

DWR WASHINGTON

97 JUL 29 PM 12:10



Wildland Mitigation Bank
Development Corporation

Kimball Island Tidal Aquatic Preserve

A Proposal for CALFED Participation

Prepared by Wildlands, Inc.
and Sierra View Landscape, Inc.

July 28, 1997

I. EXECUTIVE SUMMARY

A. Project Title and Applicant Name

The Kimball Island Tidal Aquatic Preserve is being proposed by Wildlands, Inc. in joint venture with Sierra View Landscape, Inc.

B. Project Description and Primary Biological/Ecological Objectives

The Kimball Island Tidal Aquatic Preserve is a fully designed and permitted restoration project that helps to meet the objectives of CALFED's Ecosystem Restoration Program. A key objective of the project is to offset degradation of the Delta ecosystem, particularly the loss and isolation of tidal marshes, sloughs, and waterside riparian forests. A second and related objective of the project is to provide habitat for priority special-status fish species.

Kimball Island's position in the Delta (Figure 1) and its current degraded condition present an opportunity for developing and enhancing the following priority habitats:

- 5.7 miles of *Shaded Riverine Aquatic* habitat;
- 5.3 miles of interior *Riverine Aquatic Bed* habitat;
- 82.6 acres of enhanced and protected *Tidal Perennial Marsh.*; and
- 4.29 acres of *Riparian Forest*.

These habitats will provide foraging, rearing, and in some cases spawning opportunities for several native priority fish species, including:

- San Joaquin and East-side Delta tributaries fall-run chinook salmon,
- winter-run chinook salmon,
- spring-run chinook salmon,
- late-fall run chinook salmon,
- Delta Smelt,
- longfin smelt, and
- Sacramento splittail.

C. Approach, Tasks, and Schedule

Pre-construction design, permitting and related tasks are complete, making Kimball Island ready for implementation. Acquisition involves exercising an option by Wildlands for a conservation easement on the island. Construction tasks include widening existing ditches, excavating new channels, creating channel-side berms, removing non-native vegetation on existing levees, and planting riparian vegetation on newly created berms and existing levees; these tasks will be completed by April, 1998. Post-construction tasks include establishment period maintenance and monitoring, preparation of annual monitoring reports, and establishment of a long-term management program; the establishment period will extend to December of 2001.

D. Justification for Project/Funding by CALFED

The Kimball Island project is justified by its biological benefits, the durability of those benefits, and the feasibility of implementing the project. CALFED funding for the project is justified by the consistency of the project with CALFED restoration objectives to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Delta. CALFED funding is further warranted by the fact that the project offers immediate restoration of land in a critical part of the Delta.

E. Budget Costs and Third Party Impacts

Wildlands is requesting \$499,519 from CALFED for design, permitting, and acquisition. Wildlands proposes to fund the construction and establishment period monitoring and maintenance through cost sharing with the California Department of Fish and Game and the SB 34 program. Long-term monitoring and

- management is proposed for subsequent CALFED funding.

F. Applicant Qualifications

Wildlands is a habitat development corporation and a forerunner in the mitigation banking field. Wildlands is the first company in the United States to be authorized to sell compensatory wetland mitigation credits and the first firm in California's Central Valley to be authorized to sell vernal pool preservation credits; the Wildlands Mitigation Bank opened in February, 1995 and the Orchard Creek Conservation Bank was approved in January, 1997. Wildlands currently maintains and monitors habitat at these mitigation banks.

Sierra View has been an innovative leader in wetland and riparian habitat restoration since 1989. Originally established in 1979 as a residential and commercial landscape design and construction firm, Sierra View has combined considerable knowledge and experience in earthwork, irrigation, and planting with the technical expertise of staff wildlife and fisheries biologists. This has allowed the firm to successfully restore and create over 1500 acres of native California wetland, riparian, and upland habitats for a wide variety of public and private clients.

G. Monitoring and Data Evaluation

The Kimball Island restoration project will provide the opportunity to monitor habitat enhancement and creation techniques in the Delta, and thus to help guide future habitat restoration efforts. Additionally, the project has the potential to contribute to an understanding of the role of rearing habitat in the growth and survival of chinook salmon, Delta smelt, and other sensitive species in the Delta.

Wildlands has prepared a conceptual monitoring plan with preliminary input from the U.S. Fish and Wildlife Service, but would like to coordinate the monitoring with resource agencies and perhaps with local universities. Wildlands has had initial discussions with California Department of Fish and Game staff that participate in the Interagency Ecological Program regarding the potential to cooperate in monitoring for Delta smelt and other fish in shallow water habitats. We understand that the Interagency Ecological Program is investigating the potential to expand shallow water monitoring; if this occurs, there may be potential to include Kimball Island and adjacent sloughs in this program. If this does not take place, Wildlands will work with a local university to refine and implement the monitoring program.

Monitoring to ensure successful revegetation will be funded as part of the cost sharing for construction.

H. Local Support, Coordination with other Programs, and Compatibility with CALFED Objectives

The U.S. Army Corps of Engineers received no written comments in response to the public notice for the project's Section 404 permit. However, personal communication with the Executive Director of the Delta Protection Commission indicated that Kimball Island is a logical site for restoration.

Wildlands is coordinating with the California Department of Fish and Game and has an initial commitment from the Department to fund 5000 linear feet of Shaded Riverine Aquatic habitat. The project is also compatible with objectives of the SB 34 program and the Recovery Plan for the Sacramento/San Joaquin Delta Native Fishes.

The Kimball Island project is compatible with and helps to implement CALFED's broad restoration objective of improving Delta habitat and ecological functions; it does not constrain CALFED non-ecosystem objectives. Specifically, the project helps to carry out CALFED Ecosystem Restoration Program implementation objectives pertaining to the following habitats, ecosystem processes, and species: natural floodplains and flood processes, central valley stream temperatures, Bay-Delta aquatic foodwebs, tidal perennial aquatic habitat, delta sloughs, midchannel islands and shoals, riparian and riverine aquatic habitats, Delta smelt, longfin smelt, Sacramento splittail, and chinook salmon.

II. KIMBALL ISLAND TIDAL AQUATIC PRESERVE

Applicants: Wildlands, Inc.
Contact: Steve Morgan, President
Wildlands, Inc.
5731 Manzanita Avenue
Carmichael, CA 95608
Phone: (916)331-8810
Fax: (916)331-8755
E-Mail: wildlands1@aol.com

Sierra View Landscape, Inc.
Contact: Riley Swift
Sierra View Landscape, Inc.
5729 Manzanita Avenue, No. 2
Carmichael, CA 95608
Phone: (916)344-4943
Fax: (916)344-4704
E-Mail: svl2000@worldnet.att.net

Type of Organization: California Corporation (Wildlands, Inc. and Sierra View
Landscape, Inc.)

Tax Identification Number: 68-0312392 (Wildlands, Inc.)
68-0346383 (Sierra View Landscape, Inc.)

Contractors License: 429252 (Sierra View Landscape, Inc.)

Financial Contact Person: Steve Morgan
Technical Contact Person: Riley Swift

RFP Project Groups: Acquisition
Services

III. PROJECT DESCRIPTION

A. Project Description and Approach

The Kimball Island project encompasses the construction, acquisition, and services necessary to restore and protect 104.57 acres of Delta habitat in perpetuity. The project is guided by CALFED Bay-Delta Program Visions for Ecosystem Elements, particularly those associated with Tidal Perennial Aquatic habitat, Riparian and Shaded Riverine Aquatic habitats, Mid-Channel Islands and Shoals, and Delta Sloughs. The project helps to further these ecosystem restoration visions by increasing the acreage and tidal connectivity of natural habitats.

In providing priority habitats, the project helps solve fundamental problems that have placed stress upon the Delta ecosystem, including hydrological and physical isolation of marshplain, loss and alteration of side channels, destruction of riparian vegetation, higher water temperature in aquatic habitats, and loss of habitat from urbanization, agriculture, and other uses.

The restored Kimball Island will include the following features:

- 5.7 miles of *Shaded Riverine Aquatic* habitat;
- 5.3 miles of interior *Riverine Aquatic Bed* habitat;
- 82.6 acres of enhanced and protected *Tidal Perennial Marsh.*; and
- 4.29 acres of *Riparian Forest.*

These habitats are designed to increase the ecotone between tules and tidal open water and between riparian forest and open water. The result will be rearing and potential spawning habitat for priority species, such as chinook salmon, Delta smelt, longfin smelt, and Sacramento splittail. Biologists from State and Federal resource agencies have reviewed and endorsed the proposed project design.

The approach to the project is described below with the different proposed activities separated into three groups as required by the RFP. Note that funding for only pre-construction services and acquisition is being requested from CALFED at this time.

1. Planned Construction (Group 1). Kimball Island's natural landform and habitat have been altered by past farming activities; therefore, construction will be required to restore and enhance the existing degraded marsh and weedy uplands to habitats closely resembling the aquatic, wetland, and riparian analogues found in the central Delta. More specifically, the construction is needed to modify the island's existing perimeter levee, to broaden and expand the narrow, linear relict channels of the island's former irrigation system, and to create additional planting area for the Shaded Riverine Aquatic habitat.

The key habitats that are to be restored and enhanced are Shaded Riverine Aquatic habitat, Riverine Aquatic Bed/Drainage Swale, Tidal Perennial Marsh, and Riparian Forest (Table 1). The design concept is to maximize structural diversity of habitat by placing shaded, curving sloughs through the interior of the island (Figure 2). The project will incorporate permanently flooded tule shelves into the channels and will include drainage swales for fish access to unaltered marsh. Sloughs on the adjacent Sherman and West Islands have provided a natural analog for the design with refinements based upon measurements and observations taken from Kimball Island itself (Figures 3a-e). A hydrodynamic analysis was performed by Balance Hydrologics to ensure that the proposed channels would emulate the hydrology of natural sloughs and would remain stable once constructed. Geomorphic criteria from the Balance Hydrologics report require that a system of 1st, 2nd, and 3rd order channels be created based on the characteristics of the drainage areas of the island (Table 2). The existing channels will need to be widened to form a portion of the 3rd order channel network (the 3rd order channels are the widest of the system). The 1st and 2nd order channels will need to be excavated and spoils from the channel excavation will be deposited alongside the channels to create Shaded Riverine Aquatic Habitat (Figure 4).

The existing levee along the San Joaquin River will be left in place to avoid erosion, slipping, and subsiding and to preserve the tule shelf and mudflat that currently provide shallow water habitat and support populations of Mason's lilaepsis and Delta tule pea. Existing breaches will be expanded along the north side of the island to provide inlets connecting to the offsite sloughs.

The grading plan balances cut and fill quantities on the site to eliminate the need to import or export material. The construction will be overseen by Wildlands. Wildlands will engage the services of a Delta-based dredging and barge contractor to mobilize construction equipment to the site and to perform dredging

and rough excavation. Sierra View will perform grade setting, grading, and plant installation/seeding.

