For DFG use only	
Proposal No.	Region

ERP Proposal Application Form

Section 1: Summary Information

1. Project title:	**Lower Cosumnes River Floodplain Restoration Project**
2. Applicant:	Ducks Unlimited, Inc.
3. Contact person:	Jeff McCreary
4. Address:	3074 Gold Canal Drive
5. City, State, Zip:	Rancho Cordova, CA 95670
6. Telephone #:	916-852-2000
7. Fax #:	916-852-2200
8. Email address:	jmccreary@ducks.org
9. Agency Type:	Federal Agency ☐ State Agency ☐ Local Agency ☐ Nonprofit Organization ☒ University (CSU/UC) ☐ Native American Indian Tribe ☐
10. Certified nonprofit Organization:	Yes ☐ No ☒ If yes, specify the nonprofit organization registration number:
11. New grantee:	Yes ☐ No ☒
12. Amount requested:	$1,244,991.00
13. Total project cost:	$2,141,699.00
14. Topic Area(s):	Lowland Floodplains and Bypasses (Primary). Riparian Habitat (Secondary).
15. ERP Project type:	Full-scale Implementation
16. Ecosystem Element:	Natural Floodplain and Flood Processes (Primary) Essential Fish Habitats (Secondary) Riparian and Riverine Aquatic Habitats (Secondary)
17. Water Quality Constituent:	Not Applicable
18. At-Risk species benefited:	Central Valley fall-run Chinook salmon, Sacramento splittail, Delta smelt, giant garter snake, yellow-billed cuckoo, Central Valley Steelhead, Swainson's hawk.
19. Project objectives:	Project objectives are: • Restore 154 acres of historic floodplain hydrodynamics and riparian forest • Facilitate recovery of Federally endangered and At-Risk species • Provide recreational opportunities for women, youths and disabled persons
Time frame:	June 2011- December 2013. See Section 6, Item 3, Table 1 on page 12.

Section 2: Location Information

1. Township, Range, Section: and the 7.5	Portions of the E ½ Section 26 and portions of the W ½ Section 25, Township 5 North, Range 5 East, on the 7.5 minute

USGS Quad map name.	Bruceville, CA USGS quadrangle
2. Latitude, Longitude (in decimal degrees, Geographic, NAD83):	Latitude 38.259 North, Longitude 121.396 West
3. Location description:	The proposed project site is a natural appearing 154-acre parcel of historic bottomland adjacent to the Cosumnes River and located approximately 4 miles west of the City of Galt on the Cosumnes River Preserve. Following leveeing off from the River and leveling for crop production in the 1950s, approximately 130 acres of the parcel was in annual row crop production. In 1993, small interior levees were constructed to form two managed seasonal wetlands that are flooded via an agricultural pump on the River. The site now shows signs of reverting to riparian forest, with mature valley oaks surrounding the site. Previous mapping efforts by Preserve staff have revealed that the site's soils are predominant those documented to be best suited for valley oak riparian restoration. These characteristics give this site excellent opportunity for success through the proposed effort.
4. County(ies):	Sacramento County
5. Directions:	From the city of Sacramento travelling south on Interstate 5. Take the Twin Cities Road exit. Proceed east approximately 6.5 miles to the "T" intersection at Christensen Road. Turn right onto Christensen Road and proceed south approximately 1.9 miles to Orr Road. Turn right onto Orr Road and proceed west approximately 1.7 miles where Orr Road makes an abrupt 90 degree turn to the left (south). Continue traveling west onto the private road and proceed approximately 0.25 mile to private gate. Proceed west on the private road approximately 0.9 mile past the private residence to the northeast corner of the project area. Contact Cosumnes River Preserve Manager Harry McQuillen at (916) 838-8475 prior to site visits.
6. Ecological Management Region:	The project site is located in Ecological Management Region 2
7. Ecological Management Zone(s):	Eastside Delta Tributaries Ecological Zone
8. Ecological Management Unit(s):	Cosumnes River Ecological Management Unit
9. Watershed Plan(s):	• The Cosumnes River Preserve Management Plan (BLM 2008) • Sierra Resources Management Plan (BLM 2008) • The Cosumnes River Watershed Project (TNC 2000) • Cosumnes River Watershed Project: A Proposal for Ecosystem Conservation and Restoration in the Sacramento-San Joaquin Delta (TNC 1996).
10. Project area:	154-acre parcel of Cosumnes River Preserve
11. Land use statement:	Within the lower Cosumnes River watershed where the project is

	located land uses include a mix of intensively farmed lands, rapidly spreading urban areas, and remnant natural landscapes. Much of the land in the greater Cosumnes River watershed is still undeveloped. However, urban and suburban developments spreading from the greater Sacramento area, specifically the Cities of Elk Grove and Galt, are beginning to encroach on the watershed. In addition nearby towns are expected to grow by 250 percent in the next 20 years.
12. Project area ownership:	% Private_0____; % State___0___ ; **% Federal 100**
13. Project area with landowners support of proposal:	As the lead land management agency at the Preserve the BLM is responsible for stewardship of our public lands. The BLM is committed to manage, protect and improve these lands in a manner to serve the needs of the American people. BLM Preserve staff is a key partner in planning, design and implementation of the proposed Project.

Section 3: Landowners, Access and Permits

1. Landowners granting access for project: Ducks Unlimited and the Bureau of Land Management have an existing cooperative agreement to manage and maintain Cosumnes River Preserve wetland habitats. Attached at end of proposal.	
2. Owner Interest: The Bureau of Land Management holds title on the entire 154 acre project site. Assessors parcel number 14603200080000.	
3. Permits:	Required permits include CEQA (Mitigated Negative Declaration expected), NEPA (Environmental Assessment expected), ESA Section 7 biological opinions, NHPA Section 106 cultural resources clearances, ACOE Section 404 permit, Clean Water Act Section 401 permit, Regional Water Quality Control Board SWPPP, California Fish and Game Code Section 1602 Streambed Alteration Agreement and CESA clearance, Central Valley Flood Protection Board encroachment permit, and a Sacramento County grading permit. Pre-project coordination has been initiated with the ACOE and a project file number (SPK-2011-00019) has been assigned to the project.
4. Lead CEQA Agency:	Sacramento County
5. Required Mitigation:	Yes ☐ No ☒

Section 4: Project Objectives

1. List task information:

Goal 2: Ecological Processes, Objective 6.

The project proposes to restore naturally functioning floodplain habitat that will be self-sustaining and provide a multitude of ecological benefits for At-Risk species such as fall-run Chinook salmon, Central Valley steelhead, Sacramento splittail, Delta smelt, and giant garter snake, as well as sensitive native biotic communities particularly valley oak riparian floodplains.

2. Additional objectives:

Goal 1: Endangered and Other At-rsk Species and Native Biotic Communities
Objective 1 –Achieving the Primary objective in Item #1 above through reconnection of the floodplain to the river at all flood stages will benefit Cosumnes River rearing/smolting fall-run Chinook salmon and Mokelumne River Central Valley steelhead, as well as provide potential Sacramento splitail, giant garter snake, and Delta smelt habitat.
Objective 2 – The tidal slough restoration activities will provide potential foraging habitat for giant garter snake. The riparian restoration activities will provide longer-term benefits for Swainsons hawk and yellow-billed cuckoo. All of these species currently reside on the Preserve near the project site.
Objective 3 – The proposed riparian restortion activities will increase one of the most reduced native biotic communities (riparian oak woodland) within the Central Valley.
Goal 4: Habitats
Objective 1 – The proposed project will restore 154 acres of oak woodland riparian habitat. This restored habitat will be tidally connected to the Cosumnes River recreating vital floodplain habitat during higher flows. The project has been specifically designed to allow fish and aquatic organisms to access floodplain areas when inundated and avoid stranding after high flows.

3. Source(s) of above information:

Bayley, P. 1991. The Flood Pulse Advantage and the Restoration of River-Floodplain Systems Regulated Rivers Research & Management 6(2):75-86.

California Department of Fish and Game. Ecosystem Restoration Program, Conservation Strategy for Stage 2 Implementation, Sacramento-San Joaquin Delta, Ecological Management Zone

Fleckenstein, J., M. Anderson, G. Fogg, and J. Mount. 2004. Managing surface water and ground water to restore fall flows in the Cosumnes River. Journal of Water Resources Planning and Management-Asce 130(4):301-310.

Florsheim, J. L., and J. F. Mount. 2002. Restoration of floodplain topography by sandsplay complex formation in response to intentional levee breaches, Lower Cosumnes River, California. Geomorphology 44(1-2):67-94.

Junk, W. J., P. B. Bayley, R. E. Sparks. 1989. The flood pulse concept in river-floodplain systems. Special publication Canadian Journal of Fisheries and Aquatic Sciences 106:110-127.

Kjelson, M. A., P. F. Raquel, and F. W. Fisher. 1981. The Life-History of Fall Run Juvenile Chinook Salmon, Oncorhynchus-Tshawytscha, in the Sacramento San Joaquin Estuary of California. Estuaries 4(3):285-285.

Marine, K. R., and J. J. Cech. 2004. Effects of high water temperature on growth, smoltification, and predator avoidance in Juvenile Sacramento River Chinook salmon. North American Journal of Fisheries Management 24(1):198-210.

Mount, J. F. 1995. California Rivers and Streams. University of California Press, Berkeley. Stage 2 Implementation, Sacramento-San Joaquin Delta, Ecological Management Zone

Moyle, P. B., P. K. Crain, K. Whitener, and J. F. Mount. 2003. Alien fishes in natural streams: fish distribution, assemblage structure, and conservation in the Cosumnes River, California, USA. Environmental Biology of. Fishes 6:277

Myrick, C. A., and J. J. Cech. 2004. Temperature effects on juvenile anadromous salmonids in California's central valley: what don't we know? Reviews in Fish Biology and Fisheries 14(1):113-123.

Sommer, T. R., M. L. Nobriga, W. C. Harrell, W. Batham, and W. J. Kimmerer. 2001. Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival.

Canadian Journal of Fisheries and Aquatic Sciences 58(2):325-333.
Swenson, R. O., K. Whitener, and M. Eaton 2003. Restoring floods on floodplains: riparian and floodplain restoration at the Cosumnes River Preserve. Pages 224-229 in P. M. Faber, editor California Riparian Systems: Processes and Floodplains Management, Ecology, and Restoration. 2001 Riparian Habitat and Floodplains Conference Proceedings. Riparian Habitat Joint Venture. Riparian Habitat Joint Venture, Sacramento, CA.
Whitener, K. and T. Kennedy. 1999. Evaluation of fisheries relating to floodplain restoration on the Cosumnes River Preserve. Interagency Ecological Program Newsletter 12(3):50-57.

Section 5: Conflict of Interest

Primary Contact for Proposal: Jeff McCreary (DU)
Primary Investigator: Harry McQuillen (BLM)
Co-Primary Investigator: Jeff McCreary (DU)
Supporting Staff: Jesse Ross (DU), Holden Brink (BLM), Mark Ackerman (BLM), Donald Ratcliff (AFRP)
Subcontractor(s): BLM, Hartland Nursery, Hedgerow Farms, Fishery Foundation of California, and Sacramento County. Subcontractor roles are identified in Section 6. Item 3.

Provide the list of names and organizations of all individuals **not listed** in the proposal who helped with proposal development along with any comments.

Last Name	First Name	Organization	Role
n/a	n/a	n/a	n/a

Section 6: Project Tasks and Results Outline

1. Detailed Project Description

The proposed Lower Cosumnes River Floodplain Restoration Project is an effort to address the need for functioning riparian floodplains in the Sacramento-San Joaquin Delta ecosystem. The proposed project site is an ideal candidate for floodplain restoration as described below.

The proposed project **goals** are:

1. Improve ecosystem functions and values in the lower Cosumnes River watershed.
2. Recover At-Risk species reliant on Delta habitats.

