PART A. Cover Sheet

A1. Proposal Title:
Hill Slough West Restoration Project, Phase I - Preliminary Restoration Design, Environmental Documentation and Permitting

A2. Lead Applicant or Organization
California Wildlife Foundation
Contact Name: Stephen Dunn
Address: 1212 Broadway, Suite 840
Oakland, CA 94612
Phone Number: (510) 268-1828
Fax Number: (510) 268-9948
E-mail: sdunn@californiawildlifefoundation.org

A3. Project Manager or Principal Investigator
California Department of Fish and Game
Contact Name: Gina Van Klompenburg
Address: 4001 N. Wilson Way, Stockton, CA 95205
Phone Number: (209) 942-6072
Fax Number: (209) 946-6355
E-mail: gvanklompenburg@dfg.ca.gov

A4. Cost of Project: $553,141.60

A5. Cost Share Partners:*
Solano County Public Works – DFG is currently working on an MOU with Solano County
Contact Name: Paul Wiese
Address: 675 Texas Street, Suite 5500
Fairfield, CA 94533-6341
Phone Number: (707) 784-6072
Fax: (707) 784-2894
E-mail: pwiese@solanocounty.com

California Department of Fish and Game
Contact Name: Gina Van Klompenburg
Address: 4001 N. Wilson Way
Stockton, CA 95205
Phone Number: (209) 942-6072
Fax: (209) 946-6355
E-mail: gvanklompenburg@dfg.ca.gov
In kind services: $8,888 for special status plant surveys
Cash –The Department will be providing funding for geotechnical work required for raising Grizzly Island Road.

A6. List of Subcontractors:*
Life Science! Inc.
Contact Name: Lisa Stallings, Ph.D.
Address: 1059 Court Street, Suite 106
Woodland, CA 95695
Phone Number: (530) 668-5667
Fax: (530) 668-5675
E-mail: lisa@lifescience.com
Amount of subcontract: $305,146.50
Tasks: Project Management, Revised Restoration Plan, Environmental Documents and Permits Preparation.

Philip Williams and Associates, Ltd.
Contact Name: Michelle Orr, M.S., P.E.
Contact Name: Nick Garrity, P.E.
Address: 550 Kearny Street, Suite 900
San Francisco, CA 94108-2552
Phone Number: (415) 262-2300
Fax: (415) 262-2303
Amount of subcontract: $197,709.50
Tasks: Complete Topographic Mapping, Restoration Hydrology and Engineering Assessment, Aid with Preparation of the Restoration Plan, EIS/EIR, and Permits.

A7. Other Cooperators:*
Suisun Resource Conservation District
Contact Name: Steve Chappell, Executive Director
Address: 2544 Grizzly Island Road
Suisun City, CA, 94585
Phone Number: (707) 425-9302
Fax: (707) 425-4402
E-mail: schappell@suisunrcd.org
Task: Review of Restoration Plan, Attendance and aid coordinating Public Scoping Meetings

U.S. Fish and Wildlife Service
Contact Name: Andrew Raabe
Address: 2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone Number: (916) 414-6600
Fax: (916) 414-6710
E-mail: Andrew_Raabe@fws.gov
Task: Review of Restoration Plan, Review of Environmental Documents

A8. Project Topic Area*
Primary: Shallow Water and Marsh Habitat
Secondary: Upland Habitat

A9. Project Type*
Primary: Planning
Secondary: Not applicable

PART B. Executive Summary

B1. Proposal Title
Hill Slough West Restoration Project, Phase I - Preliminary Restoration Design, Environmental Documentation and Permitting

B2. Project Description
From the mid-1870s to the early 1900s approximately 90 percent of the tidal wetland habitat in the Suisun Marsh was diked and converted to uses such as farms and managed wetlands. The loss of the tidal access has hindered the ecological processes and functions critical for sustaining a healthy aquatic ecosystem. These changes have created a lack of support for the Bay-Delta aquatic foodweb contributing to unhealthy fish populations. The loss of emergent tidal wetlands and channels has led to a reduction in the amount of potential rearing habitat for chinook salmon, delta smelt, and splittail. Reduction and fragmentation of marsh habitats has resulted in reduced populations of California clapper rail, salt marsh harvest mouse, and rare plants dependent on high tidal marsh and adjacent upland transition.

The Hill Slough Wildlife Area in the northern Suisun Marsh has been no exception to this trend of land conversion in the Suisun Marsh. The diked areas of the Wildlife Area have been cut off from tidal influences for over 50 years, causing significant modifications in the habitats present. By diking, the area has been converted from open tidal wetlands to a leveed, managed wetland with little of the original topography or hydrology remaining. The loss of natural flows and topographic features has, in turn, led to the loss of significant tidal marsh habitats on the diked areas, making the site uninhabitable by many Suisun Marsh species.