2. Proposed Acquisition (Group 2). A purchase option is in place to acquire a perpetual conservation easement on the property. Upon award of CALFED funds, the property will be transferred to Wildlands, Inc., with perpetual conservation easements and deed restrictions granted in favor of the California Department of Fish and Game, the U.S. Army Corps of Engineers, or other appropriate trustee agencies.

3. Other Services (Group 3). Pre-construction services include project planning, design, and permit coordination (see section IV of this proposal); in anticipation of future funding, Wildlands has completed this work. Post-construction services include monitoring, establishment period maintenance, and long-term management. Monitoring is discussed subsequently in this section.

It is anticipated that minimal remediation will be needed due to the suitability of the island for the proposed habitats. The applicants will be responsible for any remedial actions necessary during the establishment phase to meet performance objectives. The primary actions envisioned include weed control, plant protection device repair, animal control, and replacement plantings. The applicants presently conduct these types of remedial actions as part of their daily business activities.

Long-term management activities may include floating aquatic weed control and riverine barrier maintenance. Wildlands proposes that long-term management be financed through an endowment account, funded at a level sufficient to pay for anticipated maintenance. This account can be overseen and controlled by a designated agency, such as the California Department of Fish and Game.

B. Project Location and Boundaries

Kimball Island is located in the southwestern-most corner of Sacramento County, near the confluence of the Sacramento and San Joaquin Rivers (Figure 1). Important adjacent and nearby Delta features include Sherman Island Waterfowl Management Area to the immediate north, the Sacramento River and Montezuma Slough to the northwest, the San Joaquin River to the south and east, and Suisun Marsh to the west. The boundaries of the project are shown in Figure 2.

C. Expected Benefits

The primary stressors that are addressed by the project include: hydrological and physical isolation of marshplain; alteration of channel form; isolation and elimination of side channels; loss of existing riparian zone; high water temperature; and habitat loss from urbanization, agriculture, and other land uses (Table 3). The Kimball Island project provides benefits for four of the seven priority habitats listed in the RFP: Tidal Perennial Aquatic habitat (freshwater), Instream Aquatic habitat, Shaded Riverine Aquatic habitat, and Midchannel Islands and Shoals habitat. The project assists in the recovery of seven of the priority species: San Joaquin and East-side Delta tributaries fall-run chinook salmon, winter-run chinook salmon, spring-run chinook salmon, late-fall run chinook salmon, Delta Smelt, longfin smelt, and Sacramento splittail. The project also provides habitat for migratory birds.

Primary benefits of the project include the following:

- *Increased Hydrologic and Physical Connection to Adjacent Waters* -- the project enhances and creates 5.3 miles of channel in a manner which converts straight and truncated ditches to a dendritic pattern of swales and 1st, 2nd, and 3rd order drainages (Figure 2). As a result, the amount of existing marsh that is adjacent to a drainage is increased and a gradational network of channels is established. This promotes tidal processes, nutrient interchange, organic matter inputs to the Delta, and accessible low-velocity refuge/rearing/feeding and in some cases spawning habitat for priority fish species.
- *Establishment of Natural Channel Form* -- the enhanced and extended channels proposed increase width to mean depth ratios from the 2-4 range which currently exists (Figure 5), to 5-12, depending on the size of the drainage area involved. Approximately 20 sinuous channels are proposed on the site, where none currently exist. These changes create a natural system where an artificial system has persisted over several decades; as stated by Balance Hydrologics, Inc. (1997), "The hydrology of Kimball Island remains fundamentally an agricultural system." The biological benefits of these channel form modifications include greater connectivity, shallower and lower velocity aquatic habitat, increased structural diversity, and increased primary and secondary productivity.
- *Provision of Side Channels* -- the project will provide 5.3 miles of channels and will create new opportunities for fish spawning and rearing within structurally diverse shallow waters on the island.
- *Establishment of Riparian Vegetation* -- the project proposes exotic vegetation removal on the existing

levees and the provision of native Riparian Forest on 4.29 acres. The proposed Riparian Forest will increase the local supply of organic matter, contribute to the aquatic foodweb, and increase habitat for the yellow-breasted chat and the Suisun song sparrow

- *Provision of Shaded Riverine Channels* -- the project will provide over 5.7 miles of Shaded Riverine Aquatic habitat, which will cool the proposed shallow water habitat, contribute to the supply of instream cover for fish, and provide additional aquatic food sources.
- *Enhancement of Tidal Perennial Marsh* -- the project will enhance 82.6 acres of existing marsh and increase its accessibility and use as rearing, foraging, and escape cover by fish. The project will also improve California black rail habitat by increasing the area of open water, riparian, and marsh ecotones.

Secondary benefits of the project include: contribution to the overall diversity of habitat in the area; creation of a buffer to, and complementary preserve with, the Sherman Island Wildlife Area; and provision of information regarding the effectiveness of slough and Shaded Riverine Aquatic habitat restoration. By providing the benefits listed above, the project also helps to meet the objectives of other ecosystem restoration programs and laws, such as the Delta Flood Protection Act of 1988 (SB 34), the California Department of Fish and Game Central Valley Action Plan, and the Recovery Plan for the Sacramento/San Joaquin Delta Native Fishes. The project does not have a significant influence on CALFED non-ecosystem objectives.

D. Background and Biological/Technical Justification

1. Need for the Project. Kimball Island's physical setting and characteristics present opportunities for successful habitat enhancement, restoration, and preservation. The location of Kimball Island adjacent to the Sherman Island Waterfowl Management Area and its potential as shallow water habitat within the seasonal range of the entrapment zone provide suitable conditions for seven priority fish species: chinook salmon (four runs), Delta smelt, longfin smelt, and Sacramento splittail. Shallow water habitats and wetlands adjacent to the main flows of the rivers and open water of the Delta are historically thought to be utilized by these fish. However, the past use of Kimball Island has limited its structural and habitat diversity, connectivity, and productivity for fish.

2. Comparison with Alternative Approaches. Similar approaches have been proposed on larger islands where fields are cultivated and where the ground surface is below sea level. Kimball Island has the following advantages over these efforts: the interior of the island is stable at two feet above mean sea level (Balance Hydrologics, 1997), the island's ability to support wetland vegetation has already been demonstrated, and the previous agricultural use has been abandoned and no current use will be displaced. The CALFED Ecosystem Restoration Program Vision for Tidal Perennial Aquatic Habitat discusses the need for changes in land use management and other activities to restore leveed land elevations to suitable ranges (ERPP, page 76). Kimball Island provides stable land for restoration with suitable elevations that already exist.

Another approach to the creation of shallow water habitat is the deposition of dredge material in suitable open waters. This was accomplished with reported success at Donlon and Venice Cut Islands, located near Kimball Island (U.S. Army Corps of Engineers/U.S. Fish and Wildlife Service, 1990). This habitat creation technique is not needed at Kimball Island because of its elevation -- this allows the project to be focused on restoration and enhancement rather than on the reclamation of land.

3. Basis for Expected Benefits. The basis for the expected benefits of the construction portion of the project consists of studies that document the lack of diversity and quality of the existing habitat (Jones & Stokes Associates, 1996), that show the potential for Delta smelt and other priority species (U.S. Army Corps of Engineers/U.S. Fish and Wildlife Service, 1990; California Department of Fish and Game, 1997; Wildlands, 1996), and that demonstrate the stability of the proposed channels, as designed, and of the island itself (Balance Hydrologics, 1997). The basis for the acquisition portion of the project consists of the beneficial site location, the protection of special-status plant species, the potential for benefits to special-status fish species, and the long-term stability of the island. The basis for the services portion of the project is discussed under the Project Description and Monitoring sections.

4. Durability of Benefits. The key issues relating to durability of Kimball Island restoration are the inherent stability of the island itself and the stability of the proposed Riverine Aquatic Bed sloughs; a hydrodynamic analysis of the project by Balance Hydrologics addresses these issues (June, 1997). The island is found to be stable because the surficial layers of organic material and peat are relatively thin and because the soils will remain wet. The stability of proposed sloughs is demonstrated by the stability of existing channels. Based upon analysis of historic aerial photographs, the former irrigation ditches are changing at a very slow

rate. Additionally, the soils found at both Kimball and Sherman Islands are cohesive, perennially moist, and rich in organic matter; these three factors have been found to be the primary determinants of stable tidal channels elsewhere in the Bay-Delta. Once constructed to hydraulic geometries and channel patterns emulating those on western Sherman Island, channels on Kimball Island are expected to remain stable and free of sedimentation. This will ensure ongoing enhanced ecological processes, such as nutrient exchange, production of algae and aquatic invertebrates, and connection to adjacent fish habitat.

5. Current Status of the Kimball Island Project. Kimball Island is a new project. The planning and design phases of the project are completed, and the resulting plan is fully endorsed and approved by the resource agencies (Figure 2). The permitting is completed, including the Section 404 permit, Streambed Alteration Agreement, and Grading Permit (see section G, Implementability). Section 7 Consultation from the U.S. Fish and Wildlife Service is forthcoming with habitat protection measures recommended for construction. Supporting documentation is complete, including wildlife, botany, cultural resources, hydrology, and wetland delineation reports and California Environmental Quality Act compliance documents (initial study, mitigation negative declaration, and notice of determination). Wildlands has a commitment from the Department of Fish and Game to fund five thousand lineal feet of Shaded Riverine Aquatic habitat.

E. Proposed Scope of work.

1. Pre-Construction Phase Tasks (Group 3). All of the following pre-construction phase service tasks have been completed.

Task 1: Conduct Site Reconnaissance. Wildlands has conducted site visits and project feasibility analysis.

Task 2: Coordinate with Agencies. Wildlands has coordinated and attended meetings with local, Federal, and State representatives to obtain direction, input, and support.

Task 3: Prepare Environmental Surveys and Reports. Wildlands has prepared and commissioned the technical reports necessary to design the project and to support permitting and environmental review.

Task 4: Secure Permits. Wildlands has worked with the resource agencies to obtain the needed permits.

Task 5: Prepare Hydrology Report. Wildlands has commissioned a detailed hydrodynamic analysis to test and refine the preliminary concept plan for the island.

Task 6: Prepare Site Design and Grading Plan. Based on agency input and the hydrodynamic analysis, Wildlands prepared a final site design and grading plan.

Task 7: Prepare Legal Documents. Wildlands has prepared legal documents supporting the purchase option and proposed conservation easement for the project.

Pre-Construction Phase Deliverables: Concept Plan; Habitat Development Plan; Grading Plan; Section 404 permit; Water Quality Certification; Streambed Alteration Agreement; Grading Permit; draft purchase agreement and conservation easement; California Environmental Quality Act compliance documents; and wildlife, botany, cultural resources, hydrology, and wetland delineation reports.