The proposed project **objectives** are:

1. Restore 154 acres of historic floodplain hydrodynamics and riparian forest
2. Increase salmonid and Sacramento splittail populations in the Cosumnes River

Project Activities

The proposed project activities will include levee breaching, interior floodplain de-leveling, slough channel restoration, and installing fish exclusion screens on existing water control and intake structures. Heavy earthmoving equipment will be used to open two breaches in the riverside levee to provide perennial, tidal connectivity of the river to the floodplain. From the breaches, channels will be cut into the leveled site to re-establish two historic tidal slough channels. Multiple side-channels with varying elevations and small sub-floodplains will also be excavated off the two main channels. The upper ends of the two historic sloughs are severed from the floodplain and are managed to retain floodwaters for wintering waterfowl and for seasonal brood rearing ponds. This management regime will continue, however fish screens will

be installed on the pond inlets to prevent fish entrainment in the managed ponds. In addition to earthmoving activities riparian vegetation, consisting primarily of valley oak trees and perennial native grasses, will be planted within the project area.

The project will include a monitoring plan focused on:

- Documentation of acreage of floodplain and tidal sloughs restored.
- Documentation and quantification of floodplain use by salmonids and other native fishes.
- Documentation of floodplain inundation occurrence, depth, and frequency.
- Annual monitoring of valley oak recruitment and native vegetation coverage.
- Documentation of total public usage.

Additional details of project activities and timeline are provided in Section 6.3 Scope of Work.

Ecosystem Benefits

The proposed project has multiple ecosystem benefits including At-Risk species recovery, rare habitat restoration, river diversion screening, and recreation. The project is designed to provide fall-run Chinook salmon juvenile rearing and adult migration habitat, Central Valley steelhead migration habitat, Sacramento splittail and Delta smelt spawning habitat, and giant garter snake foraging habitat in the restored freshwater tidal sloughs and overall floodplain reconnection. The project is located in designated Essential Fish Habitat for Chinook salmon and adjacent to Cosumnes River designated Critical Habitat for Delta smelt. All of the above benefits stem from the restoration of ecological functions and values associated with oak woodland riparian floodplain. California has lost nearly 95% of this native biotic community. The Preserve protects some of the last remaining old-growth gallery riparian oak woodland in the Central Valley, and this project will contribute to the recovery of declining this habitat type. Permanently protected riparian habitat will secure habitat vital for neo-tropical migratory birds and other riparian dependent species.

In addition to providing wildlife habitat for migratory birds and special-status species, the post-project habitat would provide additional ecosystem benefits including restoring the biogeochemical cycling and decomposition processes that frees nutrients into the floodplain and stimulates primary and secondary production, providing groundwater recharge areas, and providing additional opportunities for recreational activities such as outdoor education and a youth, women, and disabled hunting program.

Relevant and Similar Investigations

Extensive documentation exists on the benefits of floodplain restoration on the lower Cosumnes River. Multiple studies (Swenson, *et. al*. 2003, Crain *et. al*. 2004, Whitener and Kennedy 1998) and the Cosumnes Research Group Final Report (2006), funded by the California Bay-Delta Authority Ecosystem Restoration Program, on previous lower Cosumnes River floodplain projects concluded that newly restored floodplain habitat provides excellent spawning (Sacramento splittail) and rearing (Sacramento splittail, fall-run Chinook salmon) habitat for native fish species during the spring months. The proposed project relies on the results of these studies and recommendations. Other relevant studies are cited throughout the proposal and are listed in the Section 4.3 as well as the Literature Cited section at the end of the proposal.

2. Background and Conceptual Models

Background

The Lower Cosumnes River Floodplain Restoration Project is located within the

Cosumnes River Preserve in the upper Sacramento-San Joaquin Delta (Figure 1). The Cosumnes River is the last free flowing river on the west slope of the Sierra Nevada. Its lower reaches, including the proposed project location, flow through one of the biologically richest regions in California's Central Valley before merging with the Mokelumne River to flow into the Sacramento-San Joaquin Delta and eventually the Pacific Ocean. The project site is located on the Cosumnes River Preserve - Cougar Wetlands Unit, which is wholly owned and managed by the Bureau of Land Management (BLM). The Cosumnes River Preserve (Preserve) was established in 1987 by its founding Partners: The Nature Conservancy and Ducks Unlimited. The Preserve has evolved into a collaborative partnership (Figure 2) now including the Bureau of Land Management, Sacramento County Regional Parks Department, California Department of Fish and Game, Department of Water Resources, and the State Lands Commission all committed to conserve, restore, and manage the upland, wetland, riparian, and riverine habitat associated with the lower Cosumnes River. Today, lands managed and protected by these different organizations total approximately 46,000 acres. The Preserve, located in the lowest reaches of the watershed, has the largest remnant mature valley oak riparian and floodplain woodlands in the Central Valley.

The proposed project site is located in the tidally influenced active floodplain of the Lower Cosumnes-Lower Mokelumne watershed (HUC# 18040005). The Lower Cosumnes River Watershed Assessment (2006) describes the watershed thusly: "The Cosumnes River watershed covers approximately 940 square miles (approximately 600,000 acres), from its headwaters in the Sierra Nevada to its confluence with the Mokelumne River in the Sacramento-San Joaquin Delta."

"Cosumnes River flows are primarily the result of winter storms, with limited seasonal snow melt. Only about 16% of the watershed lies above the typical snow-level elevation of 5,000 feet. Declining groundwater levels have caused the Cosumnes River to become completely dewatered during the summer and fall in all but the wettest years from Highway 16 downstream to the tidally influenced reach of the river," just upstream from the proposed project site.

"Historically, the river here consisted of multiple, shifting channels in a broad floodplain, which supported a mosaic of aquatic and terrestrial habitats, including riparian forest, seasonal and perennial wetlands, permanent sloughs, and seasonal floodplain lakes. Today, much of the tidally influenced floodplain is farm fields protected by low levees that do not prevent seasonal high-water flooding."

The lower Cosumnes River is typical of other mid-Central Valley rivers with its degraded channel lacking complexity and few connections to side channels, backwaters, or low elevation floodplains. This condition creates a tendency for juvenile fall-run Chinook salmon to be forced downstream during high flow events (Opperman 2006), without ability to rear in slack water areas or floodplains.

The Cosumnes River floodplain in this segment of the river is a mosaic of habitats that include oak and willow-cottonwood forests of various successional stages, uplands, agricultural lands and a series of sloughs and ditches. The Preserve partners have undertaken and are planning numerous floodplain restoration projects. In the mid-1980s, floods unintentionally breached a levee just upstream of the project site. In 1995, TNC purposely breached a levee near the original unintentional breach and reconnected over 500 acres of floodplain. In January 1997, a second section of levee was breached upstream during floods (Figure 3 sites #1 and #2) directly across the river from the proposed project site. These previous efforts are well studied and documented in the CRG Final Report (2006). TNC is currently planning a large scale floodplain restoration of the McCormick-William Tract downstream of the Mokelumne and Cosumnes Rivers confluence.

The proposed project site was partially hydrologically disconnected from the Cosumnes River and its abutting riparian habitat when it was leveed off and leveled for agricultural use (tomatoes) decades ago. Since the acquisition of the parcel by BLM, the site has been managed for seasonal wetlands and flooded via pumped withdrawals from the Cosumnes River (Figure 4). Relatively high winter and spring river flows still regularly over-top the site's existing low riverside levee and inundate the site for extended periods. These flood waters become impounded behind the levee and can only recede through a small (24-inch diameter) discharge pipe at the downstream corner of the project site. As the flood waters recede, the site traps a pool of water creating fish stranding conditions.

The proposed project provides a rare ideal opportunity to ameliorate this situation by re-establishing lost historic ecosystem services by restoring perennial, off-channel tidal habitat, historic floodplain connectivity, and riparian oak woodland (Figures 5 and 6).

Conceptual Models

The conceptual models (Figures 7 and 8) demonstrate the current hydrologic function of the proposed project site. While technically still functioning as a floodplain, the site is not connected to the Cosumnes River during spring time, high-frequency, long-duration, low-stage flood events due to the low levee along the river (Figure 9). These types of floods, also called Floodplain Activation Floods (FAF) (Willians *et. al*. 2009), have been demonstrated to be critical for achieving fully ecologically functioning floodplains that provide important services such as off-channel fish habitat, riparian habitat, and nutrient cycling, among many others. The conceptual engineering design (Figure 10) demonstrates the exterior levee breaching and tidal slough restoration activities to open the site to a FAF.

Opportunities for restoring FAFs to Delta floodplains are limited. Williams *et al* (2006) looked only at the Sacramento River and Yolo Bypass for suitable areas. However, the lower Cosumnes River, specifically on the Preserve, has ideal conditions for floodplain restoration, including perennial tidal hydrology, public landownership, land management capabilities, compatible surrounding land-uses, relatively unaltered winter and spring hydrology, as well as the opportunity to include education and outreach programs.

3. Approach and Scope of Work

The proposed project is a collaborative effort between Ducks Unlimited, the BLM, the US Fish and Wildlife Service's Anadromous Fish Restoration Program (AFRP), Sacramento County, and the Fishery Foundation of California. This project builds upon complimentary-previously implemented and currently ongoing floodplain restoration projects throughout the lower Cosumnes River, including just upstream of the project site, as well as the planned tidal wetland/floodplain mitigation bank being done by Westervelt at the confluence of the Cosumnes and Mokelumne Rivers. Additionally, the proposed project is utilizing the extensive research, analysis, and existing data sets developed from these projects by the Cosumnes Research Group in support of ERP goals and objectives. The project partners are utilizing this information to guide development and implementation of the proposed project.

To its benefit, the proposed project is somewhat simpler than the aforementioned floodplain restoration projects given significant differences in the site's biological and physical characteristics. The site currently floods, yet only at high river flows, thereby eliminating the need for set-back levees. The project builds on existing Cosumnes River flood models and no new models are anticipated. The current seasonal wetland land management efforts on the proposed project site struggle to prevent establishment of riparian vegetation, indicating highly feasible floodplain oak woodland restoration opportunities.

In essence, our approach is to allow the river continual access to the floodplain throughout its flood range by restoring historic physical attributes including floodplain morphology (*e.g.*, tidal sloughs) and connectivity (*e.g.*, breaching riverside levee). Additionally, restoration of these attributes will facilitate recovery of historic biogeochemical processes including fish rearing habitat, riparian oak woodland habitat, and nutrient cycling, among others.

To that end, the proposed scope of work consists of the following tasks:

Task 1 – Administration and Coordination

This task involves general project administration and coordination activities for planning, developing, and implementing project associated activities. Administration and coordination includes budget management, staff management, consultant/subcontract management, project activities management, funding partner coordination, landowner coordination and communication, etc. This task will be shared by Ducks Unlimited for administering and coordinating project funding and implementation, and with BLM as the overall project lead responsible for partner and landowner relations and overall project coordination. This task is not stand alone and must be undertaken along with all the other tasks. This task will be for the entire project performance period as identified in the Proposed Project Schedule (Table 1). Key Staff: Jeff McCreary (DU) and Harry McQuillen (BLM).

Task 2 – Site Assessment, Survey, and Modeling

This task covers activities associated with the planning and development of the project's environmental documentation and will help guide development of the conceptual design into full engineering design plans. Activities include both biological surveys and physical investigations. Pre-project surveys for sensitive plant and animal species currently within the project boundaries will be undertaken as part of the CEQA and NEPA evaluation process. If sensitive species are located, avoidance and minimization measures will be developed as part of this task and incorporated into the appropriate environmental documents and permits. The BLM staff biologists will be sub-contracted to perform wildlife and botanical surveys, and a To Be Determined Contractor will be sub-contracted for giant garter snake surveys as part of this task. Key Staff include Holden Brink (BLM) and Mark Ackerman (BLM).

Physical investigations will include hydrologic data collection and flood modeling. Associated activities include installation of water level recorders to document current flood heights, frequency and duration, topographic surveys (complete) will be evaluated to determine site elevations, river/floodplain cross-sections (incomplete) evaluated for inclusion into flood models. The flood modeling effort will utilize existing Cosumnes River flood models to evaluate the effect of the project on the existing flood corridor of the lower Cosumnes River. It is expected that the proposed project will not exacerbate current high-water flooding conditions of the project site, but increase FAF flooding conditions. However, proper documentation of the ultimate flooding effects of the project must be documented and analyzed. Flood modeling will be subcontracted to a To Be Determined contractor. This task is not stand alone and must be undertaken along with all the other tasks. This task will be for the performance period as identified in the Proposed Project Schedule (Table 1). Key Staff: Jesse Ross (DU), Harry McQuillen (BLM), and Jeff McCreary (DU).