The Hill Slough Restoration Project will restore tidal wetlands and moist grassland habitat to approximately 950 acres of diked seasonal and perennial wetlands. The project will consist of areas of the Hill Slough Wildlife Area that are not already fully tidal. All property in the project area is owned and managed by the Department of Fish and Game (DFG).

The wetland restoration will re-introduce tidal action to the site, restoring a transition of perennial aquatic habitat in the deepest areas, low intertidal marsh, high intertidal marsh, and lowland alluvial habitat. The desired outcome is a self-sustaining marsh ecosystem created through restoration of natural hydrologic and sedimentation processes and reliance on natural abiotic and biological succession processes. The resulting tidal marsh will contribute to the Bay-Delta food web as well as provide valuable habitat for listed species reliant on the tidal areas of Suisun Marsh. Implementation of this project will also help meet the CALFED goal of 5,000 to 7,000 acres of tidal restoration in the Suisun Marsh region.

The Hill Slough Restoration Project will be conducted in three (3) phases:

Phase I. Preliminary Restoration Design, Environmental Documentation and Permitting. This phase includes preparation of the preliminary restoration design and plan, as well as an interpretive program, environmental documents, and permits.
Phase II. Final design, implementation, and pre-project/baseline monitoring.
Phase III. Post-project monitoring.

The Hill Slough Restoration Project was originally slated to restore 208 acres west of Grizzly Island Road. For the smaller, original project, Phase I was nearly complete with a Preliminary Restoration and Management Plan, a completed CEQA document and a permitting package written, but not approved. The current, larger Hill Slough Restoration Project seeks to expand on the existing project and planning to include areas east and south of the original 208 acre site bringing the total project acreage to 940 acres. The project is able to expand by incorporating the raising of Grizzly Island Road into the project with the help of Solano County Public Works. Raising Grizzly Island Road will prevent the need for the project to construct levees to protect the road, allow the project to expand east of Grizzly Island Road, as well as alleviate flooding issues on this section of the road.

The current proposal is to complete Phase I for the larger project by building on planning already in place for the original 208 acre project. The result will be a restoration plan and completed environmental documents and permits for the all areas of the Hill Slough Wildlife Area not already tidal as well as the raised Grizzly Island Road.

PART C. Work Plan

C1. Project Background and Information

Historically, Suisun Marsh and Bay (Suisun) included more than 68,000 acres of tidal wetlands. Over 90% of these wetlands were diked and drained for conversion to agricultural uses, beginning in the mid-1800's. A series of dry years resulted in increased salinity in Suisun, which limited production/success of the farms. Many farms failed and most were replaced by waterfowl hunting clubs. Water quality degraded further when the Central Valley Project came on line in the 1940s, and then again when the State Water Project and CVP began Delta diversions to San Luis Reservoir in the 1970s. Today, most of the levees originally constructed for agricultural reclamation form part of the infrastructure for managing water levels in seasonal nontidal (managed) wetlands (Goals Project 1999). Many diked wetlands in The Suisun Marsh have progressively subsided and suffered from lack of adequate drainage. This, coupled with increased water salinity, has contributed to increased soil salinity, which impacts wetland habitat quality and increases maintenance costs.

Currently, Suisun Marsh is the Estuary's largest contiguous protected area. However, after more than 100 years of land reclamation, few areas remain with natural flows and elevations. Many linear miles of tertiary channels have been lost, which are important spawning and rearing areas for native fish and are used for feeding and resting by some waterbirds. Of the natural channels

that remain, most have degraded natural habitat values from loss of the tidal prism, dredging, levee confinement, isolation from the marsh plain, high water flow, and poor water quality. Tidal marshes, which were once the most common habitat type in the Bay/Delta system, are now restricted to remnant, disjunct patches. Most of the remaining brackish marshes in Suisun lack certain attributes of fully-functioning saline and brackish emergent wetlands.

Numerous documents and many agencies have recommended tidal restoration in Suisun. The Suisun Marsh Protection Plan (1977) recommends wetland restoration for agricultural lands within the management zones of Suisun: "Where feasible, historic marshes should be returned to wetlands status, either as tidal or managed wetlands. If, in the future, some of the managed wetlands are no longer needed for waterfowl hunting, they should be restored as tidal marshes". The Ecosystem Restoration Program Plan (ERPP) identifies more specific recovery measures, to restore tidal action to 5,000 to 7,000 acres in the Suisun Marsh within seven (7) years of its initiation (ERPP 1999). The Baylands Ecosystem Habitat Goals recommends restoration of tidal marsh in the Suisun subregion, with a specific recommendation of more than doubling the area of tidal marsh to between 30,000 and 35,000 acres (Goals Project 1999). The Suisun subregion includes the Suisun Marsh and the Contra Costa shoreline, which extends from west of the Carquinez Strait to east of Pittsburg and includes Browns and Sherman Island.