2. Construction Phase Tasks (Group 1). *The following are the tasks necessary to complete the construction phase of the project. Note: funding for construction is proposed to be through cost sharing.*

Task 1: Temporarily Fill Existing Levee Breaches. The dredging subcontractor will use a barge-mounted excavator to fill the four existing breaches in the island's north levee.

Task 2: Pump Water from the Island Interior. Any standing water remaining within the perimeter levee will be pumped from the island. Any entrained fishes will be salvaged and returned to adjacent sloughs.

Task 3: Mobilize Grading Equipment. Wildlands will contract with a Delta-based firm having dredge and barge equipment and experience to move the excavators and equipment to the island.

Task 4: Construct Staging Area. The dredging contractor and Sierra View will grade a staging area on the southeast corner of the island in an area of weedy upland.

Task 5: Excavate Sloughs and Form Tule Shelves and SRA Berms. The existing irrigation ditches will be widened and deepened as needed to meet specifications for 1st, 2nd, and 3rd order channels. New channels will be excavated according to channel specifications, with benches created to support tule shelf habitat. As material is excavated from the channels, it will be piled and compacted to form the planting berms for Shaded Riverine Aquatic habitat according to specifications that account for the size of the adjacent channels.

Task 6: Remove Non-native Vegetation. Non-native vegetation will be removed from the site. In the channels and wet areas, these efforts will focus on waterhyacinth and Himalayan blackberry; in transitional and upland areas, arundo, black locust, Himalayan blackberry, and non-native annual grasses will be targeted.

Task 7: Place Rock and Woody Debris in Sloughs. Rock will be imported during channel excavation and, along with large non-native woody material removed from the levees, will be placed on the bottom of the

sloughs to create hard substrates for egg attachment and refugia for fish. Logs salvaged from black locust removal operations on the weedy uplands will be anchored in the riverine banks to provide immediate perching and resting opportunities for water loving birds and reptiles.

Task 8: Install Plants. Sierra View will install seeds, cuttings, and container plants as appropriate to each habitat. Marsh plants will be installed in areas of disturbance using a combination of plugs and seeds or just seeds. Propagation material for Riparian Forest will include pole cuttings, seeds, and seedlings collected and, or, propagated by Sierra View. The technique for Shaded Riverine Aquatic habitat will be to place cuttings at irregular distances in punched or augured holes along the slough embankments and adjacent berms. Plant palettes for these habitats are shown in Figure 6. The Riparian Forest plants will be installed with screens for protection from voles and other rodents.

Task 9: Breach Levee and Construct Permanent Inlets. The dredging contractor will breach the levee in the locations where they were plugged on a low tide. Sierra View will then conduct the finished grading to create inlets matching the hydrologist's specifications.

Task 10: Install Channel Barriers. Sierra View, with assistance as needed from the dredging contractor, will sink pilings to which the double log booms will be chained. This will be done at each of the three proposed inlets. In addition, both sides of the berm at each opening will be planted with cuttings and rock armored to ensure long-term stability. This technique has been successfully employed by Sierra View in the Pixley Slough Marsh Mitigation project.

Construction Phase Deliverable: Restored and enhanced habitat.

3. Acquisition Phase Tasks (Group 2). The following task will be completed prior to the commencement of the construction phase. CALFED funding is requested for this task.

Task 1: Procure Permanent Conservation Easement. Wildlands will acquire and record a perpetual conservation easement on the property in favor of the California Department of Fish and Game or other acceptable group or agency. Terms of the easement will be clear as to the fundamental purpose of the easement and specific as to the uses permitted and the management activities required.

Acquisition Phase Deliverable: Recorded Conservation Easement.

4. Post-Construction Phase Service Tasks (Group 3). The habitat maintenance and monitoring tasks shown below (1-3) are proposed to be funded through cost sharing. The fishery monitoring and long-term maintenance tasks (4&5) are proposed to be funded by CALFED in future funding cycles.

Task 1: Irrigate Riparian Forest Seedlings. The Riparian Forest will require summer irrigation through the entire 3 year plant establishment period. This will be accomplished weekly during the dry season by Sierra View through hand irrigation, supplemented as needed by a diesel-powered pump and hose system.

Task 2: Maintain Habitats during the Establishment Period. Sierra View will survey installed vegetation regularly and replace plants as needed during the establishment period to meet accepted performance standards. Restoration specialists will also inspect the plant protection screens and cages and repair/replace them as needed. Sierra View will control weeds as needed to ensure that planted vegetation and desirable colonizing vegetation will grow and regenerate.

Task 3: Monitor Established Habitats. Wildlands will monitor the site for bank stability, and vegetation survival and vigor. Wildlands will prepare monitoring reports each year during the establishment period to present and analyze data taken from the site; topics to be addressed in the reports are discussed below under the heading, "Monitoring and Data Evaluation."

Task 4: Monitor Fishery. Wildlands will coordinate with the Interagency Ecological Program or university program to conduct monitoring of the fishery created on Kimball Island.

Task 5: Establish Long-term Management Program. Wildlands will formalize a long-term management program based upon the conditions of the island as informed by the establishment phase monitoring. At this time, we anticipate that the long-term management activities will be limited to channel barrier maintenance and aquatic weed removal. Wildlands will conduct these and other necessary long-term management activities.

Post-construction Phase Service Deliverables: Successfully vegetated habitats, five annual monitoring reports, and one long-term management program plan.

F. Monitoring and Data Evaluation.

1. Nature and Extent of Monitoring. Kimball Island restoration will provide the opportunity to monitor habitat enhancement and creation techniques in the Delta, and thus to help guide future habitat restoration efforts. The project may also contribute to an understanding of the role of rearing habitat in the growth and survival of chinook salmon, Delta smelt, and other sensitive species in the Delta. Wildlands

would like to coordinate with existing monitoring programs. Delta smelt restoration criteria stations located immediately adjacent to the island provide midwater trawl data. In pursuing cooperative shallow water monitoring opportunities, Wildlands has had initial discussions with California Department of Fish and Game staff that participate in the Interagency Ecological Program. We understand that the Interagency Ecological Program is investigating the potential to expand shallow water monitoring; if this occurs, there may be potential to include Kimball Island and adjacent sloughs in this program. If this does not take place, Wildlands will work with a local university to refine and implement the monitoring program.

Wildlands has prepared a conceptual monitoring plan with preliminary input from the U.S. Fish and Wildlife Service. Wildlands anticipates the need to collect data on water quality, turbidity, and salinity monthly, and tidal fluctuation seasonally, to provide base-line data for the fish monitoring. Sampling points will include the Island interior, Whorehouse Slough, and the San Joaquin River. A fish census will be conducted quarterly through the five year establishment period. Data on fish will include species composition, size, weight, and condition of individuals collected, number and location of individuals collected, number and types of predators, and any noteworthy environmental factors. Sampling methods will be selected based on effectiveness and potential to minimize harm to fish. Monitoring for the number and diversity of invertebrates will also be part of the monitoring program.

In addition to the fishery monitoring, Wildlands will monitor vegetation on the island during the 3 year establishment period to ensure successful habitat restoration.

2. Potential Coordination with other Programs. As described above, Wildlands is pursuing the potential to cooperate with the Interagency Ecological Program in monitoring for Delta smelt and other fish in shallow water habitats.

3. Peer Review. Wildlands will seek peer review through resource agency fisheries biologists and selected researchers.

G. Implementability

1. Compliance with Laws and Regulations/Status of Permits. The project is in conformance with the Sacramento County General Plan, which designates the site as a Natural Preserve. A grading permit has been issued by the County. The project's relationship with State and Federal laws is indicated below in the discussion of permits.

- Section 404 of the U.S. Clean Water Act: The project has been issued a Nationwide 27 permit for the proposed earthwork. We have complied with all of the applicable conditions of the permit. The Section 7 Consultation has been completed through the National Marine Fisheries Service but is still due from the U.S. Fish and Wildlife Service.
- Section 401 of the U.S. Clean Water Act: The project has received a waiver of the Water Quality Certification from the Central Valley Water Quality Control Board.
- California Environmental Quality Act: The California Department of Fish and Game, acting as Lead Agency, prepared a mitigated negative declaration and filed a notice of determination on the project.
- Streambed Alteration Agreement: Streambed Alteration Agreement No. II-511-97 has been executed.

2. Easements/Encumbrances. The property has no conflicting easements or encumbrances. Once the site is purchased by Wildlands, a conservation easement will be recorded in favor of the California Department of Fish and Game, or other acceptable group or agency, for the protection of the site in perpetuity. There are no obvious sources or remnants of hazardous materials on the site, but an investigation will be conducted before title is transferred.

3. Coordination with other Projects. Wildlands has a commitment from the California Department of Fish and Game to fund 5000 linear feet of Shaded Riverine Aquatic habitat.

4. Sensitivity to Hydrological/Climatic Conditions. The long-term stability of the project is discussed above under "Biological/Technical Justification." The island is not inundated by flood waters, as seen by Wildlands during the high waters of the 1996/1997 flood season.

5. Local Support. The U.S. Army Corps of Engineers published notice of the project at the beginning of the Section 404 permit process -- no local comments were received. Wildlands has discussed the project with Margit Arambura of the Delta Protection Commission; Ms. Arambura observed that Kimball Island was a logical site for wildlife habitat because, as one of the smaller islands, its levee costs would make agriculture difficult to sustain there.

IV. COSTS AND SCHEDULE

A. Budget Costs

1. Project Budget. The cost of the pre-construction and acquisition project is \$499,519.73 (Table 4); this is the amount requested for CALFED funding at this time. Of this total, \$149,519.73 has been the cost of the pre-construction services needed to bring the project to its current state of readiness. Wildlands is requesting a reimbursement of these funds as part of the current request from CALFED.

The cost of the acquisition phase is \$350,000, or \$3,347 per acre (\$350,000/104.57 acres). This is comparable to agricultural land prices in the area.

The construction phase is proposed to be funded through cost sharing. The following are per unit construction and establishment period maintenance costs for the three habitats proposed for restoration:

- Shaded Riverine Aquatic Habitat: \$100 per lineal foot
- Riverine Aquatic Bed Habitat: \$57,000 per acre
- Riparian Forest: \$65,000 per acre

The cost of long-term management will be funded by an endowment account capitalized with \$300,000. These monies will be requested in subsequent CALFED funding cycles.

2. Partnership Funding/Need for CALFED Funding. Sources of funding are available for the construction components of the project. Wildlands has received a commitment from the California Department of Fish and Game to fund 5000 lineal feet of Shaded Riverine Aquatic Habitat, or approximately \$500,000. The SB 34 program is another potential source of cost sharing. Using cost sharing for construction allows the CALFED funding to be focused on the design, the acquisition, and, through a subsequent funding cycle, long-term management and monitoring of the fishery on the island.

The basis for CALFED funding is the island's suitability to meet objectives articulated in the Ecosystem Restoration Program Plan, Visions for Ecosystem Elements, the project's alignment with the actions recommended by the Technical Teams, and the project's feasibility and readiness for implementation.