Task 3 – Environmental Compliance and Permitting

This task covers activities associated with the preparation, submittal, and compliance with all applicable environmental regulatory requirements associated with the proposed project activities. The project will develop the appropriate documentation for CEQA (Mitigated Negative

Declaration expected), NEPA (Environmental Assessment expected), Endangered Species Act Section 7 biological opinions for any listed terrestrial and aquatic resources, National Historic Preservation Act Section 106 cultural resources clearances (project site has several documented cultural resources and a full investigation will be required), Army Corps of Engineers Section 404 permit, Clean Water Act Section 401 permit, Regional Water Quality Control Board Storm Water Pollution Prevention Plan and stormwater permit, California Fish and Game Code Section 1602 Streambed Alteration Agreement and California Endangered Species Act clearance, Central Valley Flood Protection Board encroachment permit, and a Sacramento County grading permit. Ducks Unlimited staff will prepare and submit all environmental permits. BLM staff will prepare and coordinate all NEPA compliance documents. Sacramento County will prepare CEQA compliance documentation. This task is not stand alone and must be undertaken along with all the other tasks. This task covers the project performance period as identified in the Proposed Project Schedule (Table 1). Key staff are Mark Ackerman (BLM) and John Lundgren (SAC).

Task 4 – Engineering and Design

This task covers all activities associated with the preparation and finalization of engineering plans, and the engineering oversight of project construction. Design related activities will include development of engineering plans and specification submittals that incorporate the results of the physical investigations, any environmental compliances/avoidance/mitigation measures, and any specific biological needs. Construction management activities include the presence of a design engineer/construction manager on-site, full-time during project implementation due to the site's sensitive cultural and natural resources.

Engineering plans and specifications will incorporate the recommendations for riparian establishment identified in the California Salmonid Stream Habitat Restoration Manual (Part XI - Riparian Habitat Restoration), the California Department of Fish and Game In-Channel Project Review Guidelines For Protection of Delta Smelt (*Hypomesus Transpacificus*), Winter-Run Chinook Salmon (*Oncorhynchus Tshawytscha*) and Spring-Run Chinook Salmon (*Oncorhynchus Tshawytscha*) In The Sacramento-San Joaquin Estuary (2005), the Steelhead Restoration and Management Plan (1996), the Lower Mokelumne River Fisheries Management Plan (1991), the Cosumnes and Mokelumne River Floodplains Integrated Resource Management Plan (2004), and any applicable AWWA and ASTM Construction Standards, Occupational Safety & Health Administration (OSHA) regulations and industry standard practices. Ducks Unlimited staff will prepare engineering plans and manage construction activities. This task is not stand alone and must be undertaken along with all other tasks. This task covers the project performance period as in the Proposed Project Schedule (Table 1). Key Staff are Jesse Ross (DU).

Task 5 – Construction

This task covers all activities associated with on-the-ground project implementation. Activities will include earthmoving (levee breaches, slough excavation, access road re-alignment and improvements, etc.), pipeline relocation, installation of fish screens on existing water control structures, and project signage. These activities will be contracted to a To Be Determined sub-contractor. Vegetation materials will be subcontracted to Hartland Nursery and Hedgerow Farms. Vegetative establishment will be undertaken by BLM and Preserve volunteers. Also, native grass seeds will be gathered on site in 2011 and provided to NRCS Plant Materials Center for grow-out. The starter seed will then be provided to a Hedgerow Farms to produce bulk seed and plugs. This task is not stand alone and must be undertaken along with all the other tasks. This task covers the performance period shown in the Proposed Project Schedule (Table 1).

Task 6 – Monitoring and Evaluation

This task covers all monitoring related activities including development of the monitoring plan and implementation of the plan following construction. The monitoring plan will incorporate fish use, invertebrate response, vegetation establishment, and hydrologic flooding regime post-construction. The fish monitoring recommendations established by Moyle *et. al.* (2003) and Whitener and Kennedy (1999) for a previous floodplain restoration project directly across the Cosumnes River from the proposed project site will be incorporated into the proposed monitoring plan. This will allow for fish use comparisons between project sites. As part of this effort, we will monitor invertebrate response, assess the invertebrate production of the project site, and evaluate potential effects on fish growth and survival. Riparian habitat condition on the Preserve is comprehensively monitored every three years by Preserve Partners. At the proposed project site, riparian development monitoring will supplement this effort as well as assess and compare its response to previous floodplain restoration projects in our project success evaluation. Hydrologic function will be monitored by using water level recorders to document flood date, duration, and depth. Additional monitoring plan components will include any compliance measures that will be required for FESA and CESA compliance as specified in the Section 7 consultations or the 1602 Agreement. The overall monitoring plan will be developed to help ensure that the CALFED Multi Species Conservation Strategy is implemented appropriately and effectively via this project. This task is stand alone and could be undertaken separately from all the other tasks; however this task is essential in evaluating the success of the project and evaluation of how the project fulfills ERP goals and objectives. Riparian establishment and post-project hydrology will monitored by BLM. Fishery monitoring will be undertaken by the Fishery Foundation of California. This task covers the performance period shown in the Proposed Project Schedule (Table 1). Key Staff include Mark Ackerman (BLM), Holden Brink (BLM), Donald Ratcliff (AFRP), and Trevor Kennedy (FFC).

Task 7 – Outreach and Reporting

This task covers all project reporting and education/outreach activities. Education, outreach and public recreation will be important elements in the proposed project. The Preserve welcomes and encourages organized groups to come and enjoy its Visitor Center and public nature areas. The Preserve receives approximately 10,000 youth visitors a year (a total of approximately 60,000 visitors per year visit the preserve). This project will be available for educational opportunities throughout the performance period and beyond.

Outreach activities will include submitting the fisheries and vegetation monitoring reports for publishing in a peer reviewed journal, publication of all reports on the Preserve website, publishing of informational articles in local/regional magazines and newspapers. Additionally, project processes and results will be presented in either a poster or oral presentation at the CALFED Science Conference following completion of the project.

The project site is the only area open to waterfowl hunting on the Preserve, but as a limited entry program for youth, women, and disabled hunters. Portions of the project will improve access to established hunting blinds and construct ADA accessible facilities.

The annual progress reports will include a status update of all project related activities occurring during the reporting period, a schedule/timeline update including reasons for any changes, a budget status update, and an estimate of upcoming activities for the next reporting period. The final report will include an analysis of project development and implementation including identifying "lessons learned" throughout the project period, analysis of fish response to the project and how it compares to other similar projects, evaluation on the success of natural

riparian vegetation colonization versus planted vegetation, and identification of outreach activities including public recreational use, report publication, volunteer utilization, and educational opportunities.

Reporting activities will be undertaken by Ducks Unlimited, outreach and education activities will be undertaken by Ducks Unlimited and BLM. Fishery Foundation of California and AFRP will assist with outreach specifically related to fisheries and aquatic production responses. Activities of this task are contingent on all previous tasks. This task covers the performance period shown in the Proposed Project Schedule (Table 1). Key Staff include Harry McQuillen (BLM), Mark Ackerman (BLM), Jeff McCreary (DU), Donald Ratcliff (AFRP), and Trevor Kennedy (FFC).

Table 1. Proposed Project Schedule.

Task	Activity	Start	Complete
1	**Administration and Coordination**	7/1/2011	12/31/2014
2	**Site Assessment, Surveys, Modeling**	7/1/2011	7/29/2011
3	**Environmental Compliance**	7/1/2011	2/29/2012
3	**Permitting**	7/1/2011	5/30/2012
4	**Engineering and Design**	7/1/2011	5/30/2012
	· 30% Design		3/01/2011
	· 60% Design		9/30/2011
	· 100% Design		5/30/2012
	· Construction Management	7/24/2012	10/17/2012
5	**Construction**	6/12/2012	10/31/2012
	· Bid Award		6/12/2012
	· Construction Mobilization		7/23/2012
	· Project Construction	7/24/2012	10/17/2012
6	**Monitoring and Evaluation**	7/1/2011	12/31/2014
	· Monitoring Plan Development	10/1/2011	12/31/2011
	· Performance Monitoring	10/17/2012	12/31/2014
7	**Outreach and Reporting**	7/1/2011	12/31/2014
	· Annual Reporting	7/1/2011	12/31/2013
	· Final Reporting	12/1/2014	12/31/2014

4. Deliverables

Table 2. Deliverables by Task

Task 1 – Administration and Coordination • No deliverables	**Task 6 – Monitoring and Evaluation** • Monitoring Plan • Fish and Invertebrate Monitoring Report • Vegetation and Hydrology Monitoring Report
Task 2 – Assessment and Evaluation • No deliverables	
Task 3 – Env. Compliance and Permitting • CEQA compliance documentation • Section 1602 Agreement	**Task 7 – Outreach and Reporting** • Annual Progress Reports • Final Project Report • Oral or poster presentation at CALFED Science Conference
Task 4 – Engineering and Design • 100% Engineering design	

Task 5 – Construction • No deliverables	• Published monitoring results paper(s) • Local/regional magazines and newspapers informational article(s)

5. Feasibility

The proposed project activities are well suited for the project location. The area was formerly a tidally influenced riparian oak woodland floodplain prior to its conversion to agricultural uses and the current managed seasonal wetlands. Historic aerial photographs taken prior to the site's conversion clearly identify the presence of oak woodland as well as multiple tidal slough channels. The upper remnants of these sloughs are evident in Figures 1 & 5. Additionally, similar projects undertaken adjacent to and just upstream of the proposed project location are well documented as successful (Cosumnes Research Group Final Report) both for At-Risk fish species use and recovery of oak woodlands. These other project locations did not have the benefit of tidal hydrology, which makes the proposed project unique and beneficial for At-Risk species such as fall-run Chinook, steelhead, and Sacramento splittail, and potentially Delta smelt and giant garter snake.

The proposed project site is currently inundated at high river flows greater than 2,000 cfs, as measured at Michigan Bar. These and greater flows regularly overtop the existing levee along the river. As demonstrated in the Conceptual Flood Recurrence Model (Figure 8), the proposed project is assumed to not exacerbate current high flow floods, but to increase the frequency of lower flow floods on the site. Hence, the project does not need to construct any set back flood control levee. Nevertheless, the project will still perform a hydrologic flood modeling analysis and incorporate any relevant results into the engineering design.

The proposed project timeline was developed with full consideration of environmental regulatory process timelines, sensitive species constraints, and flooding hydrology of the Cosumnes River. The project team has met multiple times to develop the project's ecological goals and objectives and subsequent current conceptual design (Figures 9 and 10). The project site landowner/manager (BLM) is the lead partner on the project and has expert staff to facilitate completion of CEQA and NEPA compliance documentation. The project construction window is planned for the driest portions of the year when site conditions allow excellent access. Based on other projects completed by Ducks Unlimited with similar construction demands (earthmoving yardage, etc), the construction timeline is highly feasible. The proposed timeline allows for approximately one year each for permitting and construction. Project activities in the remaining two years will be comprised of performance monitoring and outreach/education activities. If unforeseen circumstances delay project construction for one year, the project will still have a full year of the timeline for monitoring and post-project outreach.

Implementation of the proposed project is contingent on no external influences beyond acquisition of needed funding. However, the project has several internal contingencies. All project implementation activities are dependent on completion and approval of all environmental compliance and regulatory documents and collection of supporting information. The project construction window is limited by sensitive species disturbance time frames (*e.g.*, giant garter snake hibernation window). The project construction window is further limited by the flooding regime of Cosumnes River, which is dependent on precipitation, but typically does not reach flood stage until after the giant garter snake window closes. Construction activities are planned for the driest portion of the year for suitable site conditions to allow expedient earthmoving.

Completion of all environmental compliance and regulatory requirements is the single largest constraint to meeting the proposed project timeline. Environmental compliance and

regulatory documentation needs have been identified. Funding is not yet available to fully develop this documentation; hence no permits have been obtained to date. Pre-project consultation was initiated with ACOE and a project number (SPK-2001-00019) was given to the project. Ducks Unlimited and the BLM have an existing cooperative agreement to coordinated Preserve habitat activities.

