Flood Protection Corridor Program

Project Evaluation Criteria

And Competitive Grant Application Form

I. Introduction

Grant funds under the Flood Protection Corridor Program (FPCP) of the Costa Machado Water Act of 2000 (Proposition 13) are available to local public agencies and nonprofit organizations from the Department of Water Resources. Funds will be used to pursue FPCP goals, which are to provide "for the protection, creation, and enhancement of flood protection corridors through all of the following actions:

"(1) Acquiring easements and other interests in real property from willing sellers to protect or enhance flood protection corridors and floodplains while preserving or enhancing the agricultural use of the real property.

"(2) Setting back existing flood control levees and, in conjunction with undertaking those setbacks, strengthening or modifying existing levees.

"(3) Acquiring interests in real property from willing sellers located in a floodplain that can not reasonably be made safe from future flooding.

"(4) Acquiring easements and other interests in real property from willing sellers to protect or enhance flood protection corridors while preserving or enhancing the wildlife value of the real property."

-- *[Water Code, Chapter 5, Article 2.5, Section 79037(b)]*

The following information constitutes the basis for determining whether a proposed project meets the legal criteria for funding under the Flood Protection Corridor Program and for evaluating the proposal to determine its priority in competition with all concurrent proposals. Proposals qualified under Section III of these criteria will be placed on one of two priority lists. If the proposal serves a flood protection need that is a high priority with the Department of Water Resources (other than through this Program) and it also rates a high priority *either* with the Department of Conservation for purposes of preserving agricultural land under the California Farmland Conservancy Program, *or* with the Department of Fish and Game for purposes of wildlife habitat or restoration, it will be placed on the "A List". All other qualified projects will be placed on the "B List". "A List" projects will be funded first, and when all "A List" projects have been funded to the Department's stated limit, "B List" projects will be funded.

II. General Information

Project Name: Aliso Creek Main-Stem Riparian Restoration and Flood Protection

Project Location: Laguna Beach, Laguna Niguel, Aliso Viejo

County: Orange

Name and address of sponsoring agency or non-profit organization: County of Orange

Public Facilities & Resources Department; 300 N Flower; Santa Ana, CA 92703-5000

Name of Project Manager (contact): Sonia Nasser

Phone Number: (714) 834-5679 E-mail Address: Sonia.Nasser@pfrd.ocgov.com

Grant Request Amount: $5,000,000

Project Manager — Chief, Engineering & Project Management (Title)

February 14, 2003
Date

Project Objective(s): Briefly describe your project and explain how it will advance FPCP goals. Please also include a detailed map of the immediate project site and another that shows its location within your geographical area. Photographs showing problem areas proposed to be enhanced by the project should also be included.

1 Problem Statement

Exposed utility pipeline in Aliso-Wood Canyon Regional Park.

The Aliso Creek watershed suffers from a number of problems related to water resources. Human actions and land uses have magnified the scale of these problems, particularly downstream. The list of problems currently evident in the Aliso Creek watershed is not 100 percent complete, but contains the most significant factors that were agreed upon by the individuals, agencies, and other parties that participated in its development. A number of public meetings and workshops, watershed study team meetings (stakeholders), and site investigations were held to develop this list. The identified problems are grouped in four general categories: creek instability, water quality, loss of fish and wildlife habitat, and flooding damages (Table 1-1). Specific problems within these categories are briefly discussed in the following sections.

Table 1-1: Identified Watershed Problems

Creek Instability	Channel Degradation/Migration and Erosion Damages Poor Floodplain Moistures Lost Terrestrial/Riparian Habitat Lost In-Stream Habitats Expansion of Invasive Species Devalued Recreation Experience
Water Quality	Poor Surface Water Quality Lost Aquatic Species Reduced Recreation Opportunity
Loss of Fish and Wildlife	Habitat s Lost Terrestrial/Riparian Habitat Lost In-Stream Habitat Expansion of Invasive Species
Flooding Damages	Flooding Damages to Land and Improvements

1.1 Creek Instability

The problem of channel instability is regarded as one of the most fundamental problems in the Aliso Creek watershed, which affects other identified problems. This problem has been related to natural channel change, development inside the watershed, increased flood flow peaks and/or volumes, increased dry weather (low-flow) discharge, impervious surface runoff increases, the random nature of recent large flood events, and other issues. Whatever the reasons, degradation (lowering) of the channel invert, which historically would be interspersed with periods of channel aggradation (or infilling), has turned into an increasingly destructive trend as the cyclical

erosion and fill cycle has been replaced by continued degradation. It can be seen that replacement of bare soils in the watershed by development has cut off the traditional source of sediment in the watershed. This being the case, it may be that the now hungry or sediment-poor runoff from the watershed is compensating by picking up more of its characteristic sediment load from the channel bed itself. Ultimately, a lack of sediment as a source will result in continued erosion in other locations, and eventually a lower sediment delivery to the coast. This will have long-term negative effects on beaches downcoast, as sooner or later, the channel source will also be exhausted, robbing the beaches of needed sediment.

Degradation can contribute to:

- infrastructure damage (e.g., water pipes, sewer pipes, roads, bridges, bank protection)
- land loss
- decreasing floodplain soil moisture levels
- gradual disappearance of historical floodplain and riparian zone vegetation and related wildlife species
- conversion of vegetation to xeric species
- destruction of "pool-and-riffle" sequences (i.e., disappearance of the sequences of "falls" and "pools" that once characterized the stream channel)
- disappearance or reduction of aquatic and riparian-related species, and other problems.

1.1.1 Erosion-Caused Land Loss

Erosion by surface water flow is currently causing land loss to adjacent properties. This is largely due to degradation of the channel (channel instability), which has been increasing since the late 1960s. Although this has been related to development of the watershed, increased impermeability, and increases in flood flow peaks and volumes, there is no definitive cause-and-effect relationship. It is sufficient to recognize that erosion of channel bed and banks is increasing and that land loss is accelerating. It is also recognized that treatment of the existing channel instability problem may reduce, or in some cases halt land loss by erosive forces. Because there is less damage attributable to land loss than that of overall environmental degradation, treatment of this problem is viewed as being only an incidental benefit of a larger environmental restoration campaign. Therefore, this problem will be discussed and evaluated as part of the larger watershed problem of channel instability and related environmental degradation. See Photo at the top of the previous page.