3. Contingency Planning. Potential contingency funding for the construction consists of other restoration or mitigation monies. For example, levee maintenance districts may have a need to fund Shaded Riverine Aquatic habitat.

4. Subcontract Bid and Evaluation Process. No portion of the work to be funded by CALFED requires subcontracting.

B. Schedule Milestones

The construction phase of the project is scheduled for completion in the Spring of 1998 (see Figure 7). The establishment period maintenance and monitoring phase services will then commence and last for three years, ending in June of 2001.

C. Third Party Impacts

Because Kimball Island is remotely situated, with a wildlife area as its principal neighbor, there are no adverse impacts to adjoining or nearby third parties. The environmental documentation for the project found that there would be little if any impact to floodwater conveyance and capacity, and thus no impacts to third parties are anticipated from this source (California Department of Fish and Game, May, 1997).

V. APPLICANT QUALIFICATIONS

The joint venture team of Wildlands and Sierra View has proven to be a successful pairing through the planning, design, and implementation of the Wildlands Mitigation Bank in Placer County, California. Each firm is solely engaged in habitat restoration.

Applicant: Wildlands, Inc.

Project Manager: Steve Morgan. Mr. Morgan will have overall authority for all aspects of the project and will conduct the business, financial, and real estate transactions of the project. Mr. Morgan is the Chief Executive Officer overseeing habitat development and management activities of Wildlands. In the area of wildlife habitat protection, he has successfully created over 750 acres of wildlife habitat and preserved 630 acres of vernal pool habitat in Placer County. Mr. Morgan has a B.A. degree in Business Administration from the United States International University in San Diego.

Project Administrator: Greg DeYoung. Mr. DeYoung will coordinate the administrative activities of the project, including permit compliance, construction tracking and documentation, mitigation measure monitoring, and long-term maintenance. Mr. DeYoung serves as Environmental Planner for Wildlands, responsible for the planning, permitting and development of new conservation projects, and the documentation of existing projects. He has 15 years of experience in environmental design and review. Mr. DeYoung holds a B.A. degree in Environmental Biology from the University of California, Santa Barbara and a M.A. degree in Urban Planning from the California Polytechnic University, Pomona.

Monitoring Coordinator: Diane Mastalir. Ms. Mastalir will perform the vegetative monitoring for the project and coordinate the other aspects of the proposed habitat monitoring. Ms. Mastalir is Staff Botanist/GIS Specialist for Wildlands. Her responsibilities for this position include: vegetative and hydrological monitoring, statistical analysis of monitoring data, preparation of monitoring reports, creation of GIS maps, plant identification, and supervision of seed collection and dispersal. Ms. Mastalir holds a B.S. degree in Biology with an emphasis in Botany and a Minor in Statistics.

Applicant: Sierra View Landscape, Inc.

Restoration Manager: Riley Swift. Mr. Swift designed the Kimball Island Development Plan. He will oversee all construction and habitat restoration on Kimball Island. He has been the owner and general manager of Sierra View since 1979. In this position, he has guided the restoration of over 1500 acres of native California wetland, riparian, and upland habitats in the context of over 30 projects for a wide range of public and private clients. Prior to 1979 he was employed by the California Department of Fish and Game, the University of California, Berkeley, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation. Mr. Swift holds a B.S. degree in Wildlife Management from the California State University, Humboldt and a M.S. degree in Biological Science, from the California State University, Chico.

Restoration Administrator: Linda Commons. Ms. Commons prepared the design drawings and maps for the project. She will coordinate the activities of restoration crews at Kimball Island, procure construction and revegetation materials, and provide construction and as-built drawings. She serves as Designer/Project Manager for Sierra View, where she has overseen many restoration projects, including the Coyote Creek Reach 3A & 3B Riparian Revegetation Project for the U.S. Army Corps of Engineers. Ms. Commons holds an A.A. degree in Horticultural Design from the American River College, Sacramento.

Construction Team. Sierra View has a 35 member construction team with education and experience in restoration. Key personnel are described below:

- Construction Superintendent:
 - Don Noyes: B.A. Parks & Recreation/10 years earthwork and construction, 5 years habitat restoration.
- Grade Setters:
 - Wayne Morris, B.S. Wildlife Biology/5 years of grade setting, restoration, and habitat management experience.
 - Tim Pafford, B.S. Natural Resources Management, with Fisheries Biology emphasis/5 years of restoration experience.
- Grading Sprvsr/Equip. Operator:
 - Tim Glissman, 12 years of experience in the operation heavy equipment, including scrapers, dozers, excavators, backhoes, grading tractors, and compactors.

WILDLANDS, INC. RELATED EXPERIENCE

WILDLANDS, INC. is a habitat mitigation development corporation dedicated to the preservation of natural open spaces. Wildlands is the first private enterprise in the nation to be fully authorized and permitted to develop a private commercial mitigation bank and sell compensatory mitigation credits for lost wetland habitat acreage. The following paragraphs describe the two mitigation bank facilities that have been established by Wildlands.

The Wildlands Mitigation Bank

Wildlands' first Mitigation Bank, located 22 miles north of Sacramento near the town of Sheridan, California, encompasses 315 acres which will provide compensatory mitigation for:

- | | |
|-----------------------------|------------------------------|
| *Vernal Pools | *Seasonal Marsh |
| *Vernal Swales | *Perennial Marsh |
| *Oak Woodland | *Open Water Marsh |
| *Oak and Elderberry Savanna | *Riparian Scrub and Woodland |
| *Perennial Stream Channel | *Seasonal Wetland |

The native California habitats selected for restoration and creation represent a naturalistic balance of high quality wetland and upland habitat constructed in a manner that will ensure long-term viability and sustainability with minimal human intervention.

The Wildlands Mitigation Bank includes a plant palette of over seventy species of plants known to occupy or have occupied similar habitats in the local region. In addition, several design features encouraging special-status species use are incorporated into the Bank. Target species include the giant garter snake, western pond turtle, Swainson's hawk, valley elderberry longhorn beetle, and vernal pool fairy shrimp. Compensatory habitat mitigation credits have become available for some of these species.

The Orchard Creek Conservation Bank

Wildlands' second mitigation bank is the Orchard Creek Conservation Bank, located five miles north of Roseville. This Bank site encompasses 632 acres dedicated to the preservation of vernal pools and the protection of special-status plants and animals, including threatened and endangered invertebrate species. The complex vernal pool ecosystem at the Orchard Creek Conservation Bank supports several unique biological elements:

- * The vernal pool fairy shrimp, a threatened species under the Federal Endangered Species Act;
- * Ahart's dwarf rush, a special-status plant;
- * Many native grasses and wild flowers endemic to the region; and
- * Numerous waterfowl and shore birds feeding on the plants and aquatic insects and crustaceans in the vernal pools.

These vernal pool inhabitants are protected and maintained in perpetuity at the Orchard Creek Conservation Bank through a permanent conservation easement.

WILDLANDS, INC. REFERENCES

Mr. Jim Monroe
U.S. ARMY CORPS OF ENG.
1325 J Street
Sacramento, CA 95814-2922
916-557-5266

Mr. Mark Littlefield
U.S. FISH & WILDLIFE SERV.
3310 El Camino Ave. Ste 130
Sacramento, CA 95821
(916)979-2105

Mr. Ryan Brodderick
CA DEPT OF FISH AND GAME
1416 Ninth Street, Rm. 1205
Sacramento, CA 95814
(916)653-7664

SIERRA VIEW LANDSCAPE, INC.
RELATED EXPERIENCE

Sierra View Landscape, Inc. Specializes in the restoration of California native wetland, riparian, and upland habitats. The paragraphs below describe six of over 30 successful restoration projects.

* A.G. Spanos Land Company, Pixley Slough Marsh Mitigation Area

Construction Components: a new flood-control levee, excavated main channel and low-flow channels, and upland planting terraces.

Irrigation/Planting Components: design and installation of an oak woodland irrigation system, all seeding and planting operations, long-term maintenance and monitoring.

Habitat: 25-acres of created tidal marsh, Shaded Riverine Aquatic habitat, riparian and upland habitat complex. Note: After five years, the 7,500 willow cuttings installed on the new levee had achieved a height of approximately 15-20 feet and overhung Pixley Slough, creating Shaded Riverine Aquatic habitat.

* U.S. Corps of Engineers, Sacramento Urban Levee Reconstruction Wetland and Riparian Mitigation Area

Construction Components: overflow weir design and installation.

Irrigation/Planting Components: irrigation system design and installation, soil preparation and seeding, planting, and long-term maintenance.

Habitat: 22 acres of open water, 22 acres of emergent marsh, 42 acres of cottonwood riparian forest, and 28 acres of oak woodland.

Note: Over 20,000 plants were installed as part of this restoration effort.

* Lighthouse Marina and Riverbend Development, Kachituli Oxbow Wetland and Riparian Mitigation Area

Irrigation/Planting Components: drip irrigation system installation, soil preparation, seeding, planting, and one year of maintenance on this 125-acre site.

Habitat: 125 upland and riparian acres and an 11 acre oxbow lake.

* U. S. Army Corps of Engineers - Riparian Revegetation and Maintenance Coyote Creek Reach 3A & 3B, Santa Clara County, California

Construction Components: excavation of a large non-engineered levee and recontouring to re-establish floodplain.

Irrigation/Planting Components: design and installation of an automatic drip irrigation system to water over 26,500 trees, shrubs, and herbaceous plants installed along both banks of a two mile stream segment.

Habitat: 22.5 acres of wooded riparian habitat and 1.5 acres of Shaded Riverine Aquatic habitat.

* U. S. Army Corps of Engineers - Restoration Planting and Maintenance, Yolo Basin Wetlands, Yolo County, California

Irrigation/Planting Components: design and installation of a drip irrigation system; installation of 1800 riparian plants and seeding of native perennial grasslands.

Habitat: 9.2 acres of riparian habitat and 463 acres of grassland.

* Wildlands, Inc. - Wildlands Mitigation Bank, Phases I and II, Placer County, California

Construction Components: excavation of channels; construction of earthen dams, water control structures, and overflow weirs; and vertebrate habitat structures, including refugia, nest boxes, basking structures, and hibernacula.

Irrigation/Planting Components: creation of a flood irrigation system; installation of thousands of locally collected seeds, seedlings, cuttings, and plugs.

Habitat: 153 acres to date of perennial and seasonal marsh, riparian scrub and woodland, vernal pool and swale, seasonal wetland, oak and elderberry savanna, and perennial grassland.

SIERRA VIEW LANDSCAPE, INC. REFERENCES

Mr. Sid Jones
U.S. ARMY CORPS of ENGINEERS
1325 J Street
Sacramento, CA
(916)557-7273

Mr. Jeff Finn
CA DEPT OF FISH AND GAME
13515 Schooner Hills Drive
Grass Valley, CA 95945
(916)477-0308

VI. COMPLIANCE WITH TERMS AND CONDITIONS

The required noncollusion form is attached -- there are no other submittal requirements for the services and acquisition to funded by CALFED. The terms and conditions of the project are acceptable to Wildlands/Sierra View, as outlined in Attachment D of the RFP.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

WILDLANDS, INC.