To help achieve these goals, the Hill Slough Restoration Project is planning to create 940 acres of tidal wetlands in the Suisun Marsh. The project, originally known as the Hill Slough West Habitat Restoration Demonstration Project, has been ongoing since it was first funded in 1998. This original project was proposing to restore a 208 acre subsection of the project proposed here. When it became apparent that raising Grizzly Island Road would enable DFG to restore much more acreage and avoid building a levee along Grizzly Island Road to protect the road, the decision was made to go back to planning and create a much larger project without the burden of levee maintenance along Grizzly Island Road.

C2. Project Goals and Objectives

The goal of the project is to restore brackish tidal marsh and associated upland ecotone at the site to benefit endangered as well as other migratory and resident species.

The project objectives are as follows:

- Create tidal brackish marsh habitat consisting of sinuous tidal channels and low, middle, and high marsh habitats; establish vegetation similar to local tidal brackish marshes;
- Convert upland non-native grassland habitat into lowland alluvial habitat dominated by native perennial grass and native moist grassland species;
- Restore self-sustaining habitats, minimizing the need to active operation and maintenance; and
- Provide for public access that is compatible with protection of resource values and regional and local public access policies.

C3. Approach/Methodology

The restoration design is based on an approach that consists of grading or constructing a template on which natural processes can act, thereby allowing the site to evolve into a self-sustaining marsh ecosystem. The approach is to rely on natural physical and biological succession processes as possible to promote gradual marsh regeneration, rather than more aggressive techniques such as extensive grading, planting, and/or seeding. Limited plantings may be used in areas to assist the establishment of native vegetation species.

This approach is consistent with the San Francisco Bay Area Wetlands Ecosystem Goals Project (Goals Project, 1999), a collaborative planning effort with significant input from numerous regional wetland and restoration scientists. The Organizing Principles in the Goals Project are as follows:

- The preferred approach to implementation of the goals should be the restoration of natural, self-sustaining systems that can adjust to changes in physical processes, with minimum ongoing human intervention.
- Restoration planning and design should be based on expected regimes and variability of physical processes, including hydrology, sediment, salinity, water quality, and biogeochemistry.

Once tides are restored to a site, rapid vegetation colonization usually occurs within the high intertidal areas provided elevations are within the range favoring plant establishment. In deeply subsided sites, vegetation typically first colonizes the site perimeter, along levees or other high ground. For shallowly subsided sites, such as Hill Slough West, large areas have suitable elevations and will likely be subject to rapid initial colonization. After the initial period of rapid colonization, vegetation expands laterally more slowly, lower into the tidal zone. Estuarine deposition helps vegetation establish in low areas by raising mudflat elevations high enough for colonization to occur. Once vegetation is established, ongoing deposition and in situ biomass production raise the marshplain toward natural marsh elevations which are typically at approximately MHHW. For a sustainable, vegetated marsh to maintain itself over a long timeframe (centuries), vertical growth of the marsh must be greater than sea-level rise. Elevation gain relative to sea level in any given time period is a function of organic and inorganic (sediment) accumulation, erosion, and relative sea-level rise.

Immediately after breaching, tidal channels start to form in the unvegetated areas and become relatively fixed in location as vegetation colonizes their edges. The tidal drainage network evolves over time towards a mature, well-defined system.

C4. Tasks and Deliverables (*deliverables are in italics*)

1.0 Project Management – Including meetings, calls, document review, coordination, and budget management.
2.0 Revise Project Description and Restoration and Management Plan
    2.1 Collect and Review existing data/documents
    2.2 Develop Preliminary Project Description
    2.3 Communicate with Agencies

2.4 Identify and Prepare Data Gaps – Prepare Scope of Work and Hire Consultant
2.5 Fill Data Gaps and Prepare Project Description
2.5.1 Topographic Mapping and Field Surveys
2.5.2 Restoration Hydrology and Engineering Assessment
2.6 Revise Restoration and Management Plan to reflect revised Project Description – *Restoration and Management Plan*
2.6.1 Revise Maps and Graphics
3.0 CEQA/NEPA/Permits
3.1 CEQA/NEPA Requirements Approach
3.2 EIR/EIS
3.3 Permits
3.3.1 USACE
3.3.2 BCDC
3.3.3 RWQCB