Project coordination will be structured such that BLM, as the landowner/manager, will have overall project authority and make all final approvals/signatures on all environmental compliance and regulatory documentation, engineering design plans, subcontractor coordination, monitoring plans, and outreach/education activities. Ducks Unlimited will manage project funding administration, ecological coordination, subcontracting, as well as all engineering and construction management activities. BLM, Ducks Unlimited, and AFRP, along with other funding and planning partners, comprise the project management team. This team will be responsible evaluating major project decisions and project plan development. This team will be responsible for planning, developing, and coordinating with engineering staff the ecological components of the project design. The team will also develop the project monitoring plan and coordinate outreach and education efforts.

6. Relevance to the CALFED ERP

This project addresses multiple ERP and MSCS Stage 2 Implementation priorities including being a collaborative effort, projecting multiple matching funding sources at close to a 1:1 ratio, synthesizing previously collected monitoring data on similar projects with new data from the proposed project, and restoring aquatic habitats within the Sacramento-San Joaquin Delta. Further the proposed project will help meet both immediate and long-term goals by providing floodplain restoration activities beneficial for multiple At-Risk species including fall-run Chinook salmon, steelhead, Sacramento splittail, and Delta smelt spawning/rearing functions, giant garter snake foraging habitat, restoring floodplain hydro-geomorphologic processes, and restoring riparian oak woodland vegetation.

This project is a collaborative effort between Ducks Unlimited, BLM, AFRP, Fishery Foundation of California (FFC), Sacramento County, and the Cosumnes River Preserve partners. The Bureau of Land Management is the overall project lead and assist with environmental compliance, monitoring, and survey, Ducks Unlimited will be the technical, engineering, and construction lead, AFRP will assist with technical fisheries planning, monitoring, and outreach, FFC will manage fisheries and invertebrate monitoring activities, Sacramento County will lead the CEQA process, and other Preserve partners including The Nature Conservancy and the Department of Fish and Game will assist with adjacent landowner and environmental compliance issues.

The project is using multiple funding sources. This proposal is using secured matching funds from AFRP and Ducks Unlimited. Further, this project has multiple proposals submitted seeking additional funds from both state and federal sources. If all proposals are successful, total matching funds will comprise approximately 47% of the total project budget, as indicated in the Detailed Project Budget (Table 4) at the end of the proposal.

This project is similar in scope to other previously implemented floodplain restoration projects upstream of the project site. Extensive research was conducted on these sites, partially funded by CALFED. The proposed project will follow the fish monitoring recommendations and use some of the same investigators as on these past projects. This will allow for relevant comparison between the past and proposed project sites, and allow synthesis of the entire data set for the lower Cosumnes River.

The proposed project is interdisciplinary in that it blends practical restoration of hydro-

geomorphological processes with biotic/floral restoration. These two processes are intertwined in meeting the ERP's Delta habitat and species restoration goals. Further, the monitoring activities will document fish use of the restored project site and include an analysis of invertebrate food source response, assessment of recruitment and survival of planted versus naturally colonizing riparian plants, and establish a baseline data set for post-project flooding regime.

As identified in Section 4 above, the proposed project will help meet multiple objectives for ERP including: **Goal 1**: Endangered and Other At-Risk Species and Native Biotic Communities, **Goal 2**: Ecological Processes, and **Goal 4:** Habitats.

Many of the actions and programmatic targets identified in the MSCS and the ERP Plan are difficult to achieve, such as increased summer flows in the Cosumnes River or improving water quality. These types of larger, Delta-wide stressors have a significant effect on the health of the estuary. Yet, while these higher-level stressors have profound influence on the health of the estuary, without on-the-ground habitat restoration efforts, such as the proposed project, alleviating these higher-level stressors will have only limited benefits. The loss of aquatic and floodplain habitats is critical to provide the biogeochemical and hydrologic processes that can support long-term sustainable fish and wildlife populations. Areas in which actions such as is proposed are feasible and can realistically be implemented in a relatively short time frame are quite rare in the Delta. The proposed project will add to the base understanding of the importance of floodplains to fish and wildlife populations in the Delta, and will serve as a model for similar project being planned in the North, Central, and West Delta Ecological Management Units.

This project is similar in scope to previously implemented floodplain restoration projects and monitoring efforts on the lower Cosumnes River just upstream of the project site. Extensive research on a wide variety of aspects related to floodplain dynamics was conducted by the Cosumnes Research Group (CRG) on these sites through funding from CALFED. The proposed project incorporates many of the CRG's Final Report recommendations, particularly in regards to the identifying the need for the site to maintain a Floodplain Activation Flood, as well as the proposed fish monitoring efforts.

The proposed project will help to meet the vision for the Eastside Delta Tributaries Ecological Management Zone as identified in the Ecosystem Restoration Program Plan -Volume II (July 2000). The project is located in the Cosumnes River Ecological Unit, and directly addresses the stressors of: 1) separation of the river from the floodplain, 2) reducing unscreened water diversions, and 3) riparian vegetation removal.

7. ***Expected quantitative result (project summary):***

The project will restore the site as a functional floodplain and native riparian forest that will benefit terrestrial and aquatic species, restore many natural physical processes, and improve overall ecosystem function and value.

1. The proposed project will restore the current land-use to 154 acres of the historic floodplain including multiple geomorphic features (tidal sloughs) and hydrologic connectivity to the Cosumnes River at all flood stages.
2. 2,400 linear-feet of tidal slough channels will be re-established on the floodplain.
3. Two 50-foot wide levee breaches to the Cosumnes River will be created.
4. Two water control structures and one agricultural pump will be fitted with fish screens.
5. The proposed project will plant 200 individual valley oak trees and 200 other riparian trees (willows, cottonwoods).
6. The proposed project will plant 2,000 *Carex barbarae* and 2,000 *Leymus triticoides* plugs.

8. Other products and results:

Implementation and monitoring of this project will add to the extensive body of tidal and floodplain restoration that has been completed in the Sacramento-San Joaquin Delta system, and specifically within the Cosumnes River watershed. Restoration of floodplain habitats throughout the greater Delta is continually identified as one of the most important steps to restoring multiple At-Risk aquatic species, riparian-dependent terrestrial species, and fundtional aquatic and riparian ecosystems.

9. Qualifications

Ducks Unlimited is the oldest and largest wetland conservation organization in the world. Ducks Unlimited's mission is to conserve, restore, and manage wetland and associated habitats for North America's waterfowl thereby benefitting other wildlife and people. Ducks Unlimited's Western Regional Office has conserved over 150,000 acres of wetlands and associated habitats in California since its opening in 1986. Ducks Unlimited specializes in planning and implementing wetland conservation projects through its biological and engineering teams. Together with our partners, our recent restoration efforts in the San Francisco Bay Estuary, including the Delta, have restored thousands of acres of tidal and freshwater wetlands.

Jeff McCreary, Ducks Unlimited: Mr. McCreary has over 17 years experience in wetlands and wildlife restoration and management. As Manager of Conservation Programs for the San Francisco Bay-Delta Program in DU's Western Regional Office, Mr. McCreary managed development and implementation of DU's conservation activities in his region. Programmatic activities include tidal and freshwater wetland restoration, protection of wildlife habitat and agricultural lands, and coordination with program and project partnerships. Mr. McCreary's San Francisco Bay-Delta program is the leading entity implementing estuarine and riverine floodplain habitats in the San Francisco Bay Delta estuary. Mr. McCreary has managed all project development and implementation aspects on wetland and floodplain restoration efforts in Utah, Idaho, and California including at the Yolo Bypass Wildlife Area, Stone Lakes National Wildlife Refuge, Cosumnes River Preserve, and San Pablo Bay NWR. Mr. McCreary will serve as lead representative for Ducks Unlimited and administer all grant activities, as well as coordinate day-to-day project activities with the landowner/manager and other partners.

Jesse Ross, P.E., Ducks Unlimited: Mr. Ross has design and construction management responsibility for wetland restoration projects primarily in the California Delta Region. Mr. Ross is a registered Professional Engineer in the State of California (#C73274). Mr. Ross was responsible for engineering and construction management on wetland restoration projects in the Yolo Bypass Wildlife Area, Stone Lakes National Wildlife Refuge, and Cosumnes River Preserve. Mr. Ross has experience with various wetland restoration projects including water delivery systems, tidal restorations, levee rehabilitation, and wetland enhancement and creation. Mr. Ross will serve as Ducks Unlimited's lead design engineer and construction manager.

Donald R. Ratcliff, U.S. Fish and Wildlife Service: Mr. Ratcliff is a fisheries biologist, habitat restoration coordinator and fish passage coordinator with the Anadromous Fish Restoration Program in the U.S. Fish and Wildlife Service (Service). Mr. Ratcliff has an extensive background in designing, permitting, implementing, and monitoring aquatic restoration and fish passage projects. He has over 10 years of experience as a fisheries biologist and aquatic ecologist with federal agencies. Mr. Ratcliff has overseen multiple habitat restoration and fish passage grant-funded projects through the Service's Anadromous Fish Restoration and National

Fish Passage Programs. Mr. Ratcliff secured and administers Service funding for planning and permitting work associated with the proposed project and is involved as a fisheries and aquatic habitat expert during project conceptualization and planning.

Selected Subcontractors:

Harry McQuillen, U.S. Bureau of Land Management: Mr. McQuillen has over 15 years experience in wildlife research and management. As Manager of the Cosumnes River Preserve, Mr. McQuillen oversees the day-to-day operations of the Preserve Partnership's 46,000 acres. Primary duties include supervision of Preserve staff, development and implementation of restoration and land management projects on Preserve lands, development and administration of government contracts and agreements, development and administration of cooperative agreements with local landowners conducting farming and ranching operations on Preserve lands, and oversight of budgets, personnel, and other administrative functions necessary to run the Preserve. Prior to working at the Preserve, Mr. McQuillen worked as an avian toxicologist managing large field research projects for agrochemical companies and as an endangered species biologist for the U.S. Fish and Wildlife Service. Mr. McQuillen is the project lead for BLM. BLM is the landowner and will provide technical services. BLM will be contracted to provide necessary biological and project services receiving just under 25% of the total project budget. BLM budgeting includes six staff undertaking NEPA compliance, pre-construction sensitive plant and animal surveys, cultural resources investigations and full time construction monitoring, vegetation and hydrology monitoring, project administration, and project coordination.

Holden Brink, PhD. U.S. Bureau of Land Management: Dr. Brink has over 40 years experience in wildlife research and management. Dr. Brink has been the Wetlands Manager at Cosumnes River Preserve for 18 years. His primary duties in that position have included the preparation and execution of annual and 5-year management plans for approximately 1,000 acres of intensively managed seasonal and year-round waterfowl habitat. Dr. Brink also worked for a number of years as an Environmental Specialist for BLM and a wildlife biologist for the Tennessee Valley Authority prior to joining the Preserve team.

Mark Ackerman, U.S. Bureau of Land Management: Mr. Ackerman has over 13 years of experience in wetland and wildlife management. As a Wildlife Biologist at the Cosumnes River Preserve, Mr. Ackerman's primary duties include conducting, assisting, and/or coordinating monitoring and inventory biotic surveys, assessing habitat conditions, assisting on preparation and execution of the annual and 5-year management plans, and carrying out other management and enhancement activities. In addition, Mr. Ackerman manages project conceptual design of created, restored, and enhanced wetlands, authoring or co- authoring required NEPA documents, acquiring necessary project permits, and obtaining ESA Section 7 consultations.

Trevor A Kennedy, Fishery Foundation of California: Mr. Kennedy is the Executive Director of the Fishery Foundation of California, a non-profit, fisheries restoration and research corporation. Mr. Kennedy brings considerable experience and expertise to the project team. As Senior Biologist for the Foundation he has developed and successfully implemented seven State and Federal Grants totaling over $3 million. Mr. Kennedy has been involved in collecting and analyzing instream flow, stream habitat, fish passage and fish life history data since 1995. As Director of the Fishery Foundation he is responsible for public outreach, project development, quality control, employee mentoring and training, and overall contract management. He has

been active in Cosumnes River floodplain restoration and monitoring for 10 years. His local experience includes monitoring habitat associations of juvenile fish in the lower Cosumnes River floodplain, improving adult and juvenile passage of Chinook salmon, and adult and juvenile monitoring of multiple fish species. The Fishery Foundation of California was selected because of Mr. Kennedy's involvement with fishery restoration and monitoring of similar projects on the Cosumnes River.