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

Steven K. Morgan

DATE EXECUTED

7/23/97

EXECUTED IN THE COUNTY OF

Sacramento

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

President

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Wildlands, Inc.

Item

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME
Sierra View Landscape, Inc.

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

Riley Swift
OFFICIAL'S NAME

Riley Swift

DATE EXECUTED 7/23/97 EXECUTED IN THE COUNTY OF Sacramento

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE
President

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME
Sierra View Landscape, Inc.

FIGURES

- Figure 1: Location Map
- Figure 2: Habitat Development Plan
- Figure 3: Habitat Measurement Location Maps
- Figure 4: Section View of Proposed Channels
- Figure 5: Width: Depth Ratio as a Function of Drainage Area
- Figure 6: Habitat Section and Plant Palette
- Figure 7: Proposed Schedule

1-001773

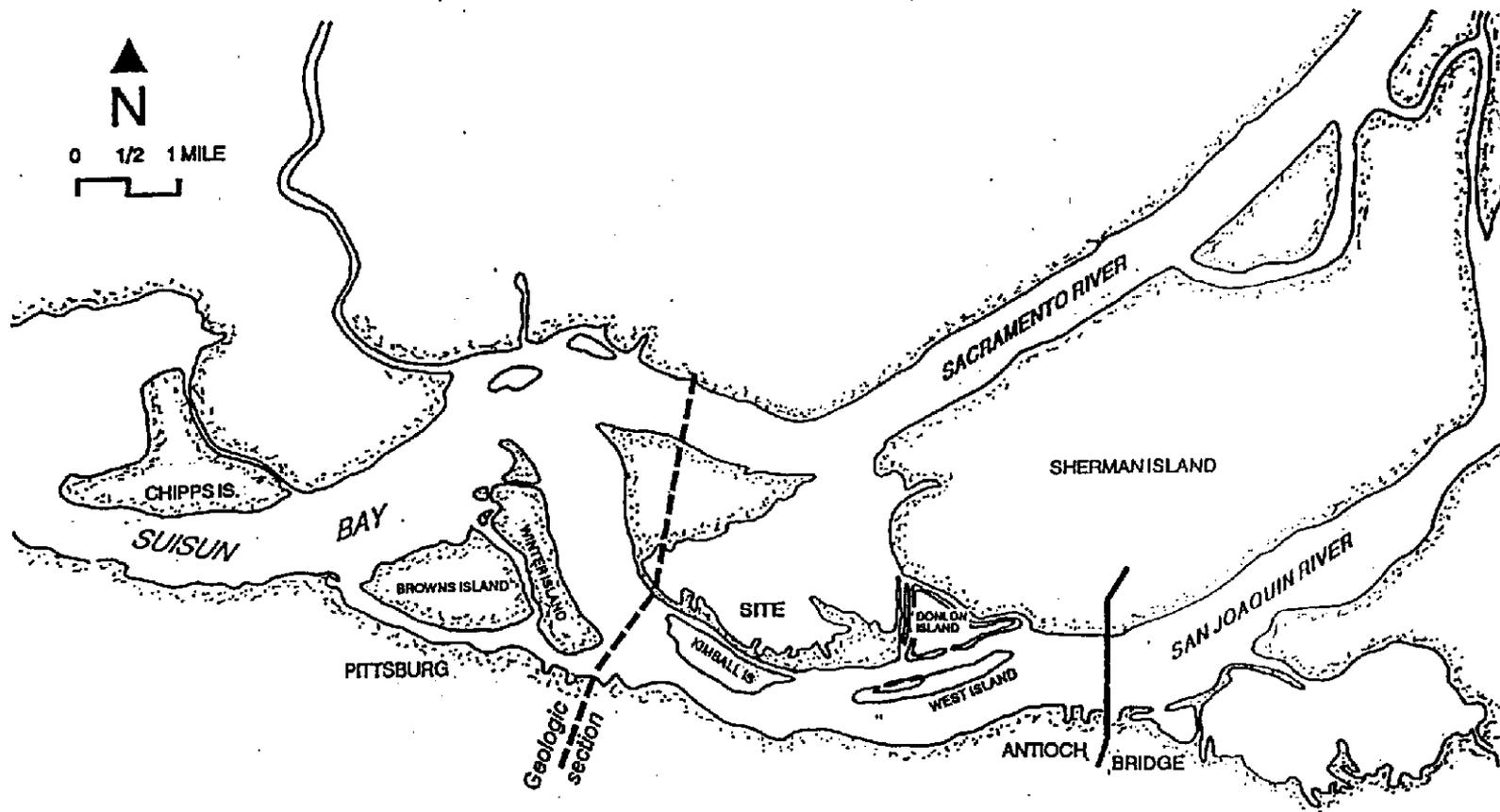
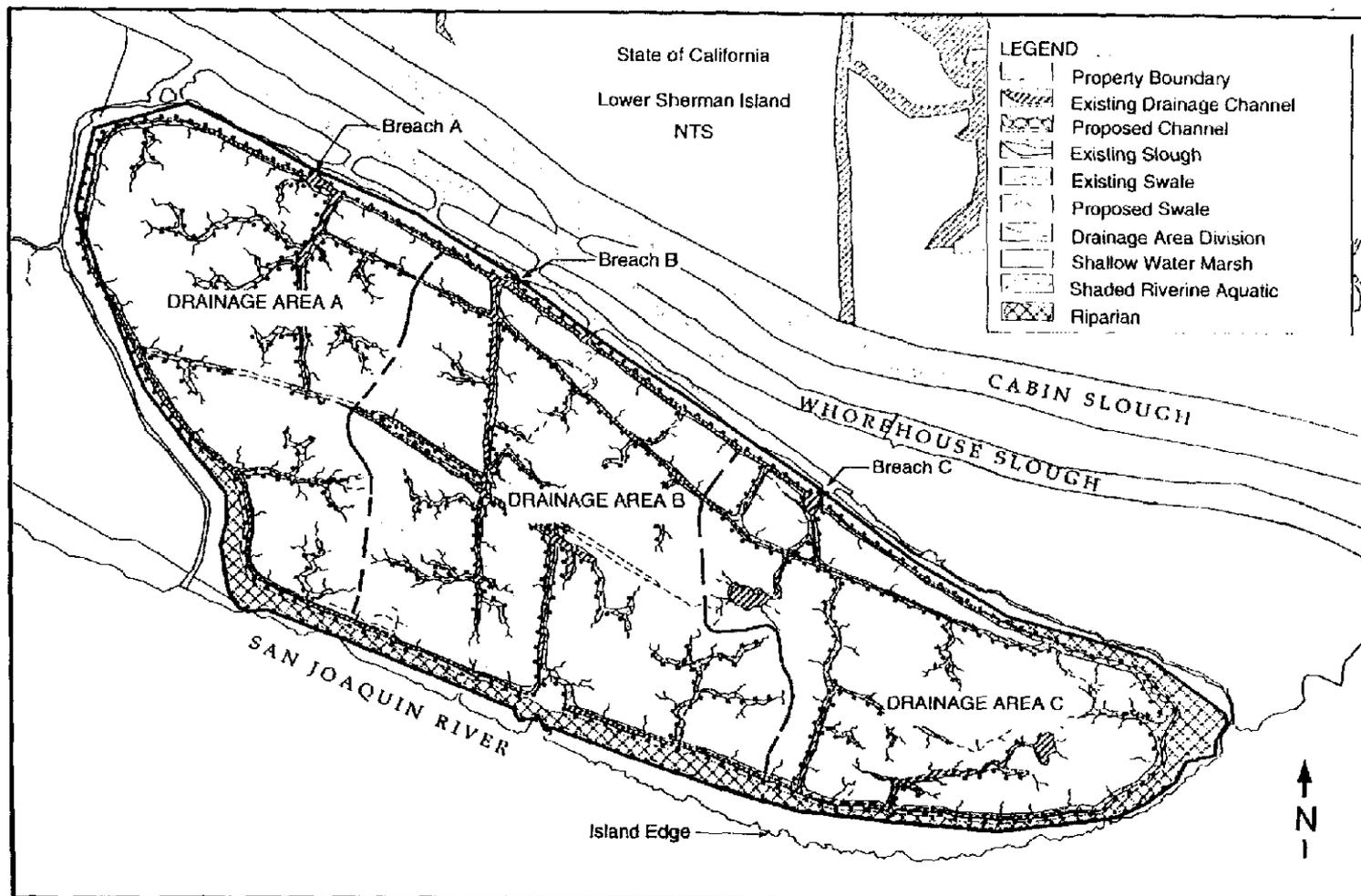


Figure 1: Location Map

1-001773

1-001774



Date	June 18, 1997	Developed By WILDLANDS, INC. 5731 Manzanita Ave. Carmichael, CA 95608 (916) 331-8810	KIMBALL ISLAND San Joaquin River Delta, California	Designed By SIERRA VIEW LANDSCAPE, INC. 5729 Manzanita Ave. #2 Carmichael, CA 95608 (916) 344-4943	Figure 2: HABITAT DEVELOPMENT PLAN
Scale	1" = 200'-0"				
Drawn	RJS/LSC				