C5. Subcontractors

Life Science! Inc. (please see Section H for qualifications)
1.0 Project Management - Including meetings, calls, document review, coordination, and budget management.
2.0 Revise Project Description and Restoration and Management Plan
2.1 Collect and review existing documents
2.2 Develop Preliminary Project Description
2.3 Communicate with Agencies
2.4 Identify and Prepare Data Gaps
2.5 Prepare Project Description
2.6 Revise Restoration and Management Plan to reflect revised Project Description
3.0 CEQA/NEPA/Permits
3.1 CEQA/NEPA Requirements Approach
3.2 EIR/EIS
3.3 Permits
3.3.1 USACE
3.3.2 BCDC
3.3.3 RWQCB

Philip Williams and Associates, Ltd. (please see Section H for qualifications)
2.5 Fill Data Gaps
2.5.1 Topographic Mapping and Field Surveys
2.5.2 Restoration Hydrology and Engineering Assessment – Review existing conditions, Hydrology Assessment, Geomorphology Assessment, Restoration Hydrology and Engineering Report
2.6 Revise Restoration and Management Plan – provide support to LSI, attend meetings
2.6.1 Graphics support
4.0 EIS/EIR and permitting support and attend meetings

C6. Work Schedule

Spring to Summer 2008 – conduct special status plant and wildlife surveys (independent of contract execution).
0-1 month from contract execution – hire subcontractors
1-7 months – Have site meeting, collect and review existing data/documents, develop a preliminary project description, identify and fill data gaps including conduct hydraulic assessment of the project site and topographic surveys.
5-24 months – Revise restoration and management plan to reflect the new project description, prepare environmental documents and permits, communicate with regulatory agencies.

C7. Special Equipment and Supplies Required

None

C8. Project Impacts (beneficial or adverse)

The current proposal is for planning and will have no impact. The actual implementation of the restoration project will result in an additional 950 acres of new tidal wetlands in Suisun Marsh.

C9. Stakeholders and Interested Parties

U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation
California Department of Water Resources
California Department of Fish and Game
NOAA National Marine Fisheries Service
Bay Conservation and Development Commission
U.S. Army Corps of Engineers
Suisun Resource Conservation District

C10. Consistency with CALFED ERP Goals*

1). Identify Project Applicability to Eco-Elements
Primary: Tidal Perennial Aquatic Habitat
Secondary: Perennial Grassland

2). Identify Project Applicability to ERP Goals and Objectives:
Goal 1. Endangered and Other At-risk Species and Native Biotic Communities
Objective 1: Achieve, first, recovery and then large self-sustaining populations of the following at-risk native species dependent on the Delta, Suisun Bay, and Suisun Marsh; Central Valley winter-, spring- and fall/late fall-run chinook salmon Seuss, Central Valley steelhead ESU, delta smelt, longfin smelt, Sacramento splittail, green sturgeon, valley elderberry longhorn beetle, Suisun ornate shrew, Suisun song sparrow, soft bird's-beak, Suisun thistle, Mason's lilaeopsis, San Pablo song sparrow, Lange's metalmark butterfly, Antioch Dunes evening primrose, Contra Costa wallflower, and Suisun marsh aster.
Project contribution: The Hill Slough Restoration Project will aid in the recover and population growth of the Suisun ornate shrew, Suisun song sparrow, soft bird's beak, Suisun thistle, Mason's lilaeopsis, and Suisun Marsh aster by providing additional, high quality habitat for

those species. The project will also aid to recovery of fish species in the delta by creating tidal marsh habitat that will contribute to the Bay-Delta foodweb.

Objective 2: Contribute to the recovery of the following at-risk native species in the Bay-Delta estuary and its watershed: Sacramento perch, delta green ground beetle, giant garter snake, salt marsh harvest mouse, riparian brush rabbit, San Pablo California vole, San Joaquin Valley woodrat, least Bell's vireo, California clapper rail, California black rail, little willow flycatcher, bank swallow, western yellow-billed cuckoo, greater sandhill crane, Swainson's hawk, California yellow warbler, salt marsh common yellowthroat, Crampton's tuctoria, Northern California black walnut, delta tule pea, delta mudwort, bristly sedge, delta coyote thistle, alkali milkvetch, and Point Reyes bird's-beak.
Project contribution: The project will contribute to the recover of the California clapper rail, California black rail, and salt marsh common yellowthroat by creating additional tidal wetland habitat. The project will also contribute to the recovery of salt marsh harvest mouse by creating higher quality habitat than what it currently occupies on the project site.