John Lundgren, Sacramento County: Mr. Lundgren is the Senior Environmental Analyst for Sacramento County's Department of Environmental Review and Assessment (DERA). DERA is the central point of contact for processing environmental review in the County of Sacramento. Their primary mission is to implement the requirements of the California Environmental Quality Act (CEQA) in an objective and unbiased manner; to produce clear, concise, objective and legally defensible environmental documents for use by decision makers and the general public; to formulate reasonable mitigation measures and project alternatives that avoid, minimize, rectify or compensate for adverse impacts to the environment; and, to provide quality customer service in a timely and efficient manner. Sacramento County is a partner in the Cosumnes River Preserve and will serve as the lead CEQA agency. DERA will be subcontracted to prepare CEQA compliance documentation.

Hart Restoration/Hartland Nursery– Hart Restoration specializes in all aspects of natural wetland and riparian habitat restoration. They emphasize an ecological approach to restoration, based on natural systems as a model but also acknowledge the influence of human altered conditions to the environment. Their nursery specializes in growing plants native to Central Valley and plants that thrive in our Mediterranean climate zone of cool, rainy winters followed by hot, dry summers. Hart Restoration was selected as a competitively priced nursery with extensive experience restoring Delta riparian and wetland habitats.

Hedgerow Farms – Hedgerow farms is the leading expert in California native grass restoration. A portion of the project will include these activities. The Cosumnes River Preserve has an existing contract with Hedgerow Farms to provide native grass seeds for another project. Adding the proposed work to this existing contract will save costs through efficiency.

To Be Determined – A general construction/earthwork contractor will be selected through a competitive bidding process. The contract for this work is expected to receive approximately 50% of the total project budget.

Other ERP Grants:

Ducks Unlimited has received funding through the following ERP agreements as a direct grantee or subcontract, as noted:

E0883001, Delta Working Landscapes, Subcontractor to Delta Protection Commission. Partially complete, still active.

ERP-1-N19 Ecological Monitoring of Tolay Creek and Cullinan Ranch Tidal Wetland Restoration Projects in the North San Francisco Bay. Completed as contracted.

ERP-1-N54 Sutter Bypass West Side Project. Completed as contracted.

ERP-02-P08, Staten Island Wildlife Friendly Farming Operation. Completed as contracted.

ERP-01-N54, Lower Butte Creek Project Phase III Facilitation/Coordination and Construction of 3 Fish Passage Modifications to Sutter Bypass West-Side Water Control Structures. Completed as contracted.

ERP-02-P07, Butte Sink Water Control Structure Modification, Phase III Construction Project. Completed as contracted.

ERP-02-P08D, M&T/Llano Seco Fish Screen Facility Short-Term/Long-Term Protection Project. Partially completed, still active

E0920010, M&T/Llano Seco Fish Screen Facility Short-Term Protection Project, Partially completed. still active.

10. Literature Cited

See End of Proposal

Section 7: Project Budget

1. Project Budget – See the detailed cost estimate in Table 4 at the end of the proposal for more information on the line items shown below and matching funds.

Table 3. Total Budget Summary Table.

Total Budget Summary Table			
Lower Cosumnes River Floodplain Restoration Project			
PERSONAL SERVICES			**Totals**
Staff Level	**Hours**	**Rate**	
DU Project Manager (Jeff McCreary)	290	$86.4	$25,056
DU Engineer (Jesse Ross)	1,180	$86.4	$101,952
DU Environmental Compliance (Patrick Britton)	305	$86.4	$26,352
Subtotal	**1,775**	**$86.4**	**$153,360**
Staff Benefits @ 28 %			$81,312
TOTAL PERSONAL SERVICES			**$234,672**
OPERATING EXPENSES			
Description			
Subcontractor Costs			
Bureau of Land Management (BLM)			$237,000
Fishery Foundation of California (FFC)			$150,000
Hartland Nursery/Hart Restoration (trees) (H1)			$10,000
Hedgerow Farms (grass seed, grass plugs) (H2)			$10,000
Sacramento County (SAC)			$40,000
To Be Determined (TBD)			$1,275,250
Travel and Per Diem			$918
Contingency (non-ERP)			$43,410
Total Operating Expenses			**$1,766,578**
EQUIPMENT			**$0**
SUBTOTAL			**$2,001,250**
OVERHEAD @ 8.36% (Less Equipment)			$140,449
GRAND TOTAL			**$2,141,699**

2. Budget Justification

The proposed project budget was developed in a collaborative process by the project management team. Operating expenses were developed through careful analysis of expected project components and activities based on review similar projects. Earthwork and related

construction quanitities were projected following completion of the comprehensive topographic survey and subsequent project conceptual plan. Water related infrastructure costs were estimated based on DU experience on projects with similar activities. Environmental compliance costs were determined by BLM for NEPA related activities, Sacramento County for CEQA activities, and other permitting needs by DU, all of which are based on experience with similar projects by DU and subcontractors. Monitoring costs estimates were determined in conjuction with AFRP staff using other Cosumnes River projects as templates. Personal Services costs were determined based on experience with similar large scale projects with multi-faceted project components.

Road improvements are included in the proposed budget as it is expected that the current private entrance road, on which BLM has a site access easement, will be substantially deteriorated following project implementation (hundreds of truck trips) that it will require repaving of approximately 4,000 linear-feet. Access road gravelling is necessary to bypass an approximately 1,000 linear foot stretch of private road and avoid needing to repave that stretch. The bypass access road will be on BLM property and provide construction equipment access at a much reduced cost than repaving the private road. Existing water control structures on the upper lagoons and pump intake are currently unscreened and will be screened as part of this project to avoid fish entrainment.

3. Administrative Overhead

Ducks Unlimited's federally approved overhead rate is 8.36%.

FIGURES and TABLES

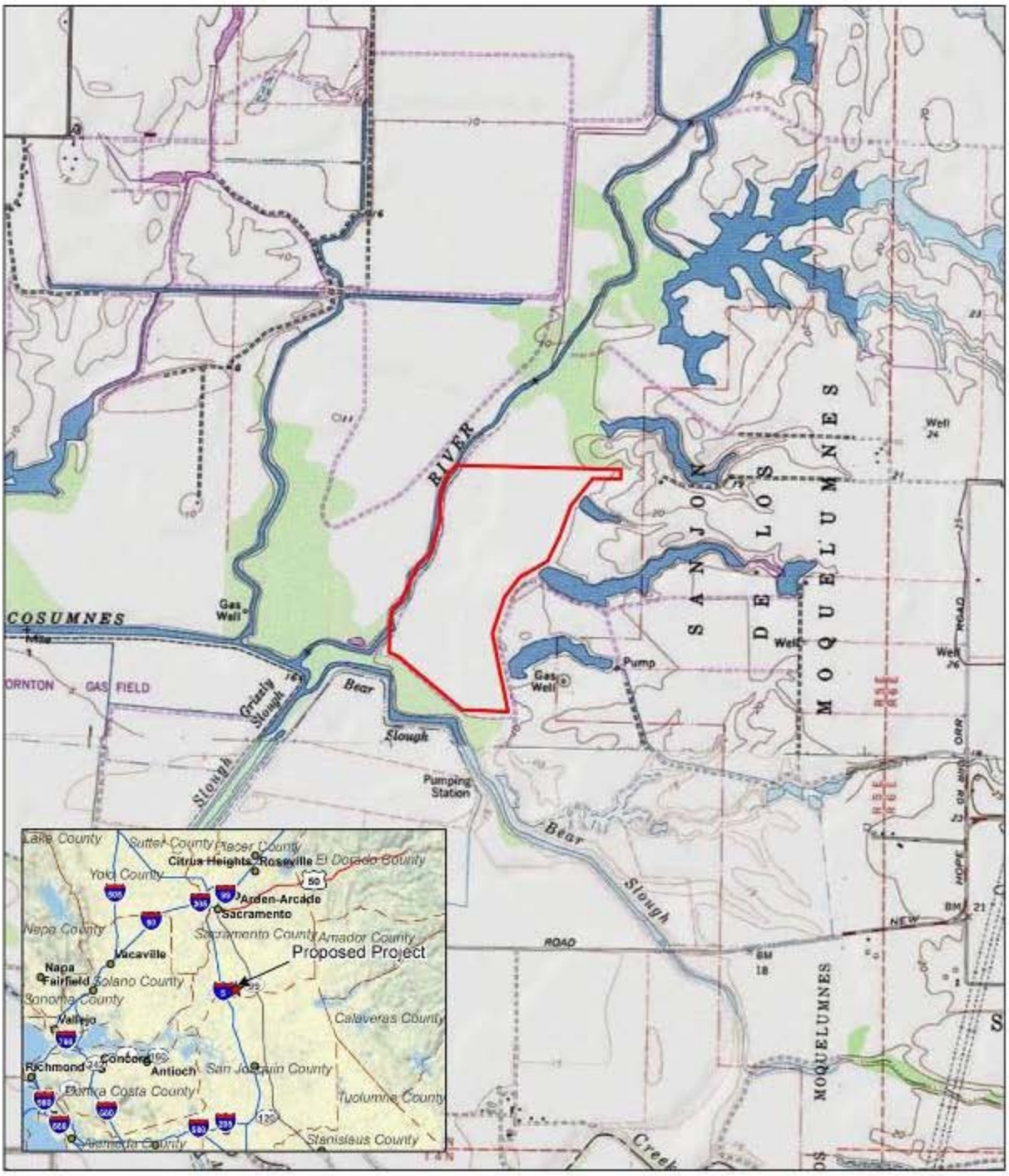

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Figure 1. Location Map

Proposed Project

USGS Quadrangle: 7.5 minute Bruceville, CA

Project location: Un-sectioned portion of the San Jon De Los Moquelumnes Land Grant, T 5N, R 5E, Sacramento County, CA