1.1.2 Loss of Floodplain Habitat

Floodplain habitat, as discussed here, refers to vegetation complexes that would be found within the floodplain, or overflow area from most flood events.

The gradual conversion of floodplain habitat from trees and bushes of certain more water-dependent types, dominated by the complex known as "California Oak Woodland," to those of a

more xeric (drought tolerant) nature is related by many observers who have spent much time in the watershed. Several long-term residents have noted that the trees once found in the floodplain are now largely gone, replaced by scrub and dry grasses. It is believed that many trees were cut in the "Mission" period, as the oaks, sycamores, and other species were a valuable resource in the production of ships, structures, charcoal, and other uses. Still, many trees survived into this century, as evidenced by in-person accounts with older residents. It is not definitively known what caused the recent disappearance of trees in the floodplain, particularly in the lower watershed, but it has been noted that areas dominated by channel degradation have few resident trees, and those not suffering from appreciable degradation have a much greater associated tree population. Given that the degradation of the channel has been accompanied by a decline in floodplain soil moisture levels, it may be the case that the source of water for these large trees has disappeared and taken the trees with them. Tap roots for these trees, although lengthy, may have been of insufficient length to reach the far deeper groundwater table under current conditions.

Environmental resource agencies, land managers, and wildlife specialists have indicated that historic floodplain vegetation is rapidly disappearing in southern California. Given that much of the lower reaches of Aliso Creek are currently in public stewardship (i.e., Aliso and Wood Canyons Regional Park), this may provide a unique opportunity for restoration of the historic floodplain vegetation complex, and the wildlife dependent on it.

1.1.3 Loss of Riparian Habitat

This issue shares similar factors to that of floodplain habitat. Much of the riparian habitat in the Aliso Creek watershed has also suffered the same kind of destruction as that on the floodplains. Some regrowth is evident in some reaches, but tends to disappear with each flood event. This could be lessened if the structure of the stream channel were more stable. Riparian habitat, which supports fish, reptiles, insects, and mammals that traditionally occupied the watershed, is more evident in the Wood Canyon sub-watershed, and within some of the upper reaches of Aliso Creek. Since this habitat is dependent on both water availability and structural stability, much of the success of a riparian environmental restoration campaign is dependent on the success of channel restabilization measures.


Photo 3: Arundo donax along a river

1.1.4 Non-Native Species

Non-native (exotic) species are those not naturally found in a given area but through some transport mechanism have successfully occupied a biological niche. Often, these species have the ability to outcompete native species through specialized adaptations or an absence of predators. The increase of non-native species negatively impacts riparian ecosystems by decreasing the diversity of native

habitat and frequently forming dense monocultures.

The giant reed (Arundo donax) is the primary exotic species to invade the Aliso Creek system. Giant reed is a hydrophyte, growing along lakes, streams, drains, and other wet sites. It uses prodigious amounts of water to supply its incredible rate of growth. Under optimal conditions, it can grow more than three inches per day (TNC, 2000).

This species is well adapted to the high disturbance dynamics of riparian systems as it spreads primarily vegetatively. Flood events break up clumps of Arundo and spread the pieces downstream. Fragmented stem nodes and rhizomes can then take root and establish as new plant clones.

Establishment and success of giant reed within a riparian corridor thus results in a decline in the diversity of native riparian plant species. All evidence indicates that giant reed does not provide either food or habitat for native species of wildlife. Areas largely taken over by this species are therefore deprived of wildlife.

Two other non-native invasive plants that are reported to be in the lower Aliso Creek riparian zones are the castor bean (Ricinus communis) and purple thistle, which is most likely bull thistle (Cirsium vulgare). A more complete list of non-native species found in Aliso Creek is given in Table 1-2.

Table 1-2: Non-Native Species in Aliso Creek

Arundo donax	giant reed
Brassica sp.	mustard
Cortaderia dioca	pampass grass
Eucalyptus sp.	eucalyptus tree
Nicotiana glauca	tree tobacco
Ricinus communis	castor bean
Schinus spp.	pepper tree
Tamarix spp.	tamarisk (salt cedar)
Vinca major	periwinkle
Centaurea solstitialis	yellow starthistle
Cynara cardunculus	artichoke thistle
Cirsium arvense	Canada thistle
Cirsium vulgare	bull thistle
Salsola Tragus	Russian thistle

1.1.5 Loss of Recreation Opportunities

The size and natural diversity of the landscape in the Aliso Creek watershed produces numerous opportunities for public recreation, education, and environmental awareness. Recreational activities available throughout the watershed include bird watching, fishing, hiking, jogging, surfing, golfing, and mountain biking. Many recreational parks and facilities are linked to a local watercourse within the watershed. In fact, some of these parks and facilities depend on Aliso Creek, or one of its tributaries.

In the watershed study area, residential development has increased at a rapid pace, making the existing recreation parks and facilities even more valuable for humans, as well as pockets of wildlife habitat. Orange County conducted a recreation analysis that examined opportunities throughout the watershed, identifying two major areas for detailed analysis, Aliso and Wood Canyons Regional Park and the Aliso Beach Park. These areas were selected because they have a history of lost recreation opportunities tied to Aliso Creek's poor water quality problems. As recreational opportunities are lost due to creek instability, watershed management practices become critical for preserving some of the area's parks and facilities.

1.2 Water Quality

While Aliso Creek channel instability is most pronounced in the lower reaches, poor water quality is a pervasive problem throughout the entire watershed. Surface water quality in Aliso Creek has been in a state of decline since intense development of the watershed began in the 1960s.

1.2.1 Poor Surface Water Quality

The Aliso Creek watershed has been designated by the San Diego Regional Water Quality Control Board (SDRWQCB) as a target watershed for priority water quality enhancement efforts. Aliso Creek is listed as a Category I Impaired Priority Watershed (Aliso-San Onofre, #18070301) in the California Unified Watershed Assessment List (USEPA, 2000). The section of the creek from Aliso Beach to one mile upstream is designated as impaired for high coliform concentrations under the 1998 Clean Water Act Section 303(d). The primary causes of impairment of this watershed are non-point source pollution. Residential and commercial use of fertilizers and pesticides, and pet and waterfowl waste, are most likely the primary contributors to the nutrient and potential stormwater toxic impacts and elevated bacteria load. High temperatures also contribute to poor water quality.

