FI-250

Phase I, 1997 Category III Proposal

I. Executive Summary

Project Title: A Learning Laboratory for Restoring Subsided Lands in the Delta: Phase I

Applicants:

Department of Water Resources	Natural Heritage Institute
U.S. Geological Survey	Philip Williams and Associates Ltd.
Northwest Hydraulic Consultants, Inc.	Steve Deverel, Ph.D

Project Groups: This project contains activities and provides significant deliverables in all three project groups: Group 1, Group 2, and Group 3.

Description and Primary Ecological Benefits: This Phase I proposal is for funds to design and construct three large restoration pilot projects totaling 600 acres on Twitchell Island, acquire Bradford Island, and develop plans for 1,000 acres of additional restoration pilot projects on Bradford Island (Figure 1). Most importantly, the learning laboratory will yield data through monitoring and research and identify techniques that enable CALFED to develop a broad-scale, long-term habitat restoration program for the Delta. In the long term, this project will create approximately 1,000 acres of *tidal perennial aquatic habitat* (freshwater) and 500 acres of *mid channel island, shaded riverine, and non-tidal perennial aquatic habitats*. During the next three years, the project will significantly increase the percentage of these habitat types in the Western Delta (see Figure 2). It will also reduce the adverse impacts of *levees* and *improper dredged spoil disposal* - ecosystem stressors identified by CALFED.

Approach/Tasks/Schedule: Any long-term plans for the Delta that do not address the subsided Central and Western Delta Islands would be incomplete since doing nothing or continuing down the present path is unacceptable. Therefore, projects like those proposed herein must find a way to restore the heart of the Delta to its critical place in the ecosystem while protecting and enhancing water quality and supply for millions of Californians.

This proposal seeks immediate funding for the first phase of a longer-term project to develop a field scale learning laboratory to design, test, analyze, implement, and monitor the most promising subsidence reversal techniques and to determine where and how they can best be replicated elsewhere in the Delta. **The goal of this project is to develop technical design recommendations for a broader, long-range, cost effective and environmentally sound Delta island restoration program.** This goal will be achieved by testing the three most promising island surface building techniques currently known: 1) cultivating tules and other wetland vegetation to accelerate peat formation, 2) reusing clean dredge materials, and 3) capturing and depositing natural sediment loads passing through the delta. Wherever possible, study plot designs will maximize the enhancement and restoration of CALFED habitat targets.

Phase I: Tasks/Schedule

• Pre-construction research and data collection of Bradford and Twitchell Island restoration projects.	10/97 - 10/00
• Comply with CEQA requirements and obtain permitting.	10/97 - 05/98
• Analysis and design project components.	12/97 - 01/99
• Acquire Bradford Island.	05/98 - 05/99
• Construct Twitchell Island restoration pilot projects.	03/99 - 08/99
• Document results and distribute program reports	10/97 - 10/00

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- Complete Bradford Island project designs.
- Construct Bradford Island restoration pilot projects.
- Monitor Twitchell and Bradford Island restoration pilot projects, document and distribute results.

Justification for Project Funding by CALFED: CALFED should fund this project because it will advance three of CALFED's four stated objectives. It will 1) directly create target habitats and benefit target species, as well as provide information necessary for broad scale restoration of these targets in the Delta; 2) develop subsidence reversal technology necessary to eliminate the long-term risk of catastrophic levee failure in the Delta; and 3) identify information and procedures necessary to simultaneously restore tidal perennial aquatic habitat and protect water quality for all beneficial uses.

Budget Costs and Third Part Impacts: This application requests approximately $12.9 million in CALFED funds, matched by $2.5 million from the applicants. The costs of major project components are divided as follows: land acquisition, $5.5 million; project planning, analysis and design, $1.4 million; project construction, $4.1 million; research and monitoring, $2.1 million; and reporting and technology transfer $0.27 million. Table IV-I details the estimated costs for this project.

The project will not create any foreseeable, adverse third party impacts.

Applicant Qualifications: The interdisciplinary team is comprised of leading experts in the fields of engineering, applied hydrology and geomorphology, wetlands restoration, chemistry, and natural resources planning and conservation. DWR engineers, biologists, and land agents have multiple years of experience with levee construction and habitat restoration in the Delta. USGS scientists and Steve Deverel have been researching the causes of subsidence and soil and water chemistry in the Delta for nearly two decades. Philip Williams and Associates have designed over 400 wetland and restoration projects, and Northwest Hydraulic Consultants has completed more than 3,000 river and estuary hydrodynamic, sediment transport, and geomorphic assessment and design projects. The Natural Heritage Institute lawyers and scientists have many years of experience facilitating public/private partnerships and identifying creative solutions to environmental problems based on the best technical information.

Monitoring and Data Evaluation: Both biological and physical monitoring are an integral part of the learning laboratory. The learning laboratory will not only monitor the degree to which specific CALFED targets are achieved, but will also evaluate the efficacy and broader applicability of the various subsidence and habitat restoration techniques.

Local Support/Coordination with other Programs/Compatibility with CALFED objectives: Bradford Island landowners who have been contacted expressed enthusiasm for the project. The project is also supported by the State Water Contractors, USACE, SWRCB, RWQCB, BCDC, EPA, the Nature Conservancy and the UC Davis Public Service Research Program. Ed Littrell of the Department of Fish & Game, the State's lead agency on habitat design, will collaborate on all biological restoration activities. It is compatible with all CALFED objectives and will be coordinated with other habitat restoration projects in the Western Delta.