N

0 1,000 2,000 Feet

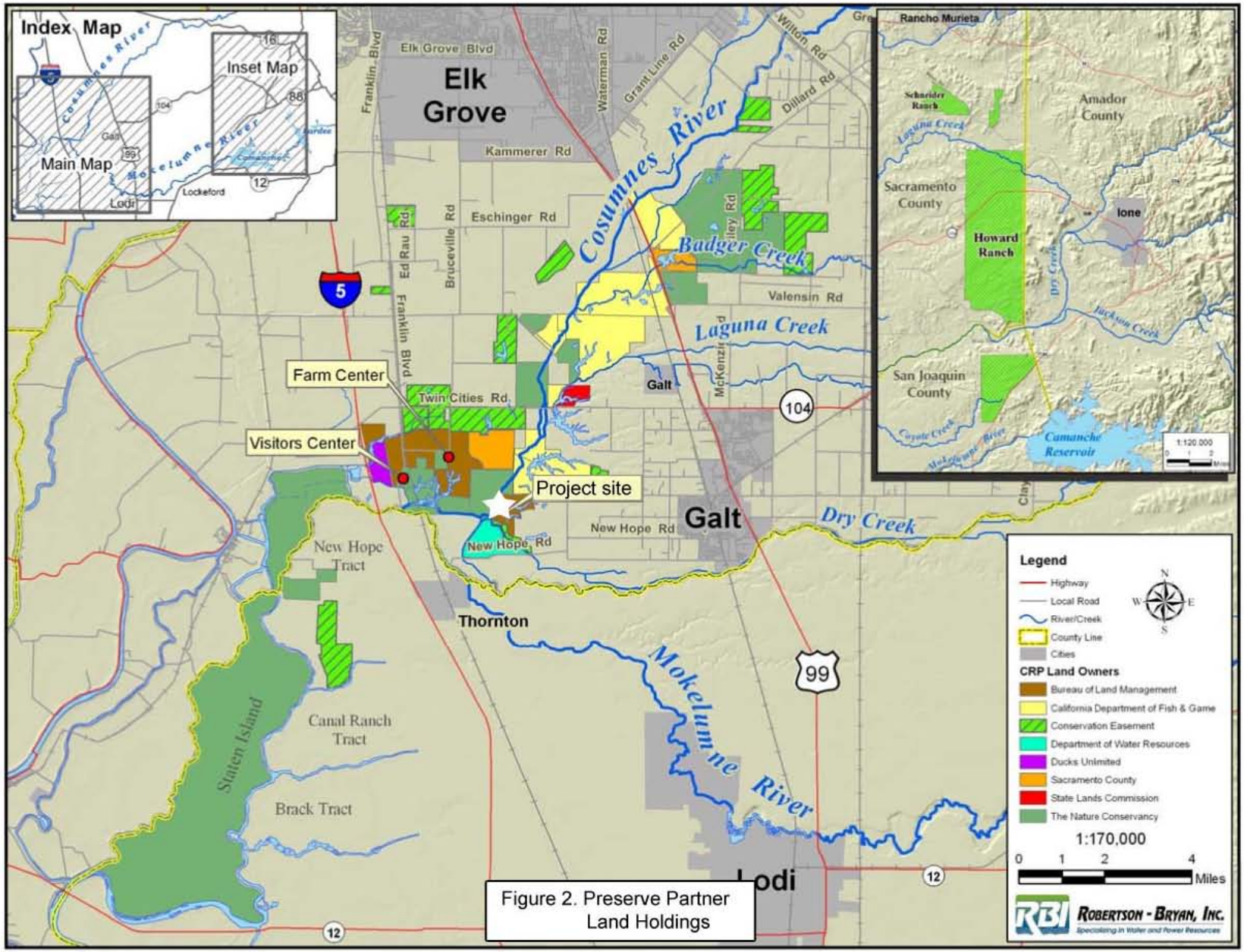


Figure 2. Preserve Partner Land Holdings

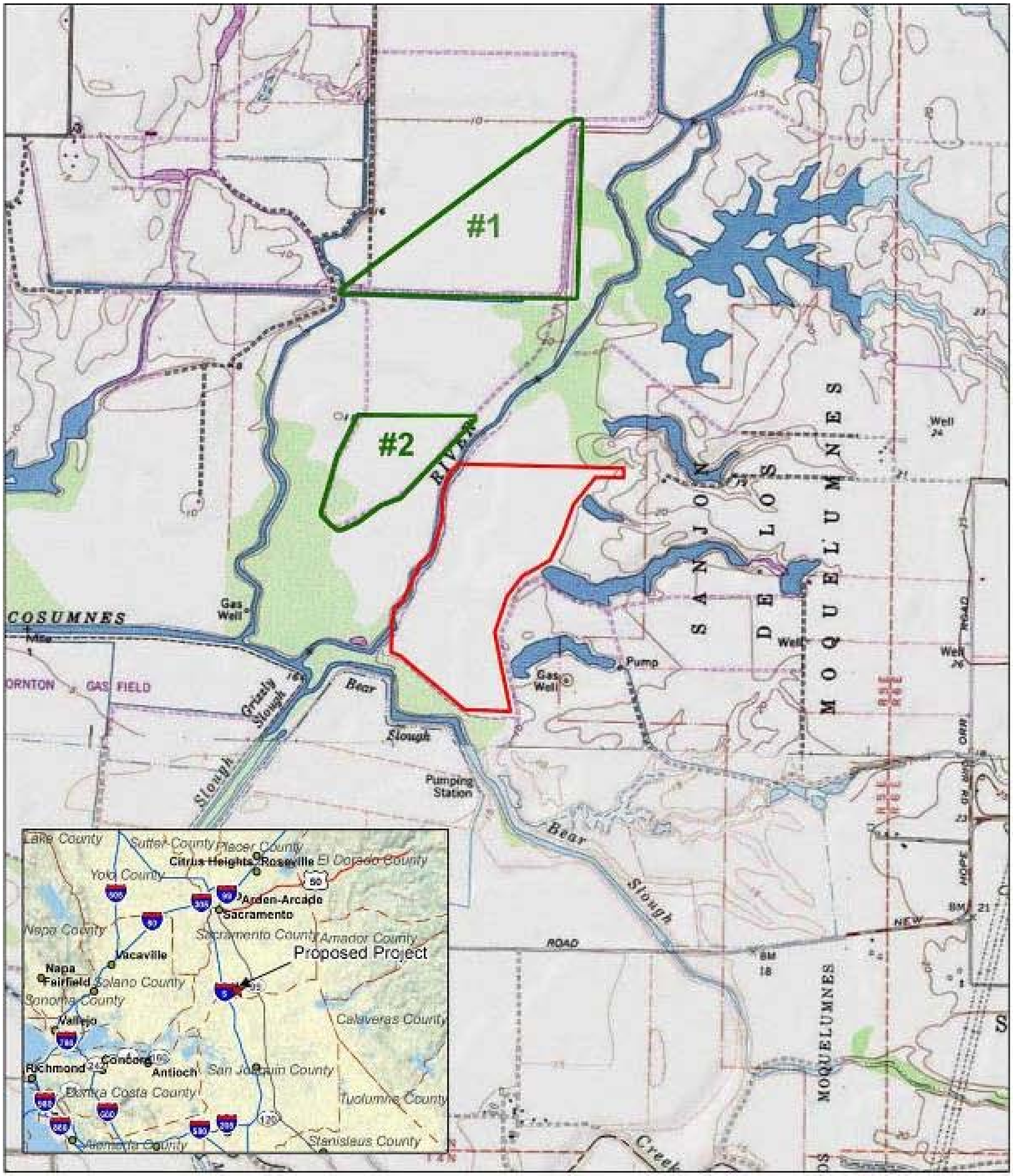


Figure 3. Similar Project Location Map

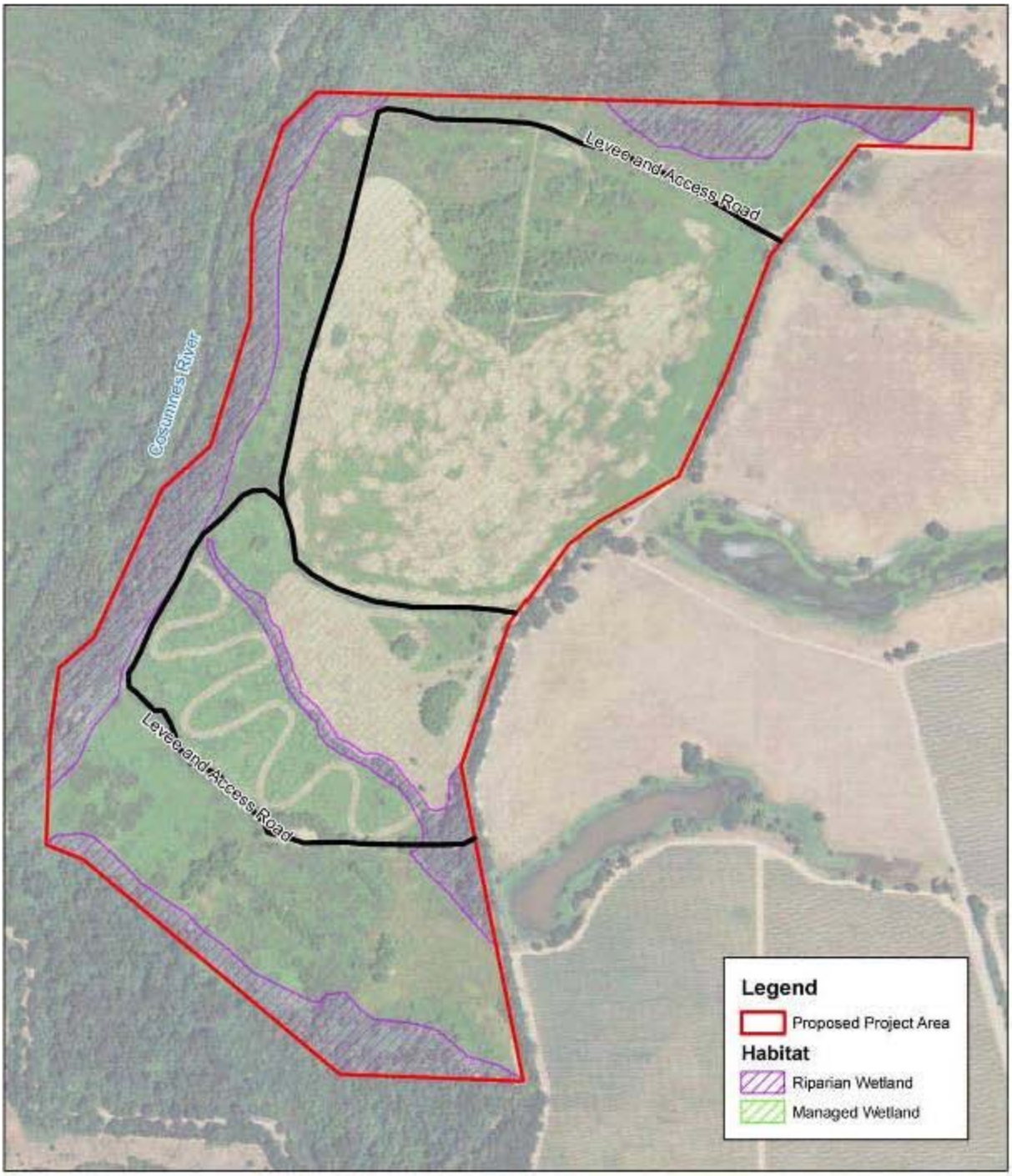
Proposed Project

Similar Projects

Project location: Un-sectioned portion of the San Jon De Los Moquelumnes Land Grant, T 5N, R 5E, Sacramento County, CA

N

0 1,000 2,000 Feet



DUCKS UNLIMITED

Figure 4. Habitat Map

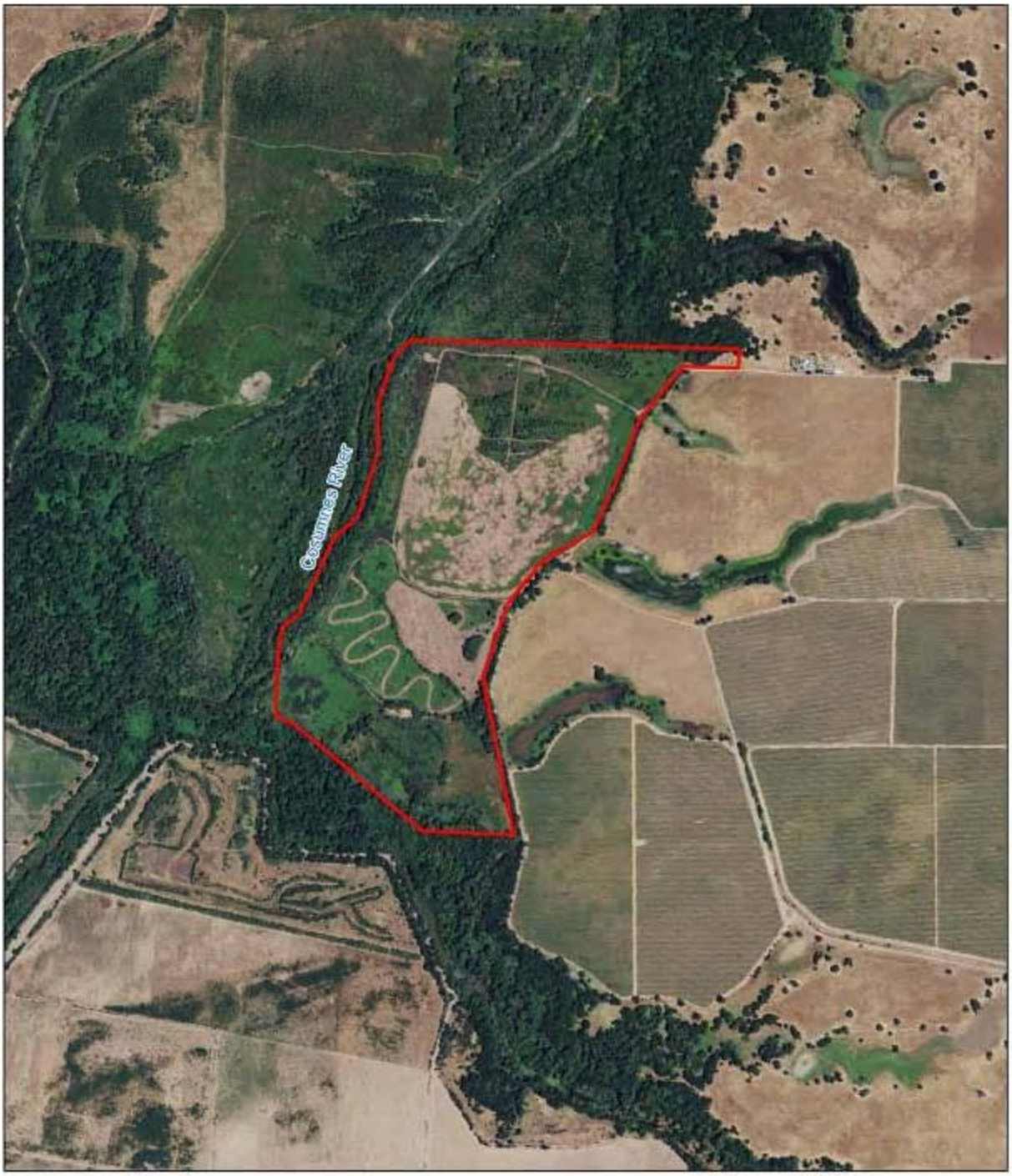
Proposed Project

Aerial Photo: 2009 FSA Color Orthophotography

Project location: Un-sectioned portion of the San Jon De Los Moquelumnes Land Grant, T 5N, R 5E, Sacramento County, CA