1-001774

1-001775

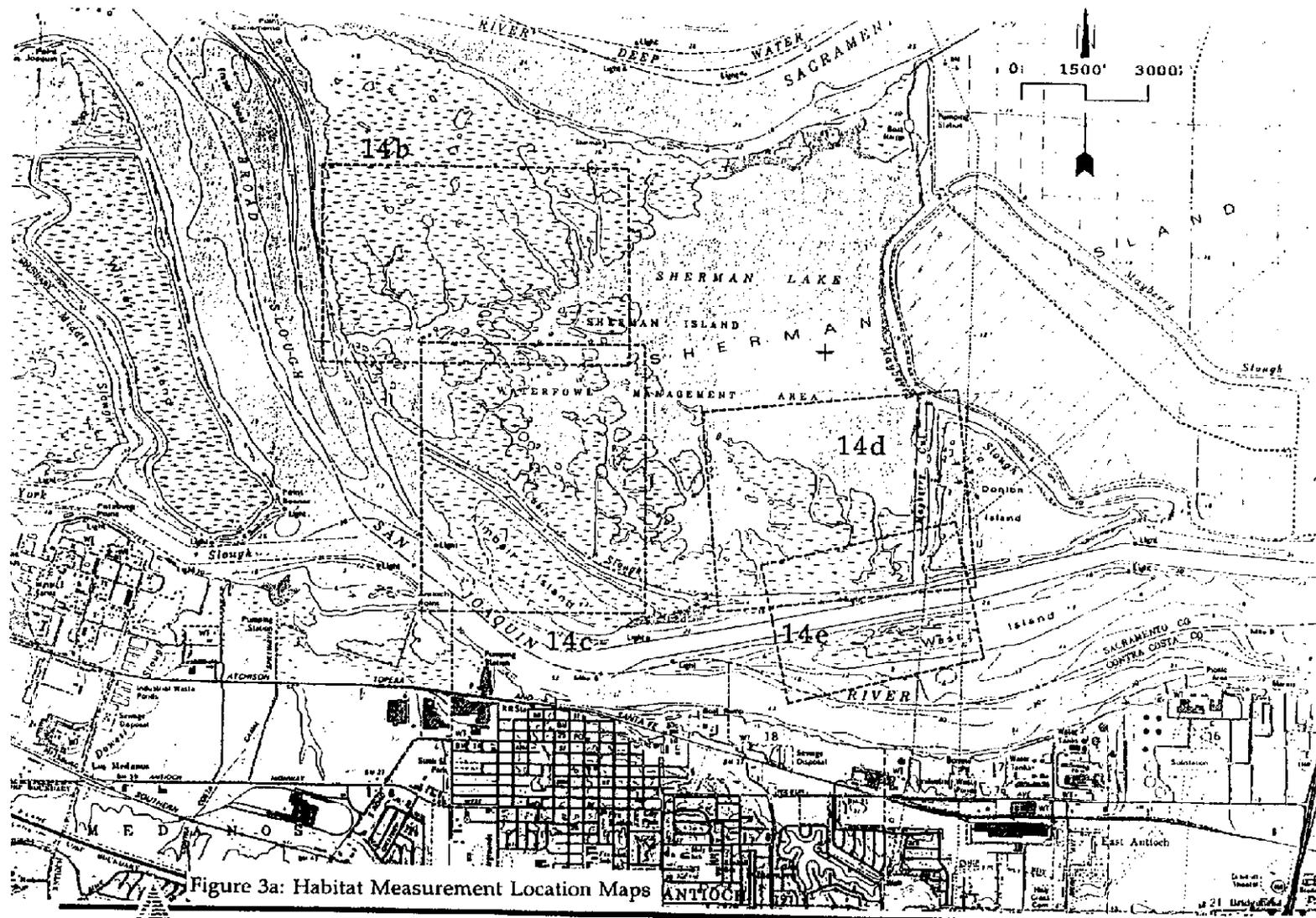


Figure 3a: Habitat Measurement Location Maps



Balance
Hydrologics, Inc.

Index to aerial photographs
showing measurement locations
at Sherman, Kimball and West Islands

1-001775

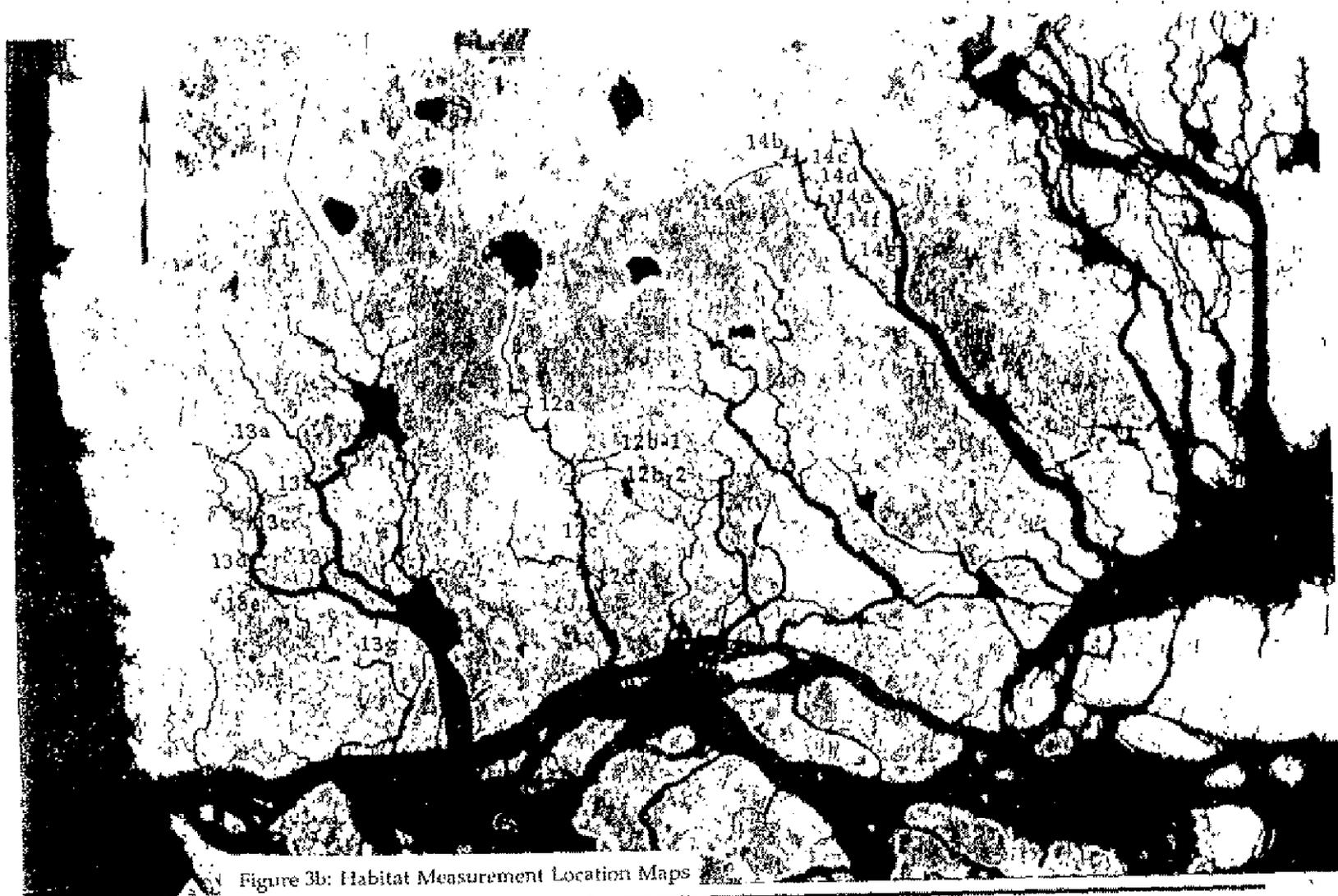


Figure 3b: Habitat Measurement Location Maps



Balance
Hydrologics, Inc.

Locations of measurements at
at Sherman Island (north).
(photo on file at USDA ASCS, Sacramento;
flown May/June 1987)



Figure 3c. Habitat Measurement Location Maps



Balance
Hydrologics, Inc.

Locations of measurements at Kimball
Island and Sherman Island (south).
(photo on file at USDA ASCS, Sacramento;
 flown May/June 1987)



Figure 3d: Habitat Measurement Location Maps

Locations of measurements at Sherman Island (southeast), (photo on file at USDA/ASCS, Sacramento, from May-June 1997)

Balance Hydrologics, Inc.