Objective 3: Enhance and/or conserve native biotic communities in the Bay-Delta estuary and its watershed, including the abundance and distribution of the following biotic assemblages and communities: native resident estuarine and freshwater fish assemblages, anadromous lampreys, neotropical migratory birds, wading birds, shore birds, waterfowl, native anuran amphibians, estuarine plankton assemblages, estuarine and freshwater marsh plant communities, riparian plant communities, seasonal wetland plant communities, vernal pool communities, aquatic plant communities, and terrestrial biotic assemblages associated with aquatic and wetland habitats.
Project contribution: The project will enhance native resident estuarine fish assemblages, wading birds, shore birds, waterfowl, estuarine plankton assemblages, estuarine marsh plant communities, and terrestrial biotic assemblages associated with wetland habitats by creating tidal wetlands in Suisun Marsh.

Objective 4. Maintain the abundance and distribution of the following species: hardhead, western least bittern, California tiger salamander, western spadefoot toad, California redlegged frog, western pond turtle, California freshwater shrimp, recurved larkspur, mad-dog skullcap, rose-mallow, eel-grass pondweed, Colusa grass, Boggs Lake hedge-hyssop, Contra Costa goldfields, Greene's legenere, heartscale, and other species designated "maintain" in the Multi-Species Conservation Strategy.
Project contribution: The project will aid in maintaining the abundance and distribution of the western least bittern, western pond turtle, short-eared owl, and tricolored blackbird by creating higher quality wetland habitat than what exists and enhancing the adjoining upland area.

<u>Goal 2: Ecological Processes</u>
Objective 1: Establish and maintain hydrologic and hydrodynamic regimes for the Bay and Delta that support the recovery and restoration of native species and biotic communities, support the restoration and maintenance of functional natural habitats, and maintain harvested species.
Project contribution: Restoration of tidal influence to project area by levee alteration (breach or leveling) in Suisun would facilitate recovery of natural floodplains and flood processes by re-establishing regular inundation; aid in re-establishing a hydrodynamic regime that favors native

species and natural habitats by providing nutrient exchange, food web support, and rearing habitat; and increase estuarine productivity by increasing acreage of productive shallow-water marshes and reducing turbidity in open-water regions of the estuary.

Objective 2: Increase estuarine productivity and rehabilitate estuarine food web processes to support the recovery and restoration of native estuarine species and biotic communities.
Project contribution: Please see Goal 2, Objective 1.

Objective 3: Rehabilitate natural processes to create and maintain complex channel morphology, in-channel islands, and shallow water habitat in the Delta and Suisun Marsh.
Project contribution: The restoration design is based on an approach that consists of grading or constructing a template on which natural processes can act, thereby allowing the site to evolve into a self-sustaining marsh ecosystem. The approach is to rely on natural physical and biological succession processes as possible to promote gradual marsh regeneration and dendritic channel formation.

Goal 4: Habitats
Objective 1: Restore large expanses of all major habitat types, and sufficient connectivity among habitats, in the Delta, Suisun Bay, Suisun Marsh, and San Francisco Bay to support recovery and restoration of native species and biotic communities and rehabilitation of ecological processes. These habitat types include tidal marsh (fresh, brackish, and saline), tidal perennial aquatic (including shallow water and tide flats), nontidal perennial aquatic, tidal sloughs, midchannel island and shoal, seasonal wetlands, riparian and shaded riverine aquatic, inland dune scrub, upland scrub, and perennial grasslands.
Project contribution: The project will restore approximately 950 acres of brackish tidal marsh.

Objective 3: Protect tracts of existing high quality major aquatic, wetland, and riparian habitat types, and sufficient connectivity among habitats, in the Bay-Delta estuary and its watershed to support recovery and restoration of native species and biotic communities, rehabilitation of ecological processes, and public value functions.
Project contribution: The restoration project will restore high quality wetland habitat by re-establishing regular inundation; aid in re-establishing a hydrodynamic regime that favors native species and natural habitats by providing nutrient exchange, food web support, and rearing habitat; and increase estuarine productivity by increasing acreage of productive shallow-water marshes. The project is adjacent to Rush Ranch another large are of tidal marsh.

3). Identify Project Applicability to Environmental Water Quality Constituents:
Primary: Sediment
Secondary: Other

4). Identify Project Applicability to CALFED ERP Stage 1 Milestones.
The Hill Slough Restoration Project contributes to Milestones 39 and 41.

C11. Related Projects*

01-E205	Suisun Marsh Property Acquisition and Habitat Restoration	CALFED ERP
S-03-ER-032	Habitat Management, Preservation, and Restoration Plan for Suisun Marsh	CALFED ERP
01-E201	Hill Slough West Habitat Restoration Demonstration Project, Phase I	CALFED ERP
1998-F07	Hill Slough West Habitat Restoration Demonstration Project, Phase II	CALFED ERP
	Blacklock Restoration Project	CALFED ERP

PART D. Budget Summary

D1. Budget
Please see attached.