N

0 250 500 Feet



DUCKS UNLIMITED

Figure 5. Aerial Photo

Proposed Project

Aerial Photo: 2009 FSA Color Orthophotography

Project location: Un-sectioned portion of the San Jon De Los Moquelumnes Land Grant, T 5N, R 5E, Sacramento County, CA

N

0 500 1,000 Feet

DUCKS UNLIMITED

Figure 6. CNDDB Overview

Proposed Project

Aerial Photo: 2008 Color Orthophotography

Project location: Un-sectioned portion of the San Jose De Los Moquelumnes Land Grant, T 5N, R 5E, Sacramento County, CA

N

0 4,000 8,000 Feet

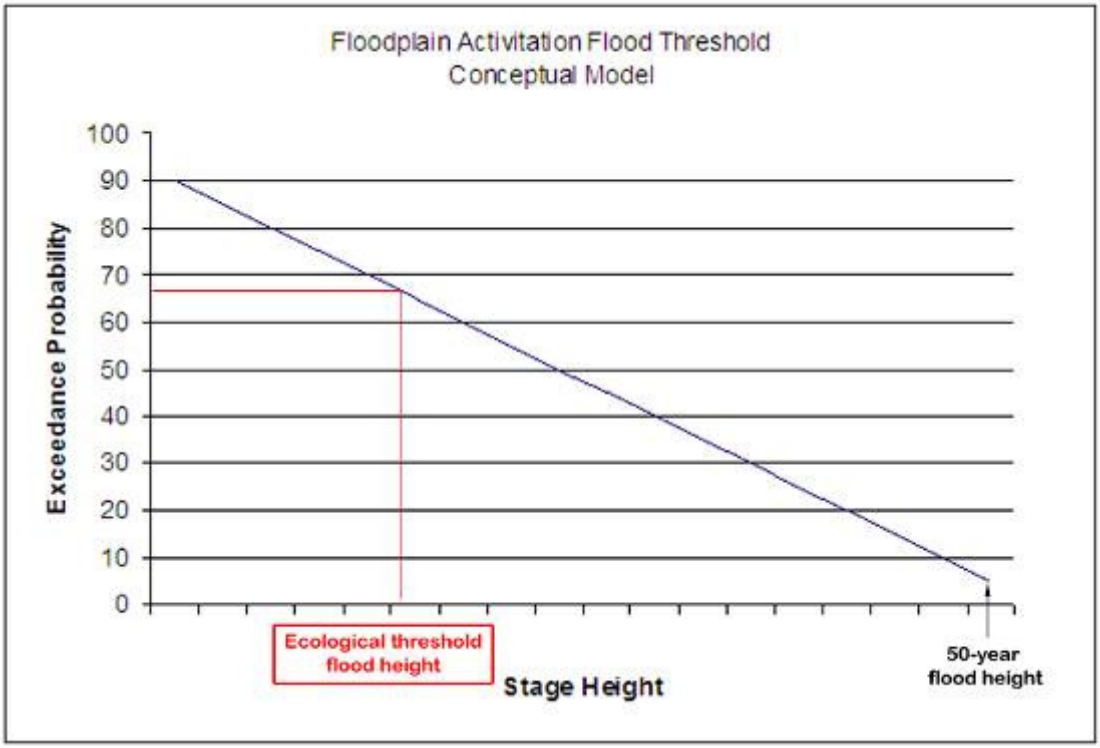


Figure 7. Conceptual Floodplain Activation Flood Threshold Conceptual Model

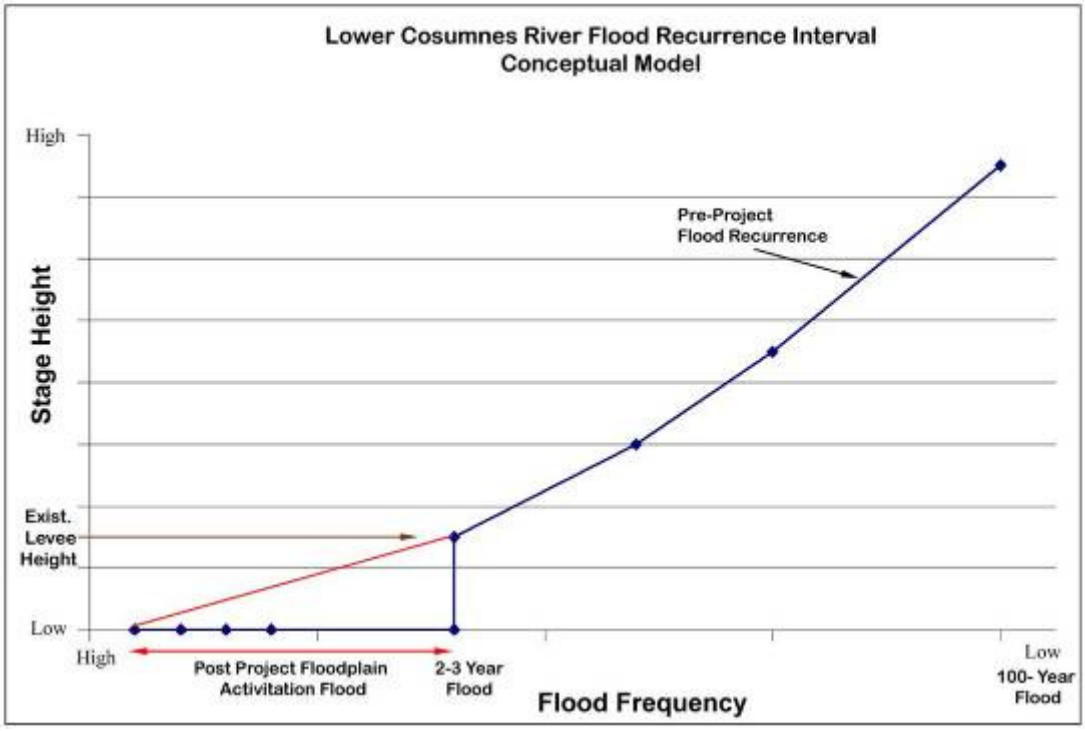


Figure 8. Project Site Flood Recurrence Interval Conceptual Model

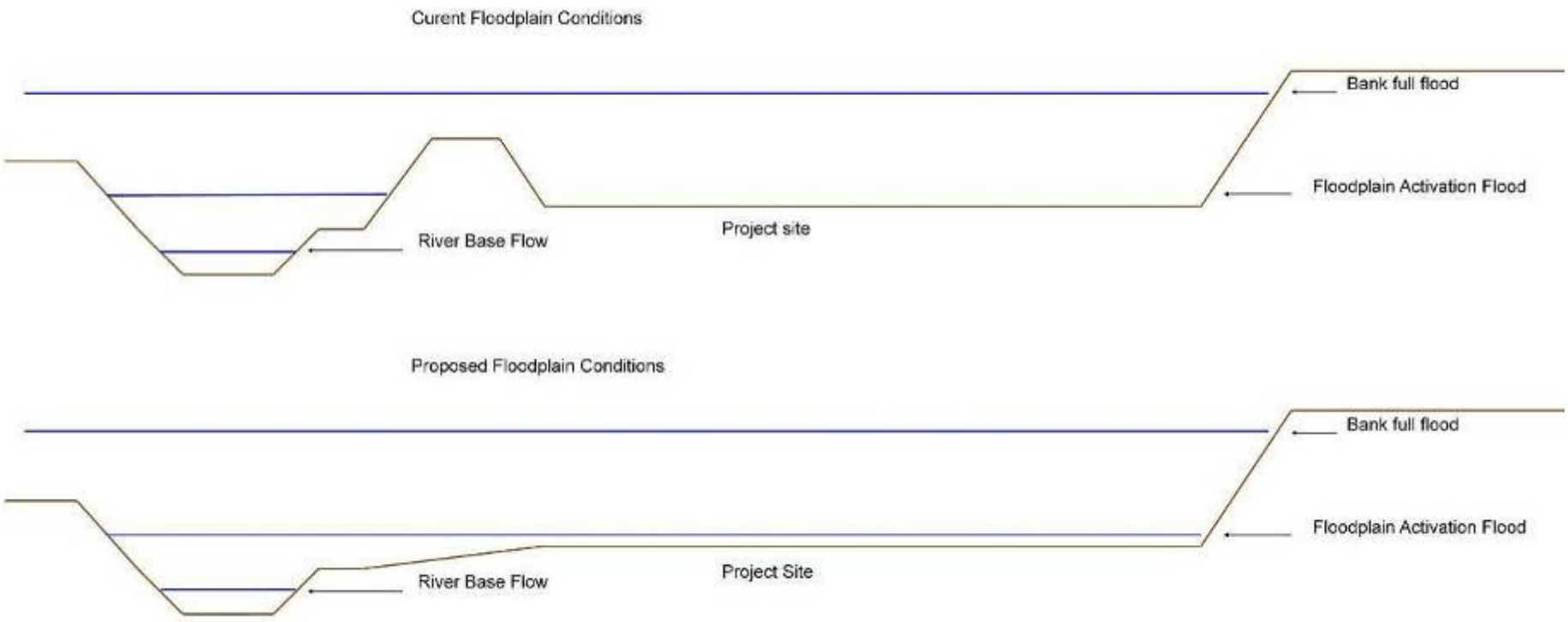


Figure 9. Current and Proposed Site Cross Sections and Conceptual FAF interaction