1-001779

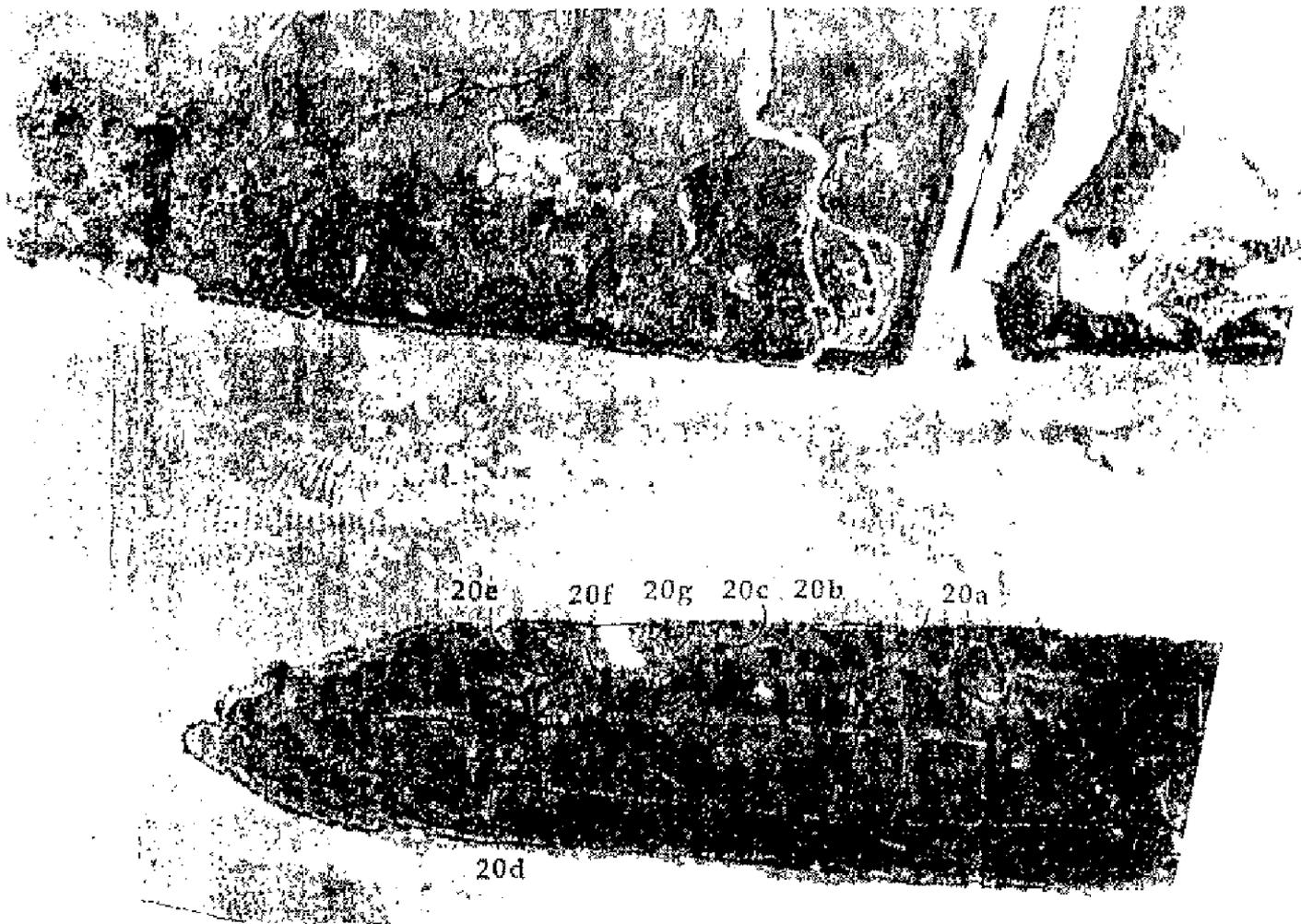


Figure 3e: Habitat Measurement Location Maps

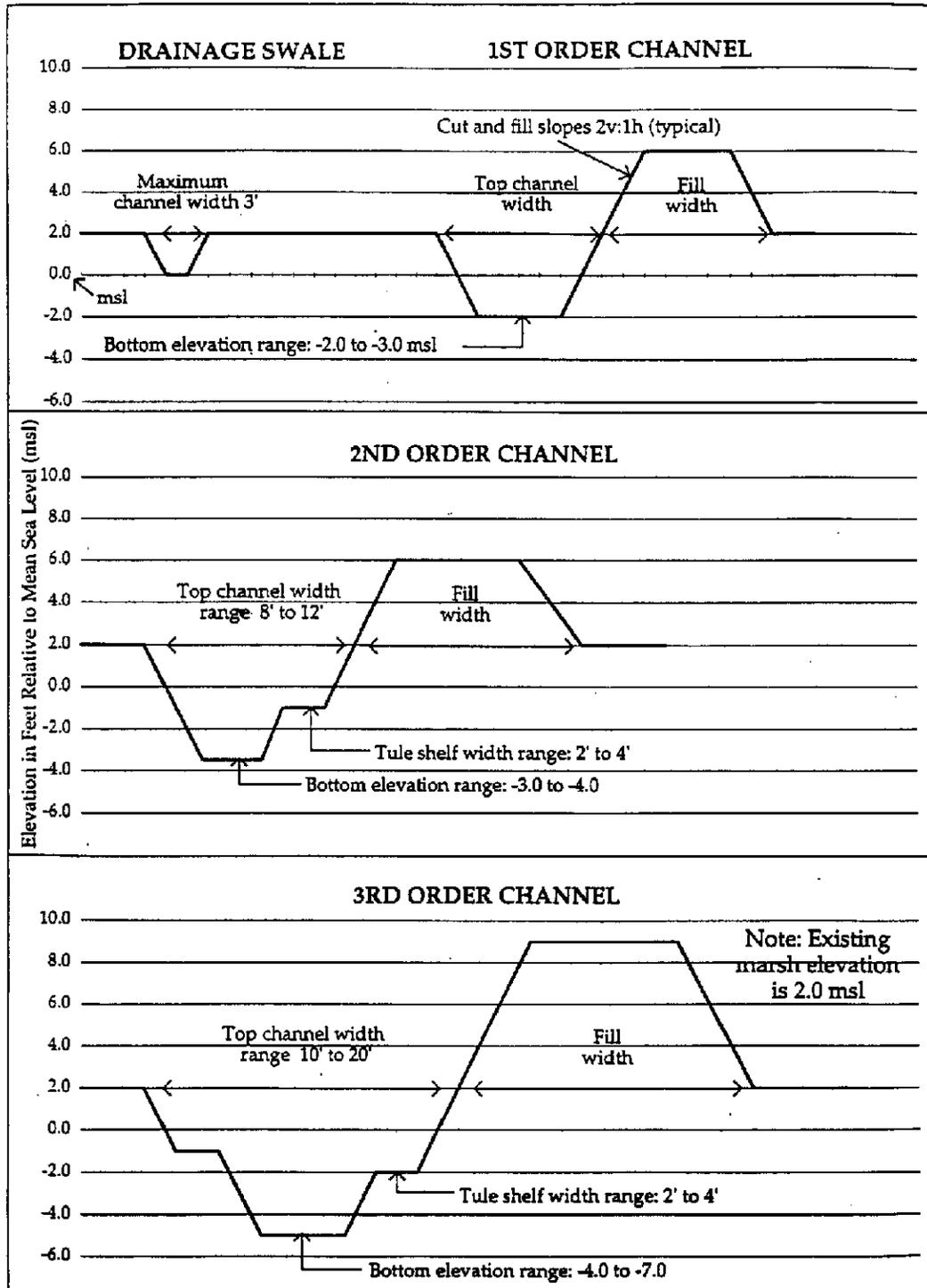


Balance
Hydrologics, Inc.

Locations of measurements at West Island.
(photo on file at USDA ASCS, Sacramento;
flown May/June 1987)

1-001779

Figure 4: Section Views of Proposed Channels



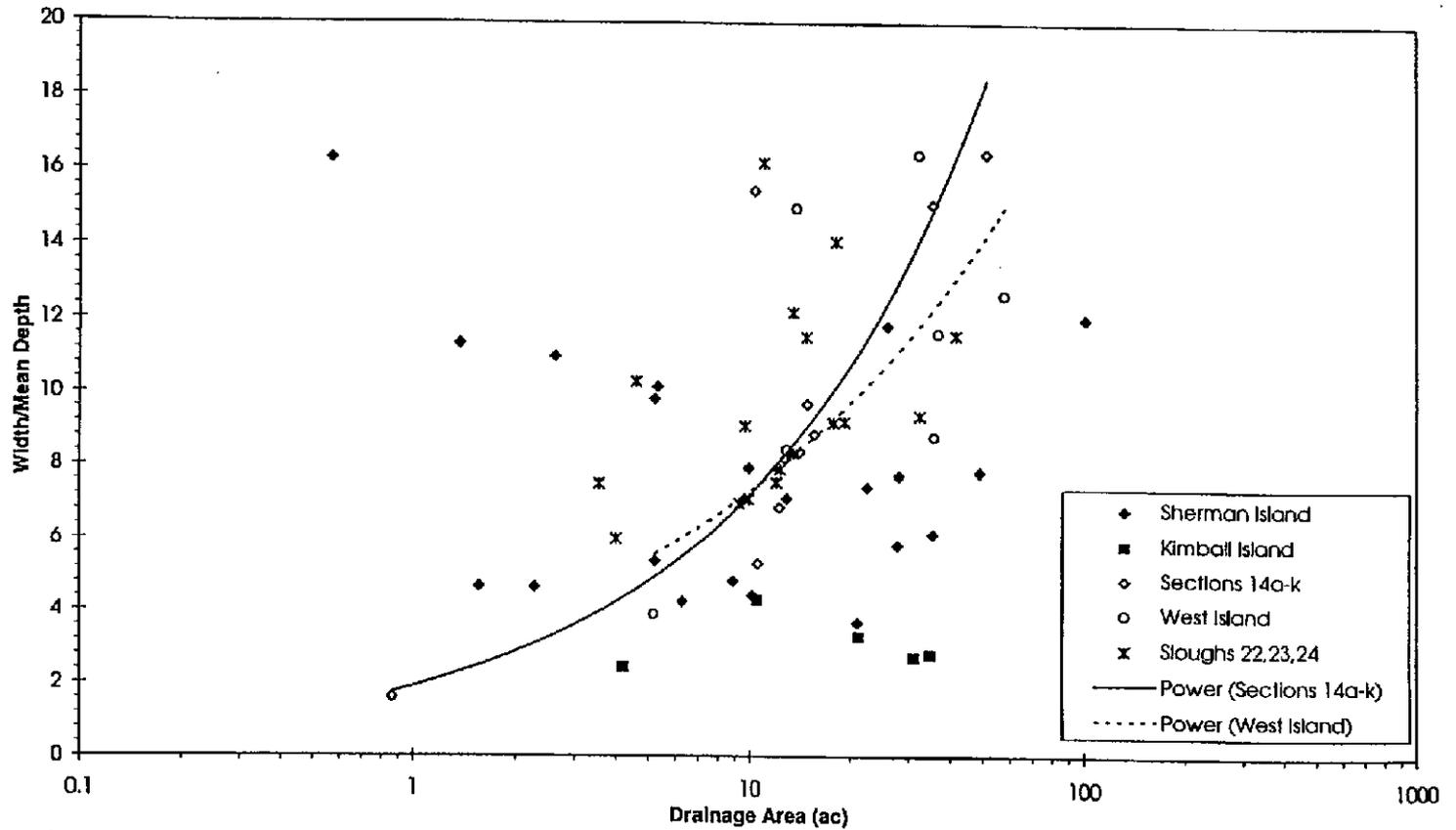
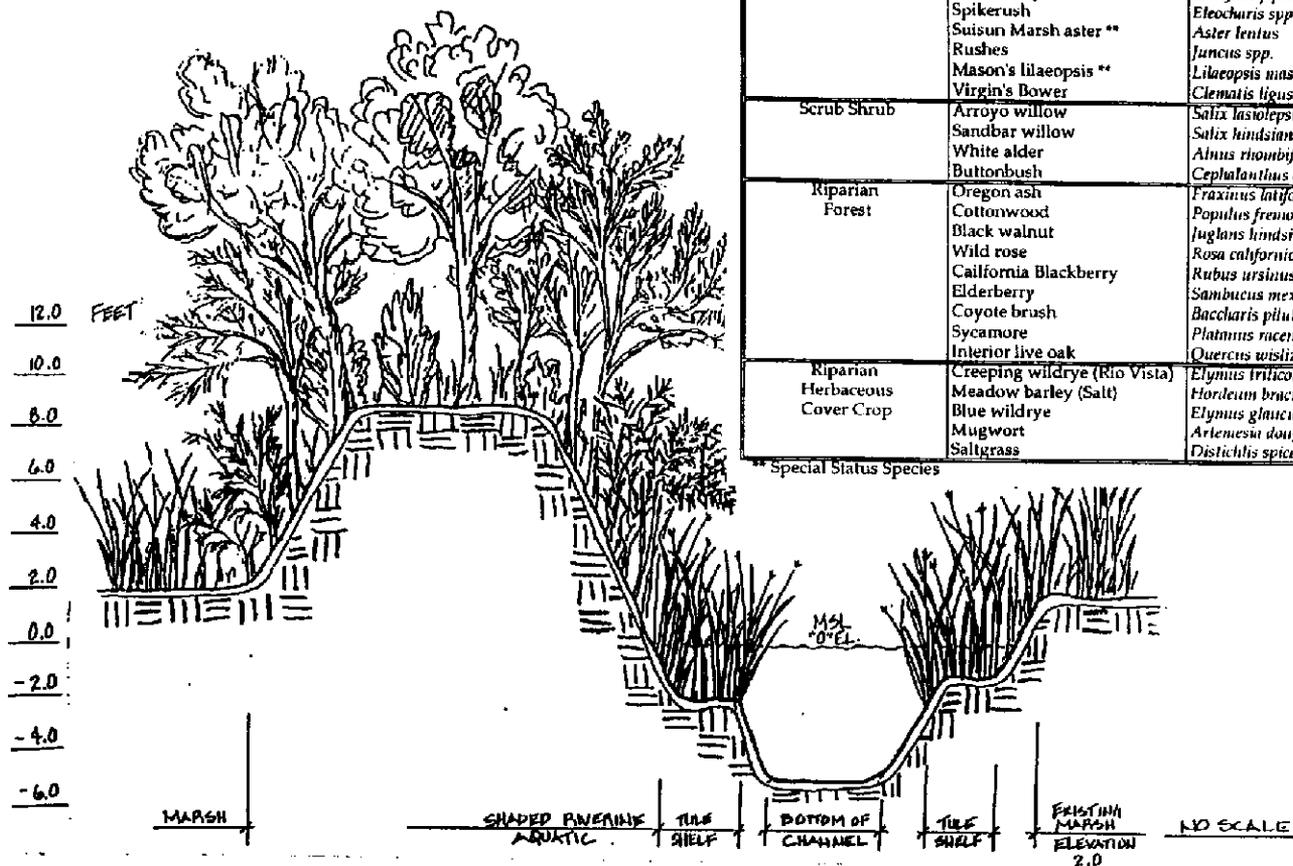