PART E. Project Location Information

E1. Project Location
The project is located in northern Suisun Marsh near the corner of Highway 12 and Grizzly Island Road.

E2. County or Counties Project is Located in
Solano County

E3. ERP Eco-Region, Eco-Zone, and Eco-Unit Project is Located in*
ERP Eco-Region: Bay Region
ERP Eco-Zone: Suisun Marsh and North San Francisco Bay
ERP Eco-Unit: Fairfield, 2.1

E4. Project Centroid
Latitude/Longitude Coordinates
122˚1’9.20”W, 38˚14’5.92”N

E5. Project Map
Please see attached.

E6. Digital Geographic File*

E7. Congressional District
Congressional District 10

PART F. Environmental Information

F1. CEQA/NEPA Compliance

1). Will this project require compliance with CEQA, NEPA, both, or neither:*
Yes, it should require compliance with both CEQA and NEPA. The proposal is for planning and completion of CEQA/NEPA documents and environmental permitting.

2). Is your project covered by either a Statutory or Categorical Exemption under CEQA or a Categorical Exclusion under NEPA:*
No, we do not believe the project is exempt.

3). If your project requires additional CEQA/NEPA analysis, please indicate which type of documents will be prepared:

- EIR/CEQA Findings of Fact
- EIS/ Record of Decision

4). If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).

- CEQA Lead Agency: Department of Fish and Game
- NEPA Lead Agency (Must be a Federal Agency): U.S. Army Corps of Engineers

5). If your project is not covered under items 2 or 3, and you checked no to question 1, please explain why compliance is not required for the actions in this proposal:
N/A

6). If the CEQA/NEPA process is not complete, please describe the estimated timelines for the process and the expected date of completion:
We expect to have completed environmental documents two years after a contract is awarded with one of those years being dedicated to completing the environmental documents.

7). If the CEQA/NEPA document has been completed, what is the name of the document and provide State Clearinghouse number:
N/A

F2. Environmental Permitting and Approvals

Please indicate what permits or other approvals may be required for the activities contained in your proposal and which have already been obtained. Please indicate all that: 1) are needed, and 2) if needed, have been obtained:

1). Local Permits and Approvals

- None

2) State Permits and Approvals:

- CWA 401 certification
- Notification of DPC or BCDC

3) Federal Permits and Approvals:
- ESA compliance Section 7 consultation
- CWA 404

PART G. Land Use Questionnaire

G1. Land Use Changes

1). Do the actions in the proposal involve physical changes in the land use, or potential future changes in land use (Yes/No):
No
- If no, explain what type of actions are involved in the proposal (i.e., research only, planning only): The currently proposal is only for planning. Actual implementation will be changing types of wetland which does not constitute a land use change.

2). How many acres of land will be subject to a land use change under the proposal:
N/A

3). Is the land subject to a land use change in the proposal currently under a Williamson Act contract (Yes/No):
No

4). For all lands subject to a land use change under the proposal, describe what entity or organization will manage the property and provide operations and maintenance services.
N/A

5). Does the applicant propose any modifications to the water right or change in the delivery of the water (Yes/No):
No

G2. Current Land Use and Zoning

1). What is the current land use of the area subject to a land use change under the proposal:
The land is currently used as a DFG Wildlife Area.

2). What is the current zoning and general plan designation(s) for the property:
The area is designated as “Marsh”.

3). How is the land categorized on the Important Farmland Series (IFL) maps (published by the California Department of Conservation):
The property is designated “X”, other land in the Important Farmland Series maps.

G3. Land Acquisition

1). Will the applicant acquire any land under the proposal, either in fee or through a conservation easement (Yes/No):
No

G4. Land Access

1). Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal (Yes/No):
No

PART H. Qualifications

H1. Qualifications

More extensive statements of qualifications for each firm and individual resumes are available upon request.

Life Science! Inc

Life Science! staff and associates include Plant and Soil Scientists, Botanists, Biologists, and Geographic Information Systems (GIS) and Construction Management Specialists who share high levels of motivation, personal and professional integrity, and a willingness to collaborate to find creative solutions to complex environmental problems. The staff of Life Science specialize in offering a range of services in natural and biological resource assessment, installation, and management of habitat restoration and mitigation projects.