Photo 4: Contaminated water sign at Aliso Beach

Water temperature is a crucial factor in stream restoration for the following reasons:

- Dissolved oxygen solubility decreases with increasing water temperature, so the stress imposed by oxygen-demanding waste increases with higher temperatures.
- Temperature governs many biochemical and physiological processes in cold-blooded aquatic organisms, and increased temperatures can increase metabolic and reproductive rates throughout the food chain.
- Many aquatic species can tolerate only a limited range of temperatures and shifting the maximum and minimum temperatures within a stream can have profound effects on species composition.

- Temperature also affects many abiotic chemical processes, such as reaeration rate, sorption of organic chemicals to particulate matter, and volatilization rates.

1.2.2 Decrease/Disappearance of Aquatic Species

Recent surveys of Aliso Creek indicate a lower diversity and abundance of aquatic wildlife than is recorded in historical accounts. Small fish and some aquatic insects like the dragonfly (Macromia sp.) and the non-native mosquito fish (Gambusia affinis) still inhabit the creek's waters, but the effects of aquatic and riparian habitat degradation are clearly evident. In addition, flood events have severely impacted aquatic wildlife. For example, following the 1983 flood all remaining large fish including the bluegill (Lepomis macrochirus) and non-native bass (Micropterus spp.), and large indigenous frogs totally disappeared from the watershed (PFRD, 2000).

The degradation and loss of formerly stable riparian and floodplain areas combined with exceptional natural events have caused the elimination of critical aquatic species from the waters of Aliso Creek. Historical accounts indicate that steelhead trout may have been present in Aliso Creek until the late 1960s or early 1970s (USACE, 1997). In 1999, an aquatic life assessment was conducted by Orange County to provide a qualitative and quantitative evaluation of the existing aquatic community in Aliso Creek. Six benchmark sites, listed below, were identified and sampled.

- Lower Aliso Creek near former station ACJ01
- Aliso Creek below Sulphur Creek above Wood Canyon near ACJ01
- Aliso Creek above Sulphur Creek near ACJ01
- Upper Aliso Creek near Trabuco Road
- Lower Sulphur Creek below box culvert near SDCAM
- Upper Sulphur Creek above reservoir near SCBJ03

These sites were chosen for their ability to represent the typical range of conditions found within the Aliso Creek channel. Of these sites, Upper Sulphur Creek station exhibited the poorest habitat due to the large accumulation of organic sludge in the substrate generated by excessive algal growth. In general, most organisms still present in the creek were tolerant of degraded conditions and further underscore the fact that the water quality conditions in the watershed are poor.

1.3 Flooding

This problem is defined as the inundation of structures and other valuable property by floodwaters in such a way that monetary damage is caused. It is important to understand that ANY structure in the watershed could be inundated by water at any time. Water entering a home or business may not come from one of the obvious channels in the area, but might come from a slope upstream, a backed-up storm drain, or a burst water main. It is also in the nature of rainfall in southern California that a high-intensity storm cell may "park" itself over a neighborhood and

exceed the ability of local drains to carry the runoff away. Repair of damages caused by these events is not normally covered by homeowner's insurance. This is why any homeowner, even those far removed from an obvious storm drain or channel would benefit from obtaining a flood insurance policy. Currently, there are not many sites within the Aliso Creek watershed that are at a significant risk of flood inundation.

Photo 5: Debris on Aliso Creek Inn Golf Course after 1997 – 1998 floods.

The Aliso Creek Watershed Management Feasibility Study (USACE, 1999) included an analysis of the current flood threat in the Aliso Creek watershed. The results indicated that most structures in the watershed, and all continuously occupied residences, have a very low probability of flood inundation at this time. Several schools and at least one church are currently at the margins of the "100-year" floodplain. The 100-year floodplain encompasses an area in which the risk of inundation is, on average, one percent in any given year. This means that this size flood event is rare and should only occur, on average, approximately once in a 100-year period. It does not mean that this size flood cannot occur several times in a century, or even twice in one year. The given frequency is not a guarantee, but an estimate based on limited knowledge of past flood events. The schools and church are not currently at a high risk of inundation. It would take a major flood to threaten these institutions. During such events, it would be wise for staff from these facilities to monitor water height in the channel nearby and have a plan in place to evacuate to higher ground should water go over the banks. It does not, however, make economic sense to floodproof these structures at this time due to the high cost involved and low probability of inundation.

The single most vulnerable site in the Aliso Creek watershed is that of the Aliso Creek Inn and Resort in the canyon mouth and a small number of properties in close proximity. This site has been determined to be within a "25-year" floodplain, or to have a risk of inundation of, on average, approximately four percent in any given year. The Aliso Creek Inn and Resort has suffered significant damage during moderate to large flood events. The sites in the canyon mouth have been at risk from flood inundation since prior to development of the Flood Information Study generated by the Corps of Engineers and the County in 1973.

2 Proposed Project in Response to the Identified Problems

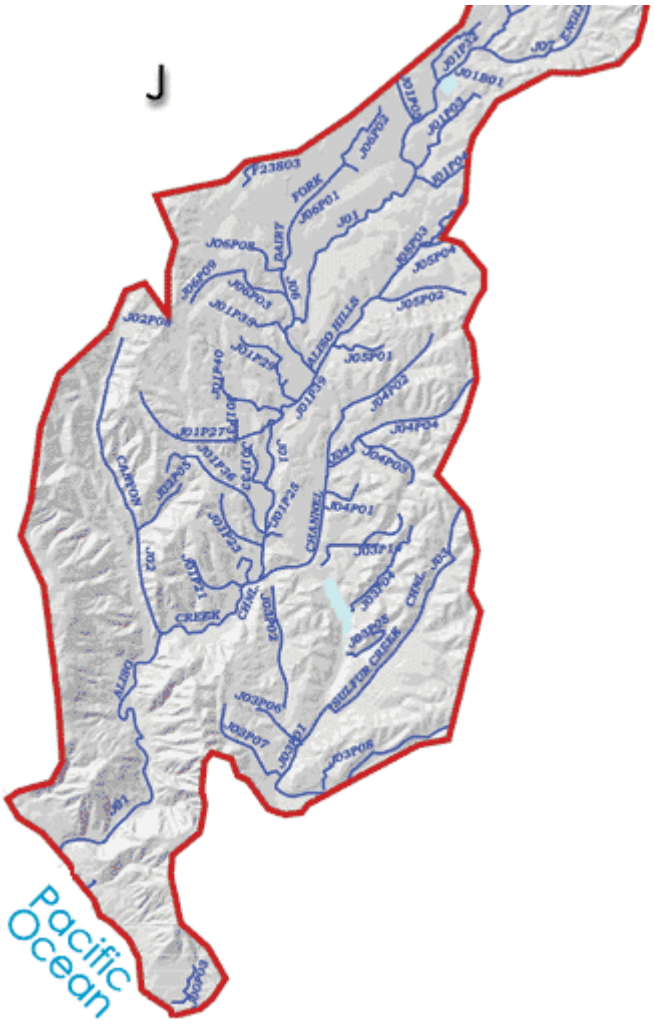
Aliso Creek Mainstem Ecosystem Restoration, Stream Stabilization, and Flood Damage Mitigation.