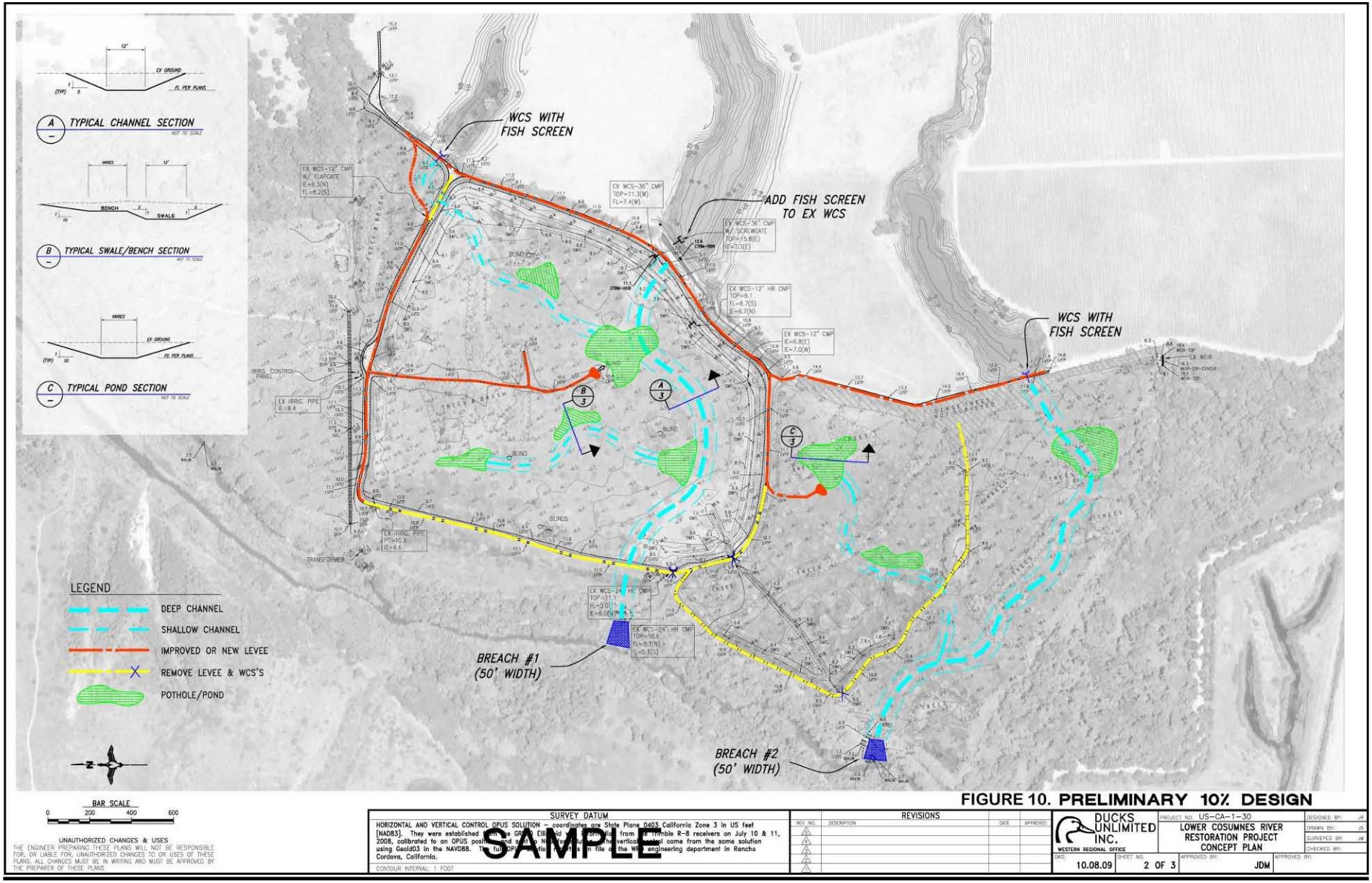


FIGURE 10. PRELIMINARY 10% DESIGN

Table 4. DETAILED BUDGET TABLE

** Lower Cosumnes River Floodplain Restoration Project **										
Task No.	Sub	Item	Units	Qty	Unit Price	Extended Cost	Proposed ERP	Submitted Proposals	Match FWS-AFRP	Match DU
OPERATING EXPENSES										
	Objective 1: Floodplain Restoration and Reconnection Activities									
2	BLM	Sensitive species surveys	LS	1	$20,000	$20,000	$20,000			
2	TBD	Hydro/floodplain modeling	LS	1	$100,000	$100,000	$72,000		$28,000	
3	Sac	CEQA Compliance - Mit. Neg Dec.	LS	1	$40,000	$40,000	$10,000		$30,000	
3	BLM	Section 106 site investigations	LS	1	$70,000	$70,000	$20,000	$50,000		
3	BLM	Section 106 inventory, monitoring	LS	1	$29,000	$29,000	$29,000			
3	BLM	USFWS Section 7 Bio. Assess.	LS	1	$17,500	$17,500	$10,000	$7,500		
3	TBD	NMFS Section 7 Bio. Assess.	LS	1	$17,500	$17,500	$10,000	$7,500		
3	BLM	NEPA Environmental Assesment	LS	1	$40,000	$40,000	$30,000	$10,000		
3	TBD	Permitting Fees	LS	1	$7,500	$7,500	$7,500			
5	TBD	Mobilization & Site Preparation	LS	1	$50,000	$50,000	$46,000	$4,000		
5	TBD	Earthwork - Cut slough & levee breach	CY	145000	$6.25	$906,250	$431,250	$475,000		
5	TBD	Repave entrance roadway	LF	4200	$20	$84,000	$84,000			
5	TBD	Earthwork - Compacted fill for access/maintenance roads	CY	15000	$4	$52,500	$23,000	$22,000		
5	TBD	Access road Gravel	LS	1	$15,000	$15,000	$10,000	$5,000		
5	TBD	Purchase and install signage	LS	1	$5,000	$5,000	$5,000			
5	TBD	Purchase and Install Fish Screens	EA	3	$12,500	$37,500	$12,500	$25,000		
6	FFC	Monitoring - Fish and invertebrates	YR	2	$75,000	$150,000	$106,000	$44,000		
		Subtotal Objective 1:				**$1,641,750**	**$926,250**	**$650,000**	**$58,000**	
	Objective 2: Riparian Revegetation/Restoration Activities									
5	H/H	Revegetation - trees and grasses	LS	1	$20,000	$20,000	$10,000	$10,000		$0
6	BLM	Monitoring - vegetation and hydrology	YR	2	$10,000	$20,000	$14,000	$6,000		
		Subtotal Objective 2:				**$40,000**	**$24,000**	**$16,000**		**$0**
	Objectives 1 and 2 Common Activities									
1	BLM	Project Administration and Coordination	LS	1	$34,000	$34,000	$34,000			$0
1	DU	Travel	Mi	1800	$1	$918	$918			
7	BLM	Education and Outreach	LS	1	$6,500	$6,500	$6,500			
		Subtotal Common Activities:				**$41,418**	**$41,418**	**$0**		**$0**
SUBTOTAL OPERATING EXPENSES						**$1,723,168**	**$991,668**	**$666,000**	**$58,000**	**$0**
PERSONAL SERVICES										
	Objective 1: Floodplain Restoration and Reconnection Activities									
1	DU	Project Administration and Coordination	HR	150	$86	$12,960	$12,960			
3	DU	Sac. County grading permit preparation	HR	45	$86	$3,888	$3,888			
3	DU	Water quality board 401 preparation	HR	45	$86	$3,888	$3,888			
3	DU	ACOE Wetland 404 preparation	HR	45	$86	$3,888	$3,888			
3	DU	Fish and Game1602 SBAA preparation	HR	40	$86	$3,456			$3,456	

3	DU	Flood Protect. Board encroachment prep.	HR	40	$86	$3,456			$3,456	
3	DU	SWPPP preparation	HR	40	$86	$3,456			$3,456	
3	DU	Environmental compliance and coord.	HR	150	$86	$12,960	$7,560	$5,400		
4	DU	Engineering Design 10%	HR	100	$86	$8,640				$8,640
4	DU	Engineering Design - 30%	HR	300	$86	$25,920	$12,960		$12,960	
4	DU	Engineering Design - 60%	HR	150	$86	$12,960	$6,480		$6,480	
4	DU	Engineering Design - Final	HR	150	$86	$12,960	$6,480	$6,480		
4	DU	Construction Management	HR	480	$86	$41,472	$36,072	$5,400		
7	DU	Outreach and Final Reporting	HR	40	$86	$3,456	$3,456			
7	DU	Benefits @ 28%	LS	1	$81,312	$81,312	$59,640	$6,720	$11,592	$3,360
		Subtotal Objective 1:				**$234,672**	**$157,272**	**$24,000**	**$41,400**	**$12,000**
SUBTOTAL PERSONAL SERVICES						**$234,672**	**$157,272**	**$24,000**	**$41,400**	**$12,000**
		Contingency				**$43,410**		**$42,810**	**600**	**$0**
OVERHEAD			**8.36**	**%**		**$140,449**	**$96,051**	**$43,350**	**$0**	**$1,048.0**
GRAND TOTAL:						**$2,141,699**	**$1,244,991**	**$776,160**	**$100,000**	**$13,048**

	SUBCONTRACTORS
DU	Ducks Unlimited
BLM	Bureau of Land Management
FFC	Fishery Foundation of California
SAC	Sacramento County
H	Hedgerow Farms
H	Hart Nursery/Restoration
TBD	To Be Determined

LS	Lump sum	Cubic yard	CY
EA	Each unit	Ton	TN
LF	Lineal feet	Hour	HR
Mi	Miles		

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LANDOWNER ACCESS AGREEMENT

COOPERATIVE AGREEMENT

Between the

U.S. Bureau of Land Management

And

Ducks Unlimited, Inc.
Western Regional Office

RELATING TO THE OPERATION AND MAINTENANCE OF THE COSUMNES RIVER PRESERVE. {DU PROJECT NO. CA-0030-01*5*)

AUTHORITY

THIS COOPERATIVE AGREEMENT is entered into by and between the Bureau of Land Management, an executive agency of the United States Department of the Interior, and hereinafter referred to as the "Bureau", and Ducks Unlimited, Inc., hereinafter referred to as "DU", pursuant to the Federal Land Policy and Management Act of 1976, Sections 307(b) and (c). This agreement supplements the Memorandum of Understanding Signed by the Bureau and DU on February 20, 1990.

PURPOSE AND OBJECTIVES

THE PURPOSE OF THIS COOPERATIVE AGREEMENT is to specify operations and maintenance responsibilities that are shared by the Bureau and DU for the managed wetland projects at the Cosumnes River Preserve (Preserve), and the associated costs of those responsibilities. The obligations of this Cooperative Agreement for both parties for the operations and maintenance are limited to the costs specified in this agreement, unless amended by mutual written consent.

AGREEMENT

IT IS HEREBY AGREED AS FOLLOWS:

The responsibilities for the operation and maintenance of managed wetland projects on the Preserve shall be shared by the Bureau and DU as defined in this agreement.

I. The Bureau shall:

A. Be responsible for the day-to-day operations and maintenance of the managed wetland projects and facilities at the Preserve.

B. Provide and pay for the necessary labor and equipment for the day-to-day operations and maintenance of the managed wetland projects at the Preserve, including, but not limited to, maintenance of levees, water control structures, pump stations, and/or other facilities and material, as needed, or as not provided for under this or other agreements.

C. During the term of this agreement the Bureau's funding commitments for the above listed operations and maintenance services shall not exceed $20,000 annually unless agreed to between the Bureau and DU. This commitment is contingent on the availability of funding during each federal fiscal year.

II. DU shall:

A. Contribute not more than $20,000 annually towards the cost of operating and maintaining the managed wetland projects on the preserve. This funding may be available to pay for pumping costs, unexpected/unforeseen pump repair costs, equipment such as tractors and mowers, or for other uses as agreed upon by both the Bureau and DU.

B. Provide technical assistance to improve the day-to-day operations and maintenance of the wetland projects at the Preserve, for the development of new managed wetland projects at the Preserve, or for other issues (*e.g.,* methylmercury, mosquito vector control, hunting), as needed.

Neither party shall be obligated to incur expenses in excess of the amount listed above for their obligation during the term of this agreement.

TERM OF AGREEMENT

THIS AGREEMENT WILL BECOME EFFECTIVE August 1, 2010, and shall expire on July 31, 2013. Although this agreement represents a long term commitment to the funding of the Preserve's managed wetland projects, nothing in the agreement shall obligate either party to continue this agreement or execute a new agreement at the expiration of this agreement unless there is a mutual written agreement between the parties to do so.

MUTUAL COOPERATION

EACH PARTY AGREES TO COOPERATE with the other in accomplishing the purpose and objectives of this Cooperative Agreement, and fulfilling its obligation as herein provided.

COOPERATIVE AGREEMENT – DU/BLM
COSUMNES RIVER PRESERVE OPERATIONS & MAINTENANCE

AUTHORIZED OFFICERS

Bureau Authorized Officer shall be:

Harry L. Mcquillen
Bureau of Land Management
Cosumnes River Preserve
13501 Franklin Boulevard
Galt, CA 95632

Ducks Unlimited Inc. Authorized Officer shall be:

Mark Biddlecomb
Ducks Unlimited, Inc.
Western Regional Office
3074 Gold Canal Drive
Rancho Cordova, CA 95670-6116

AMENDMENTS

AMENDMENTS TO THE COOPERATIVE AGREEMENT may be proposed by either party and shall become effective upon being reduced to a written instrument executed by both parties.

TERMINATION

Should either DU or the Bureau cease to have an ownership interest or management responsibility in the Preserve, then this agreement may be terminated upon thirty days written notice to the non-terminating party.

IN WITNESS WHEREOF, each party hereto has caused this Cooperative Agreement to be executed by its authorized official on the day and year set forth below said official's signature.

BUREAU OF LAND MANAGEMENT

Signatures:

William S. Haigh
Field Manager

Date: 7-2-10

DUCKS UNLIMITED, INC.

Acting ~~Rudolph A. Rosen~~
Director

Date: 7/29/10