Our firm specializes in all aspects of restoration work – planning, project design, permitting, construction and short-and long-term monitoring. We are dedicated to achieving the highest standards of environmental restoration. But we're more than a restoration firm. We take pride in completing projects on time – or before their assigned completion dates. Also, we are building a reputation for finishing projects under budget. Our clients include city and county planning departments, local, state and federal agencies, developers, landowners, lenders and many individuals. Life Science! has completed a number of San Francisco Bay mitigation projects for the California Department of Fish Game. Often, these projects are funded through the department's supporting nonprofit organization, the California Wildlife Foundation.

Lisa Stallings, Ph.D. - Principal

Dr. Stallings has over 14 years of professional experience in preparing environmental permits and biological resource surveys. She specializes in project management, soil surveys, wetland delineations, and restoration plans. She is a certified community mediator, is highly skilled at meeting facilitation and consensus building, and frequently serves as a liaison with federal regulatory personnel. Dr. Stallings has taught classes in Soil Science, Wetland Delineation, Project Management, and Environmental Impact Assessment at California State University, Chico.

Dr. Stallings specializes in restoration and mitigation planning, soil mapping, management plan preparation, and environmental permit acquisition for various types of projects including wetlands delineations, native re-vegetation plans, and mining reclamation projects. Examples of her recent projects include, Project Manager for CEQA/NEPA documents, permit facilitation, and construction of the South Bay Salt Ponds Initial Stewardship Plan, Eden Landing Ecological

reserve, and Outer Bair Island Wetland Creation and Enhancement Plan- project is mitigation for San Francisco International Airport's consolidated wetland fill project, preparation of the Management Plan for South White Slough- for Vallejo Sanitation and Flood Control District. She frequently serves as a liaison with federal, state, and local regulatory personnel. Dr. Stallings oversees and coordinates all aspects of business operation, administrative and technical work and ensures that Life Science! resources are available to meet the ongoing needs of all clients and projects. Dr. Stallings supervises all aspects of the project from contract negotiation and award through review and finalization of deliverable work products. Dr. Stallings is also an experienced mediator and public speaker and will support the projects at public meetings.

Krishnan Nelson – Construction/Project Manager
Krishnan Nelson has over ten years experience in State and Federal service, working for both the California State Department of Transportation as an Associate Environmental Planner in the District Office of Environmental Management and for the U.S. Fish and Wildlife Service as a fisheries biologist working with Winter-run Chinook salmon. A 1995 CSU Chico graduate in Biology, Krishnan brings with him a strong background in agriculture and construction management, and has a working knowledge of heavy equipment and excavation practices. Krishnan provides on-site construction management and biological over-site of our implementation projects. He is a highly skilled technical writer and is the project manager for environmental impact analysis projects.

David Markham, Ph.D. Project Manager/Document Preparation
David Markham has a background computer science and communication. He has worked for as a consultant to various federal agencies, including the DoD, the intelligence community, and NASA. During these thirty years of government consultation he has prepared numerous technical documents for a variety of customers. He has also consulted with these federal and state government agencies on variety of topics and conducted public reviews such as design reviews, impact assessment, and managerial plans.

Philip Williams and Associates, Ltd.

Philip Williams & Associates, Ltd. (PWA) offers professional consulting services in hydrology, hydraulic engineering, geomorphology and water resource planning and design. Our staff possesses the broad range of skills necessary for developing practical solutions to complex multi-objective water resource management problems, expanding beyond traditional single-focus engineering approaches.

Experience
PWA demonstrates a broad range of experience and unique perspective that provides solutions adaptable to the natural and social environment. Our civil engineers, hydrologists and geomorphologists have years of technical and field experience in hydraulic analysis, computer modeling, flood hazard determination, sediment transport, watershed management and environmental planning. PWA has completed more than 1,900 projects for a full range of clients; government agencies, developers, attorneys, citizen groups and other design consultants, on issues ranging from policy recommendations to construction design. PWA has worked in

various hydrological systems, from the arid conditions of the Southwest to the moist climate of the Pacific Northwest.

Technical Excellence
PWA staff are recognized leaders in the fields of applied hydrology, geomorphology and wetland restoration. Philip Williams founded PWA in 1976 to bridge civil engineering principles with the natural sciences of rivers, estuaries and wetlands. While such interdisciplinary thinking is now fairly common, PWA pioneered this approach over thirty years ago. PWA continues to develop innovative and creative solutions to advance the field of applied environmental hydrology and to integrate geomorphology and eco-hydraulics into the restoration design process - a template for the professional restoration community.

Project Management
Sound project management and effective client and team communications are fundamental to project success. These issues are often as important as the technical solutions we develop in achieving the goals of our clients.