This management measure proposes stream restoration and stabilization of the Aliso Creek in the reach beginning just upstream of the South Coast Treatment Plant and ending at the Pacific Park Drive. The components are as follows:

- Lower Aliso Creek Stabilization Plan, a measure that includes a series of low riprap drop (or "riffle") structures with pools in between. The pools will have the long-term equilibrium slope necessary for a stable channel while the drops provide the fall necessary to meet the overall gradient of the creek. Each structure consists of a buried soil cement grade control, a grouted riprap riffle slope, a dumped riprap scour pad, and a side slope of open-celled articulated concrete revetment (e.g., Armorflex) with vegetation planted in the voids. This stabilization measure begins in the reach just upstream of the South Coast Treatment Plant and ends at the Aliso Water Management Agency (AWMA) Bridge.

- Middle and Upper Aliso Creek Stabilization Plan extends the pool and riffle concept into the Aliso Creek reach beginning just upstream of the AWMA access road bridge and ending at Normandale. The riffles are intended as a replacement for the vertical concrete drops that currently segment the stream and restrict movement of aquatic, amphibious, and terrestrial wildlife species. The existing riprap will be removed and replaced with vegetation.

- Floodplain Riparian Habitat proposes to flatten and terrace the vertical banks. In terms of stream stabilization, the modified sections will reduce stream velocities and unit discharges, and will be less erosive. In terms of restoration, the flattened slopes will provide a stable surface for plantings and for establishment of riparian and upland habitat. With a stable profile combined with flattened, terraced, and vegetated side slopes, lateral instability will be reduced.



- Off-Channel Aquatic Habitat and Riparian Restoration proposes to construct an off-channel riparian and aquatic habitat in the abandoned oxbow near the confluence of Aliso Creek and Wood Canyon. A low-flow channel would be constructed along the outside of the abandoned bend with the appropriate depth, velocity, substrate, and vegetation to provide for fish spawning and rearing. The side slopes would be vegetated with emergent, riparian, and upland species at the appropriate elevations.

- Modify Existing Grade Control Structures (Interim Measure): The two 10-foot vertical concrete drops located upstream of the AWMA road bridge result in wide shallow ponding on the upstream side. This ponding can be eliminated by cutting a low-flow triangular notch in each of the structures. This measure is a low-cost, interim solution that will immediately reduce ponding, but is not considered a permanent restoration alternative.
- Aliso Creek Riparian Revegetation Plan involves the planting of native vegetation within this reach of the Aliso Creek mainstem.

TOTAL ESTIMATED COST: $25 million

The positive effects of this management measure include:

- Reduced erosion in the Aliso-Wood Canyon reach
- Removal of barriers to wildlife movement; Increased terrestrial wildlife connectivity
- Water quality improvement by aeration and temperature reduction for the low flows
- Attenuation of certain pollutants
- Creation active floodplains that reduce risk of downstream flooding during certain storm events.
- Riparian revegetation
- Restoration of floodplain moisture
- Reestablishment of native species

***To be complete, an application package must include all of the items specified in the proposed Section 497.7 of Title 23, California Code of Regulations, Division 2, that is available on the FPCP web site (www.dfm.water.ca.gov/fpcp) by selecting the Regulations link.**

III. Minimum Qualifications

Project proposals that do not meet the minimum qualifications will not be accepted.

A. The project proposes to use any granted funds for protection, creation, and enhancement of flood protection corridors *[Water Code Section 79037(b)]*.

B. A local public agency, a non-profit organization, or a joint venture of local public agencies, non-profit organizations, or both proposes the project *[Water Code Section 79037(a)]*.

C. The project will use the California Conservation Corps or a community conservation corps whenever feasible *[Water Code Section 79038(b)]*.

D. If it is proposed to acquire property in fee to protect or enhance flood protection corridors and floodplains while preserving or enhancing agricultural use, the proponent has considered and documented all practical alternatives to acquisition of fee interest *[Water Code Section 79039(a)]*.

E. Holders of property interests proposed to be acquired are willing to sell them *[Water Code Section 79040]*.

F. If it is proposed to acquire property interests, the proposal describes how a plan will be developed that evaluates and minimizes the impact on adjacent landowners prior to such acquisition and evaluates the impact on the following *[Water Code Section 79041]*:
- ►Floodwaters including water surface elevations and flow velocities
- ►The structural integrity of affected levees
- ►Diversion facilities
- ►Customary agricultural husbandry practices
- ►Timber extraction operations

The proposal must also describe maintenance required for a) the acquired property, b) any facilities that are to be constructed or altered.

G. The project site is located at least partially in one of the following:

1. A Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA), or
2. An area that would be inundated if the project were completed and an adjacent FEMA SFHA were inundated, or

3. A FEMA SFHA, which is determined by using the detailed methods identified in FEMA Publication 37, published in January 1995, titled "Flood Insurance Study Guidelines and Specifications for Study Contractors", or
4. A floodplain designated by The Reclamation Board under Water Code Section 8402(f) *[Title 23, California Code of Regulations, Division 2, Section 497.5(a)],* or a
5. Locally designated Flood Hazard Area, with credible hydrologic data to support designation of at lease one in 100 annual probability of flood risk. This is applicable to locations without levees, or where existing levees can be set back, breached, or removed. In the latter case, levee setbacks, removal, or breaching to allow inundation of the floodplain should be part of the project.