Figure 6: Habitat Section and Plant Palette

1-001782



Proposed Plant Palette for Kimball Island Restoration

Habitat Type	Species	Botanical Name	Elevation
Shallow Water Marsh: Tule Shelf	Common tule	<i>Scirpus acutus</i>	-2.0 to 0
	California bulrush	<i>Scirpus californicus</i>	"
Shallow Water Marsh: Tule Shelf Edge Cover Crop	Cattail	<i>Typha latifolia</i>	0.0 to 2.0
	Smartweed	<i>Polygonum spp.</i>	"
	Water grass	<i>Echinochloa crus-galli</i>	"
	Sedges	<i>Carex spp.</i>	"
	Delta tule pea **	<i>Lathyrus jepsonii jepsonii</i>	"
	Spikerush	<i>Eleocharis spp.</i>	"
	Suisun Marsh aster **	<i>Aster lentus</i>	"
	Rushes	<i>Juncus spp.</i>	"
	Mason's lilaopsis **	<i>Lilaeopsis masonii</i>	"
Scrub Shrub	Virgin's Bower	<i>Clematis ligusticifolia</i>	"
	Arroyo willow	<i>Salix lasiolepis</i>	3.0 to 4.0
	Sandbar willow	<i>Salix hindsiana</i>	"
	White alder	<i>Alnus rhombifolia</i>	"
Riparian Forest	Buttonbush	<i>Cephalanthus occidentalis</i>	"
	Oregon ash	<i>Fraxinus latifolia</i>	4.0 to 10.0
	Cottonwood	<i>Populus fremontii</i>	4.0 to 12.0
	Black walnut	<i>Juglans hindsii</i>	"
	Wild rose	<i>Rosa californica</i>	"
	California Blackberry	<i>Rubus ursinus</i>	"
	Elderberry	<i>Sambucus mexicana</i>	8.0 to 12.0
	Coyote brush	<i>Baccharis pilularis</i>	"
Riparian Herbaceous Cover Crop	Sycamore	<i>Platanus racemosa</i>	10.0 to 12.0
	Interior live oak	<i>Quercus wislizenii</i>	"
	Creeping wildrye (Rio Vista)	<i>Elymus triticoides</i>	4.0 to 12.0
	Meadow barley (Salt)	<i>Hordeum brachyantherum</i>	"
Cover Crop	Blue wildrye	<i>Elymus glaucus</i>	"
	Mugwort	<i>Artemisia douglasiana</i>	"
	Saltgrass	<i>Distichlis spicata</i>	"

** Special Status Species

1-001782

TABLES

Table 1: Proposed Habitats

Table 2: Summary of Proposed Kimball Island Channel Enhancement Activities

Table 3: Summary of the Biological Benefits of Kimball Island

Table 4: Project Cost

Table 5: References

Table 1: Proposed Habitats

Proposed Habitat Type	Quantity	Proposed Habitat Summary Description
Riparian Forest	4.29 acres	Levee uplands revegetated with riparian trees and shrubs
Shaded Riverine Aquatic Habitat	30,146 feet 9.67 acres	5.7 miles of riparian plants overhanging riverine aquatic bed
Tidal Perennial Marsh	82.6 acres	Emergent marsh, including a low band with primarily tules
Aquatic Riverine Bed (Slough)	28,324 feet 8.01 acres	5.3 miles of meandering open water channels connecting to Whorehouse Slough
Total Acreage	104.57	

Table 2: Proposed Kimball Island Channel Enhancement Activities

1st Order Channel					
Drainage Area	Length	Width of Cut at Surface	Area of Cut	Width of Fill at Surface	Area of Fill
	linear feet	linear feet	acres	linear feet	acres
Area A	2,242	8	0.41	8	0.41
Area B	4,368	8	0.80	8	0.80
Area C	2,288	8	0.42	8	0.42

2nd Order Channel					
Drainage Area	Length	Width of Cut at Surface	Area of Cut	Width of Fill at Surface	Area of Fill
	linear feet	linear feet	acres	linear feet	acres
Area A	2,064	10	0.47	10	0.47
Area B	2,110	10	0.48	10	0.48
Area C	2,002	10	0.46	10	0.46

3rd Order Channel					
Drainage Area	Length	Width of Cut at Surface	Area of Cut	Width of Fill at Surface	Area of Fill
	linear feet	linear feet	acres	linear feet	acres
Area A	727	15	0.25	14	0.23
Area B	1,693	15	0.58	14	0.54
Area C	781	15	0.27	14	0.25

Totals For All Drainage Areas				
	Length	Area of Cut	Area of Fill	Total Converted Area
	linear feet	acres	acres	acres
1st order Channel	8,898	1.63	1.63	3.27
2nd Order Channel	6,177	1.42	1.42	2.84
3rd Order Channel	3,200	1.10	1.03	2.13
Toe Drain Channel	10,050	1.85	0.00	1.85
Grand Total	18,274	6.00	4.08	10.08

Table 3: Summary of the Biological Benefits of Kimball Island

Stressor	Method of Addressing
Floodplain or Marshplain changes-Hydrological isolation of marshplain	Increasing linear extent of channels, improving connectivity and tidal flows. Adding numerous drainage swales. Widening stream channels to reconnect the marshplain to the water channel, allowing a more natural inundation cycle.
Channel Form Changes-Alteration of channel form	Decreasing slope of channel sides, increasing nutrient exchange, vegetation, and wildlife habitat.
Channel Form Changes-Isolation or elimination of sidechannels and tributaries	Reconnecting isolated channels and tributaries.
Channel Form Changes-Loss of Existing Riparian Zone	Adding Riparian and Shaded Riverine Aquatic Habitat.
Water Temperature	Increasing channel connectivity and tidal flows. Increasing shallow water and riparian habitats and planting vegetation which can cool the water through shading and evapotranspiration.
Undesirable Species Interactions-Competition from introduced plants	Removing Waterhyacinth, Black Locust, Himalayan Blackberry, and non-native grasses.
Land Use-Agricultural Practices	Restoring a delta island which had been converted to agricultural uses to a functioning tidal wetland. Providing a long term management program to protect the island from further degradation. Establishing easements to protect the Island and funds to maintain it.
Habitats Benefitted	This project benefits four of the seven priority habitat listed in the RFP: Tidal perennial aquatic habitat (freshwater), instream aquatic habitat, shaded riverine aquatic habitat, and midchannel island and shoals habitat.
Rare Plant Species Benefitted	Delta Tule Pea, Mason's Lilaopsis
Priority Species Benefitted	Delta Smelt, Longfin Smelt, Sacramento Splittail, Chinook Salmon
Migratory Birds Benefitted	California Black Rail, Yellow-Breasted Chat
Benefits to other ecosystem restoration projects	Increasing habitat on Kimball Island will provide forage and nesting habitat for migratory birds visiting nearby Sherman Island.

Table 4: KIMBALL ISLAND TIDAL AQUATIC PRESERVE - PROJECT COST (EXCLUDING CONSTRUCTION)

PHASE OR TASK #	DIRECT LABOR	OVERHEAD LABOR/ GENERAL ADMIN	SERVICE CONTRACTS	LAND ACQUISITION	OTHER DIRECT COSTS AND MISC	TOTAL COST
PHASE I						
Task #1 Site Reconnaissance	\$716.81	\$9,867.12	\$2,857.50	\$0.00	\$25,276.73	\$38,718.06
Task #2 Agency Coordination	\$1,903.30	\$18,321.00	\$0.00	\$0.00	\$0.00	\$20,224.30
Task #3 Environmental Surveys and Reports	\$1,799.78	\$0.00	\$7,067.06	\$0.00	\$7,048.72	\$15,915.54
Task #4 404 Application and Other Permits	\$4,666.50	\$0.00	\$6,314.86	\$0.00	\$1,851.00	\$12,632.36
Task #5 Hydrology Report	\$733.62	\$0.00	\$19,381.54	\$0.00	\$1,531.15	\$21,546.51
Task #6 Site Design & Grading Plan	\$2,052.33	\$16,896.50	\$214.50	\$0.00	\$14,266.65	\$33,431.98
Task #7 Legal	\$34.40	\$0.00	\$6,914.68	\$0.00	\$0.00	\$6,949.08
TOTAL PHASE I	\$11,906.72	\$45,086.62	\$42,750.14	\$0.00	\$49,776.25	\$149,619.73
PHASE II						
Task #1 Land Acquisition	\$0.00	\$0.00	\$0.00	\$350,000.00	\$0.00	\$350,000.00
Total Phase II	\$0.00	\$0.00	\$0.00	\$350,000.00	\$0.00	\$350,000.00
TOTAL PHASE I & II	\$11,906.72	\$45,086.62	\$42,750.14	\$350,000.00	\$49,776.25	\$499,619.73

1-001788

1-001788

TABLE 5:
REFERENCES

- Arambura, Margit, Delta Protection Commission Executive Director. December 10, 1996. Personal communication.
- Balance Hydrologics, Inc. June 1997. "Hydrology of Kimball Island and Proposed Geomorphic Criteria."
- California Department of Fish and Game. May 1995. "SB 34 Delta Levees Mitigation Guidance Document." California Department of Fish and Game, Region 2, Delta Levees Project.
- California Department of Fish and Game. May 21, 1997. "Negative Declaration for Kimball Island Mitigation Bank." California Department of Fish and Game, Region 2.
- California Department of Fish and Game. 1997. "20 Millimeter Delta Smelt Survey." <http://www.delta.dfg.ca.gov/data/dsstatus/dsstatus.html>.
- Jones & Stokes Associates, Inc. July 1996. "Wildlife Survey of the Kimball Island Project."
- U.S. Army Corps of Engineers/U.S. Fish and Wildlife Service. September 1990. "Design and Biological Monitoring of Wetland and Riparian Habitats Created with Dredged-Materials." U.S. Army Corps of Engineers, Sacramento District, Planning Division; U.S. Fish and Wildlife Service, Division of Ecological Resources.
- Wildlands, Inc. October 1996. "Delta Smelt, Longfin Smelt, Sacramento Splittail and Chinook Salmon: Habitat Requirements and Reported Occurances with Respect to Kimball Island, Sacramento County, California.