Wetland Restoration and Management
PWA specializes in the planning, design and implementation of multi-objective projects to restore and manage wetland systems. With over 29 years of tidal wetland restoration planning and design, PWA is continually refining our expertise based on monitoring of previous restorations and adjusting our restoration approach for future designs. PWA pioneered some of the earliest wetland restoration plans in the 1970's. PWA has successfully implemented complex, large-scale tidal marsh restorations. We have extensive restoration expertise that extends from initial restoration planning through hydraulic modeling, conceptual design, environmental compliance documentation, permitting, preparation of design drawings and specifications, construction observation, and post-project monitoring. We can anticipate potential issues, integrate multiple objectives and build support from both stakeholders and the scientific community for cost-effective solutions.

Our experience has shown that successful wetlands management requires comprehensive understanding and integration of hydrologic and geomorphic analysis with biological, legal and land-use planning considerations. Our broad base of expertise enables us to assess the effects of flood tides, sediment delivery, tidal circulation, and groundwater movement to solve a wide variety of problems in natural and managed fresh and salt water wetlands.

In San Francisco Bay, PWA's tidal marsh restoration planning, design and monitoring experience includes most of the major tidal marsh restorations, as well as numerous smaller projects. Selected projects include the Shorebird Marsh in Corte Madera, the Napa Salt Marsh Restoration, Bair Island Restoration and Management Plan in South San Francisco Bay, the South Bay Salt Pond Restoration, Alhambra Creek Marsh Enhancement Project in Martinez, Hamilton Airfield Wetland Restoration in Novato, Sonoma Baylands and Crissy Field in San Francisco.

PWA has experience of similar work outside of the Bay area, assisting in the planning and design of salt pond restorations in San Diego Bay, tidal wetland restoration in the Delaware Estuary and Skagit Estuary in Puget Sound.

Philip B. Williams, Ph.D. P.E., Eur. Ing., President / Technical Advisor
Dr. Williams has been engaged in a wide range of national and international hydrologic and engineering hydraulics work since he received his Ph.D. in 1970. In 1976, after working in civil engineering and environmental planning firms, he opened his own practice, expanding to form Philip Williams & Associates in 1979. During the past three decades, he has developed considerable expertise in a wide range of technical and water-related policy issues both in the U.S. and abroad. From his original research field of sediment hydraulics, Dr. Williams has pioneered practical technical analyses in wetland hydrology, multi-objective river corridor management, lake water balances, the impacts of climate change, the hydraulics of coastal lagoons, and estuarine management. His work has addressed a wide variety of problems, including flood management, salt marsh restoration, reservoir operation, harbor maintenance dredging, riparian management, watershed sediment yield, groundwater management, and coastal lagoon restoration.

He has supervised over 300 studies related to the management and restoration of estuaries, wetlands and lagoons on the Pacific coast. These have included projects such as the analysis of freshwater inflow requirements for San Francisco Bay, the design of the Crissy Field and Sonoma Baylands wetland restoration projects, research on the evolution of flooded islands in the Delta, and planning of the 15,000-acre South Bay Salt Pond Restoration Project.

Michelle K. Orr, P.E., Principal / PWA Project Director
Michelle Orr leads PWA's Coastal Wetlands Restoration group. Michelle is an experienced manager of multi-disciplinary, multi-stakeholder wetland restoration projects, including major projects in San Francisco Bay, the Sacramento-San Joaquin Delta, San Diego Bay, and Puget Sound. Her experience consists of preliminary design, feasibility assessment, environmental impacts assessment and mitigation, permitting assistance, and post-project monitoring. As a water resources engineer with a background in coastal and riverine hydraulics, she brings particular expertise in integration of flood management with habitat restoration. Her areas of technical expertise include coastal marsh geomorphology, hydraulic and sediment transport modeling, and tidal channel dynamics. Michelle is actively engaged in the scientific and restoration communities through conference presentations and peer-reviewed publications.

Nicholas J. Garrity, M.S., P.E., Senior Associate / Estuarine Management and Hydrodynamics
Nicholas Garrity is a core member of PWA's Wetlands Restoration group. He has extensive technical and project management experience in tidal wetland restoration planning and design, environmental impacts assessment and mitigation, and post-project monitoring and evaluation. His project experience includes major wetland restorations in the San Francisco Bay, Sacramento-San Joaquin Delta, and Humboldt Bay. Mr. Garrity is an environmental engineer with expertise in coastal wetland hydrology and geomorphology. His technical skills include the assessment and modeling of wetland habitat and tidal channel evolution, salinity and sediment

dynamics, coastal and riverine hydraulics and flood hazards, and engineering design. Since joining PWA in 2000, Mr. Garrity has advanced innovative approaches to tidal wetland restoration and engaged in research, conference presentations, and peer-reviewed publications on topics such as the effects of sea level rise on marsh morphology and the evaluation of coastal flood risks.