IV. (340 points) Flood Protection Benefits

A. Existing and potential urban development in the floodplain (50)

1. Describe the existing and potential urban development at the site and the nature of the flood risk.

   Current urban development of the watershed is 74% of the total land area. The remaining undeveloped area (88%) consists of mostly regional parks and the Cleveland National Forest. The residential population of the watershed is projected to grow to 161,000 by 2020. The population was estimated to be 144,000 in 1997 (ACOE, 2001). Housing units are anticipated to increase from 53,590 in 1997 to 62,462 in 2020.

   Historic flooding and erosion damages have been estimated by the Army Corps of Engineers for this watershed (ACOE, 2001). Table A-1 below lists the damage estimates in year 2000 dollars. Note, these do not include economic losses caused by flood and erosion damages.

Table A-1
Historic Flood and Erosion Damages

Year	Flood & Erosion Damages
1969	$4,500,000
1992	$2,900,000
1995	Not Estimated
1998	$5,574,000

   It is estimated that the South Coast Water District spends approximately $48,000 to $58,000 per year on emergency bank protection and access road cleanup and repair due to flooding and erosion damages that occur each year.

2. How often has flooding occurred historically?

   Flooding and erosion damage has historically occurred in minor amounts on an annual basis.

Major events during El Nino years (1969, 1992, 1995, 1998) resulted in major damages and the need for emergency services to either evacuate people or provide essential utility support.

3. Discuss the importance of improving the flood protection at this location. Include the number of people and structures that are affected by the flood hazard, and the flood impacts to highways and roads, railroads, airports and other infrastructure, and agriculture.

   Several schools and at least one church are currently at the margins of the "100-year" floodplain. The single most vulnerable site in the Aliso Creek watershed is that of the Aliso Creek Inn and Resort in the canyon mouth and a small number of properties in close proximity. This site has been determined to be within a "25-year" floodplain, or to have a risk of inundation of, on average, approximately four percent in any given year. The Aliso Creek Inn and Resort has suffered significant damage during moderate to large flood events. The sites in the canyon mouth have been at risk from flood inundation since prior to development of the Flood Information Study generated by the Corps of Engineers and the County in 1973.

B. Flood damage reduction benefits of the project (100)

1. Does the proposed project provide for transitory storage of floodwaters? What is the total community need for transitory storage related to this water course and what percentage of the total need does this project satisfy? What is the volume of water and how long is it detained?

   The total amount of transitory storage has not been precisely calculated. Further engineering is still required, for which funding is needed. However, the pool and riffle structures proposed will result in the transitory storage of some flood waters at each pool structure. These pools will act as retention during storm events and, collectively, will reduce the risk of flood damage during extreme events.

   Additionally, and more importantly, the channel stabilization and reduction in erosion that these pool and riffle structures will create will result in long-term reduction in flooding property damage risk. Flood related damages are more likely to occur due to erosion during storm events rather than over-topping of the stream banks. Erosion is observed every year and many years erosion results in property damages and losses, particularly in the downstream reaches of the stream. The bank failure and loss to property through the erosion processes observed every year will be mitigated by this plan, and property damages minimized.

2. Describe any structural and non-structural flood damage reduction elements of the project. (Examples of structural elements are levees, weirs, detention/retention basins, rock slope-protection, etc. Examples of non-structural elements are acquisition of property for open space, acquisition of land for flood flow easements, transitory storage, relocation of structures and other flood prone development, elevating flood prone structures, flood proofing structures, etc.)

The proposed pool and riffle structures consist of a series of low riprap drop (or "riffle") structures with pools in between. The pools will have the long-term equilibrium slope necessary for a stable channel while the drops provide the fall necessary to meet the overall gradient of the creek. Each structure consists of a buried soil cement grade control, a grouted riprap riffle slope, a dumped riprap scour pad, and a side slope of open-celled articulated concrete revetment (e.g., Armorflex) with vegetation planted in the voids. This stabilization measure begins in the reach just upstream of the South Coast Treatment Plant and ends at Normandale. The riffles are intended as a replacement for the vertical concrete drops that currently segment the stream and restrict movement of aquatic, amphibious, and terrestrial wildlife species. The existing riprap will be removed and replaced with vegetation.

3. By what methods and by how much dollar value will the project decrease expected average annual flood damages?

   ACOE (2001) estimated the expected annual damages due to inundation and erosion. Average annual inundation damage was estimated to be $147,000 and erosion damage was estimated to be $188,600 for a total of $335,600. ACOE conducted frequency based damages analyses using hydrologic models and overlaying the flood overflow maps on the property maps of the watershed. The damages estimated include direct damages to property and infrastructure and the estimated costs of repairs and emergency services. The damages do not include extended economic impacts of flood and erosion events to the surrounding communities.

4. How does the project affect the hydrologic and hydraulic conditions at the project site and adjacent properties?

   a) Will the project reduce the magnitude of a flood flow, which could cause property damage and/or loss of life?

      The project will reduce erosion substantially throughout the watershed. Some water retention will occur at the pool structures. In general, the reduction in property damage has been estimated to be as follows in Table B-1:

Table B-1
Economic Benefits

Location	Current Damaging Event	New Damaging Event	Annual Economic Benefit
SOCWA effluent transmission main Location A	5 year	25 year	$900
SOCWA effluent transmission main Location B	5 year	10 year	$4,000
SOCWA effluent transmission main Location C	5 year	500 year	$4,000
ACWEP Structure	10 year	500 year	$25,500
SOCWA/AWMA Road	2 year	25 year	$5,500
Aliso Wood-Canyon		Increased user-	$102,000

Table B-1 Economic Benefits			
Location	**Current Damaging Event**	**New Damaging Event**	**Annual Economic Benefit**
Regional Park		days	

ACWEP = Aliso Creek Wildlife Habitat Enhancement Project

b) What are the effects of the project on water surface elevations during a flood event which could cause property damage and/or loss of life?

Water surface elevations are generally similar post-project during flood events. Water surface elevations during non-flood periods are higher, which allow potential fish and other animal passage with habitat enhancement and ecological restoration. This is accomplished with the pool and riffle structures, which act to stabilize velocities in the stream and prevent hydraulic jumps that currently occur. The stabilized velocities will lower some peak water elevations, but primarily prevent the high velocities at certain reaches of the stream that cause current hydraulic jumps and stream bank erosion, which results in the catalogued property damage.

c) How are flow velocities impacted by the project during a flood flow which could cause property damage and/or loss of life?

As described above, the velocities are stabilized in that they are lowered in certain reaches of the stream with the pool and riffle structures. This has been modeled by ACOE (2001) to prevent erosion at the key locations where erosion and flooding currently causes damages. The amount of property damage prevented on an annualized basis is presented in Table B-1.

C. Restoration of natural processes (60)

1. Describe how any natural channel processes will be restored (for example: for channel meander, sediment transport, inundation of historic floodplain, etc.) and describe how these natural processes will affect flood management and adjacent properties.

Some of the key benefits of this project is the restoration of natural channel processes, particularly natural channel ecosystems and habitat that have been degraded during the last several decades. Key natural process benefits include:

- Removal of barriers to wildlife movement; Increased terrestrial wildlife connectivity
- Water quality improvement by aeration and temperature reduction for the low flows
- Attenuation of certain pollutants
- Creation active floodplains
- Riparian revegetation
- Restoration of floodplain moisture

- Reestablishment of native species

The ACOE assessed the habitat functional capacity benefit of the project and concluded that an increase of 284.1 functional habitat capacity units (an increase of 125%) would occur. This will be accomplished by the creation of riparian habitat throughout the watercourse. The pool and riffle structures will result in an increased water table and stream bank moisture, which will stimulate the growth of vegetation in the riparian corridor. In additional exotic invasive species will be removed making way for native California riparian species to dominate the ecosystem. This will attract native wildlife and create a wildlife corridor throughout the riparian area.

2. Describe any upstream or downstream hydraulic or other effects (such as bank erosion or scour, sediment transport, growth inducement, etc.).

As described above, the velocity stabilization will reduce downstream scour and bank erosion. This will reduce the imbalanced sediment movement that is currently occurring and create a balanced sediment transport regime that more accurately reflects the pre-development conditions of the watershed. Of course, it is not possible to replicate pre-development sediment transport conditions exactly, but some beneficial changes will occur. Due to the velocity stabilization caused by the pool and riffle structures, stream bank erosion and undercutting will be reduced in areas where it is currently excessive, plus sediment deposition will be reduced in other areas where it currently occurs to excess. In generally, sediments will become more evenly distributed throughout the stream area and some amount of sediment will arrive at the stream mouth where littoral drift processes can replenish the beaches with that sediment. Since, the velocity stabilization will reduce the sporadic movement of sediments and create a more continuous movement of sediments during flow events in the stream, the beach replenishment processes are expected to be more stable and less sporadic.

3. If the project includes channel modification or bank protection work, will riprap or dredging be part of the design? If so, provide an analysis of potential benefits and impacts.

Some riprap is part of the design. The riprap is used to create some of the pool and riffle structures that are used to stabilize stream velocities, prevent some flooding, and reduce stream bank erosion. The design currently results great benefits from the use of the riprap for such an application. Habitat will be increased, ecological systems restored, stream bank erosion reduced in reaches of the stream where riprap is not being placed, and flooding reduced. In the locations where riprap is being placed, it is planned to be placed in a low manner so that sediments and vegetation can take hold atop the riprap.

D. Project effects on the local community (60)

1. How will the project impact future flooding on and off this site?

Flood damages in the watershed are most concentrated in Reach 4, the downstream-most reach of the watershed, where flooding occurs at several government and utility maintenance facilities, and at a golf resort that regularly receives significant damage

to both its golf course and structures. Creation of a hybrid structure (or structures) that incorporates the basic structure of a natural "pool and riffle" sequence in the channel will both meet the needs of environmental concerns, provide a significant ecosystem benefit, and will function hydraulically like a drop structure, satisfying the need to slow water velocities and reestablish an equilibrium slope.

This project will reduce future flooding potential, as described in the above paragraphs. Additionally, the reduction in erosion that occurs as a result of the project will significantly reduce property damages that occur as a result of stream flows.

2. How will the project affect emergency evacuation routes or emergency services and demands for emergency services?

   The project will not impact or impair emergency evacuation routes. Because the project reduces flood and erosion related damages, there will be less demand for emergency services during precipitation events than there currently are. During some extreme storm events, it is necessary to evacuate people from the creek area using emergency services.

3. Explain how the project will comply with the local community floodplain management ordinance and the floodplain management criteria specified in the Federal Emergency Management Agency's National Flood Insurance Program (FEMA's NFIP).

   The project fits within the FEMA NFIP. Floods will be reduced within the current flood plain, which fits within the FEMA NFIP objectives.

E. Value of improvements protected (70)

1. What is the assessed value of structural improvements that will be protected by the project?

   The assessed value of structural improvements that will be protected by the project is approximately $4.7 million. This is the 50 year present value of annual estimated damages caused by flooding and erosion. Therefore, this is the approximate replacement value of the structural improvements currently damaged by flood waters and erosion in the channel.

2. What is the estimated replacement value of any flood control facilities or structures protected by the project?

   The estimated replacement value is roughly equal to the assessed value above. The assessed value was based on the cost to replace the structural improvements that the project is designed to protect.

V. (340 points) Wildlife and Agricultural Land Conservation Benefits

Proponent should provide a statement of the relative importance of the project's wildlife and agricultural land conservation benefits. DWR will use the statement and all other project materials to assign a fraction of the total benefits to each type (wildlife (F_w) or agricultural land conservation (F_a)) so that the fractions total unity. Actual points

scored for each type of resource will be multiplied by the respective fraction for each resource, and the wildlife and agricultural scores resulting for each type of resource will be added together.

A. (340xF_w points) Wildlife Benefits

Habitat values refer to the ecological value and significance of the habitat features at this location that presently occur, have occurred historically, or will occur after restoration.

Viability refers to the site's ability, after restoration if necessary, to remain ecologically viable with minimal on-site management over the long-term, and to be able to recover from any natural catastrophic disturbances (fire, floods, etc.).

A1. Importance of the site to regional ecology (70)

1. Describe any habitat linkages, ecotones, corridors, or other buffer zones within or adjacent to the site. How are these affected by the project?

   The site is a link between the Cleveland National Forest, a relatively wild land, and the Pacific Ocean. Completing the project will link these two traditionally linked ecosystems with a riparian corridor, which traditionally existed in the streambed, but through agricultural and urban development, became lost. The project will restore this riparian habitat and replenish the ecological corridor of the stream. Much of the stream area is within regional parks and is designated as open space and recreation. This open space also acts as a buffer and ecotone between the stream and upland habitats. The project, through the removal of non-native vegetation, and re-establishment of transitional ecotones within the riparian zone will link surrounding habitats with the riparian habitat and create a balanced regional ecosystem. Additionally, the restored riparian habitat will allow migration of animals up and down the watershed through the increase in water in the pool and riffle structures, the increased riparian soil moisture, and the increased native riparian vegetation and habitat.

2. Is the site adjacent to any existing conservation areas?

   Yes. Upland of the site is the Cleveland National Forest, which is managed by the U.S. Forest Service in accordance with conservation principals. Much of the stream area flows through regional parks, which are also managed in accordance with conservation principals.

3. Describe any plans for aquatic restoration resulting in in-stream benefits.

   Substantial aquatic restoration will occur through implementation of the project. The pool areas will maintain water that will allow fish passage and the formation of aquatic habitat. These pools will also allow for the

establishment of benthic macro-invertebrate communities, which through their filtration mechanisms improve water quality and aquatic habitat for other organisms such as fish and amphibians.

4. Discuss any natural landscapes within the site that support representative examples of important, landscape-scale ecological functions (flooding, fire, sand transport, sediment trapping, etc.)?

   Throughout the stream area are examples of landscape-scale ecological functions. Sand transport currently occurs within the channel where in some portions of the channel sand and silts are eroded from the channel bottom and sides and are deposited at other portions of the channel. In fact, this sediment transport is out of balance with natural pre-development conditions. Pre-development conditions were in equilibrium in that movement of solid material within the stream did not significantly alter the nature of the stream in a short period of time. Now, in the post-development condition, erosion is so severe in portions of the channel that annual maintenance activities are required to prevent the stream from altering its course in a drastic manner in a very short period of time. The project, as proposed, will stabilize the sediment transport mechanisms to get closer to pre-development conditions, in which sediment transport occurs in a manner that does not radically alter the stream, but still deposits healthy amounts of sediments at the beach where littoral processes can replenish down-coast beaches.

   Additionally, ecological diversity will be significantly improved and enhanced through the creation of this riparian ecological system during implementation of the project. Soil moisture will be increased, exotic invasive species will be eradicated, and native vegetation will be introduced to create a diverse native habitat that attracts back threatened and endangered species, which no longer inhabit the stream.

A2. Diversity of species and habitat types (70)

1. Does the site possess any:

   i. areas of unique ecological and/or biological diversity?

   The stream is in and of itself an area of unique ecological and biological diversity. It can be much better than it currently is. In this arid portion of Southern California, Aliso Creek was one of the few streams that contained water most of the year, even during the pre-development period. There are documents describing explorers mooring their ships outside the mouth of the river and harvesting large timbers from the river area. Such large timbers could only be available from a relatively lush environment in which water was somewhat plentiful. This project will restore such conditions to this river area, and restore the ecological and biological diversity that once existed there prior to agricultural and urban development.

Once we complete this project and create the pool structure that links the reaches of the waterway with water and vegetation, endangered and threatened native species will have habitat

ii. vegetative complexity either horizontally or vertically?

Vegetative complexity will be enhanced significantly with the implementation of this project. The native riparian vegetation restored in the streambed area will give way to upland scrub to re-create the natural pre-development habitat and vegetative conditions. The creation of this habitat will attract and sustain numerous important native threatened and endangered species and create a lateral corridor from the mountains (Cleveland National Forest) to the Ocean that has not existed in the area for many decades. Such a corridor will allow for migration of species from upland areas to the ocean as has not been possible for many decades and such migration and interaction between species will allow for substantial vegetative complexity to develop along the corridor. The ecological interaction at the boundaries of different species domains, niches, and habitats will create a rich diverse environment in which multiple species can co-exist and thrive as has not been possible since before the first settlers began to develop the land.

2. Describe habitat components including year-round availability of water, adequate nesting/denning areas, food sources, etc.

   Yes, see item 5 below. A number of important species and habitat types will be developed at the site as part of the implementation of this project.

3. Describe any superior representative examples of specific species or habitats.

   Yes, see item 5 below. A number of important species and habitat types will be developed at the site as part of the implementation of this project.

4. Does the site contain a high number of species and habitat types? List and describe.

   Yes, see item 5 below. A number of important species and habitat types will be developed at the site as part of the implementation of this project.

5. Does the site contain populations of native species that exhibit important subspecies or genetic varieties historically present prior to European immigration?

   Several threatened and endangered native species and subspecies are likely to occur in the Aliso Creek watershed . Much of the following information is summarized from the USFWS Planning Aid Letter (USFWS, 1996).

   Plants

   Thread-leaved brodiaea (Brodiaea filifolia), Status: Threatened: Part of the Liliaceae family, thread-leaved brodiaea typically occurs on gentle hillsides, valleys, and floodplains in mesic, southern needlegrass grassland and alkali

grassland plant communities in association with clay, loamy sand, or alkaline silty-clay soils. Historical range extends from the foothills of the San Gabriel Mountains at Glendora, east to Arrowhead Hot Springs in the San Bernardino Mountains western foothills, and south to northwestern San Diego County.

Big leaved crown-beard (Verbesina dissita), Status: Threatened: This plant is a member of the Asteraceae family. In the United States, it is limited to rugged coastal hillsides and canyons in southern maritime chaparral and, to a lesser extent, coastal sage scrub and mixed chaparral, along a 3.2 km stretch of coastline in Laguna Beach, Orange County. Portions of its distribution extend into Aliso-Wood Canyons Regional Park, but the majority of the populations are on private land.

Invertebrates

Quino checkerspot butterfly (Euphydryas editha quino), Status: Endangered: Part of the Nymphalidae family, the quino checkerspot butterfly is closely tied to its larval host plant, dwarf plantain (Plantago erecta). The butterfly is restricted to open grassland and sunny openings within shrubland habitats of the interior foothills of southwestern California and northwestern Baja California, Mexico.

Fish

Unarmored threespine stickleback (Gasterosteus aculeatus williamsoni), Status: Endangered: Currently, only three populations of stickleback are known; 1) at the headwaters of the Santa Clara River, 2) in Shay Creek in San Bernardino County, and 3) in San Felipe Creek in San Diego County (Swift et al. 1993). The fish are generally found in the greatest abundance in pools with some flow and in shallow backwater areas, instead of in the main channel of a stream.

Tidewater goby (Eucyclogobius newberryi), Status: Endangered: the tidewater goby is restricted to coastal, brackish-water habitats from the mouth of the Smith River in Del Norte County, south to Agua Hedionda Lagoon in San Diego County (USFWS, 1999).

Steelhead Trout (Onchorynchus mykiss), Status: Locally Extinct: Steelhead trout are listed as endangered for the Southern California ESU which extends from the Santa Maria River to Malibu Creek in Los Angeles County. Orange County populations are extinct and not listed as part of the ESU. However, steelhead did formerly occur in the Aliso Creek watershed (USACE, 1998), until sometime in the 1970s.

Arroyo chub (Gila orcutti), Status: Species of Concern. The arroyo chub is adapted to surviving in the warm fluctuating streams of the Los Angeles Plain. They prefer slow moving or backwater sections of warm to cool streams with substrates of sand or mud (Moyle 1976). Their native range includes the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita rivers and also Malibu and San Juan creeks (Wells and Diana 1975).

Amphibians

Arroyo southwestern toad (Bufo microscaphus californicus),Status: Endangered: The arroyo southwestern toad was historically found throughout the drainages in southern California from San Luis Obispo to San Diego County. Currently, these toads occur in a few isolated populations, including the headwaters of the San Juan Creek watershed. The arroyo toad is restricted to rivers that have shallow, gravely pools adjacent to sandy terraces.

California red-legged frog (Rana aurora draytoni), Threatened: In the United States, this species occurs only along the Pacific Coastline, as far south as northern Baja California. Habitat for the red-legged frog includes dense riparian vegetation associated with deep still or slow moving water (Jennings et al. 1992). Heavily vegetated, terrestrial riparian areas may provide wintering habitat to estivating frogs (Rathburn et al. 1993).

Birds

Bald Eagle (Haliaeetus leucocephalus), Threatened: The southern bald eagle (Haliaeetus leucocephalus) is the only locally occurring subspecies in the study area. In southern California, this species was a formerly common resident of the Channel Islands and along the mainland coast from Santa Barbara to San Diego County. Currently, the breeding range for bald eagles is largely confined to northern California. However, bald eagles are known to inhabit Aliso Canyon (Marsh 1992). A minimum of 5 individuals have been observed in the canyon. Bald eagles typically nest in large, old growth timber or dominant live trees with open branch work near bodies of open water.

California least tern (Sterna antillarum (albifrons browni), Endangered: The breeding range of the least tern extends from Baja California, Mexico, to San Francisco Bay. Sandy beaches close to estuaries and coastal embayments with little human activity are preferred nesting sites.

Least Bell’s vireo (Vireo belii pusillus), Endangered: The least Bell's vireo inhabits riparian forests of southern California. Dense low growing thickets of willows (Salix spp.), mule fat (Baccharis glutinosa), blackberry (Rubus ursinus), mugwort (Artemisia douglasiana) or other similar species are an essential part of the habitat. Critical habitat has been proposed involving 10 areas totaling approximately 43,000 acres including portion of the following: Prado Basin-Santa Ana River (Riverside and San Bernardino Cos.), the Santa Ynez River (Santa Barbara Co.), the Santa Clara River (Ventura and Los Angeles Cos.), and Sweetwater River, Tijuana River, Coyote Creek, Jamul-Dulzura Creeks, San Luis Rey River, Santa Margarita River, and San Diego River (San Diego Co.) (USFWS 1986).

Southwestern willow flycatcher (Empidonax traillii extimus), Endangered: This species occurs in riparian habitats along rivers, streams, and other wetland habitats where dense growth of willows (Salix spp.), mulefat (Baccharis spp.), arrowweed (Pluchea spp.), buttonbrush (Cephalanthus spp.),

or other similar plants are present. Currently, in California, flycatchers exist only in small disjunct groups and have been extirpated from the lower Colorado River.

Coastal California gnatcatcher (Polioptila californica), Threatened: The gnatcatcher is an obligate resident of coastal sage scrub dominated plant communities located along the west coast from Los Angeles County to San Diego County. This endemic species appears to be most abundant in areas dominated by California sagebrush (Artemesia californica).

Western snowy plover (Charadrius alexandrinus nivosus), Threatened: The Pacific coast population of western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Foraging habitat includes wet sand, dry sandy areas above the high tide line, salt pans, spoil sites, and edges of salt marshes and salt ponds.

A3. Ecological importance of species and habitat types (100)

1. Discuss the significance of habitat types at this location and include any local, regional, or statewide benefits received by preserving or improving the area.

   The benefits are substantial. In addition to the ACOE's improvement of 125% in functional habitat capacity units based on it's Hydro-Geomorphic Modeling (HGM), the creation of a true native riparian corridor from the mountains to the sea establishes an ecological situation that has not been in existence since the first settlers began to convert the region to agricultural use.

   Species not seen in the area for many years will be able to re-establish themselves due to the creation of this habitat. The diversity of species that can flourish along this riparian corridor from the mountains to the ocean can be substantial. The creation of this native riparian ecological habitat provides significant regional benefits:

   - Creation of native riparian habitat
   - Improving water quality in the stream and ultimately at the beach. The pool structures will act as biological filters of the water due to the establishment of macro-invertebrate communities, which filter nutrients, fine sediments, and bacteria from the water. Thus, cleaner water will flow to the ocean and beach surf waters.
   - Increasing recreational opportunities through the creation of enhanced habitat for visitors to enjoy.
   - Reducing flood and erosion damages.

   Additionally, the creation of relatively rare riparian habitat from the mountains to the ocean will attract endangered and threatened species, which has a state-wide and even a national benefit. One of the causes of the endangerment and threatening of these species is the loss of habitat through agricultural and urban development. Restoring this habitat increases the

likelihood that these species can survive and the world will not lose the genetic diversity that they represent.

2. Does the site contain any significant wintering, breeding, or nesting areas? Does it fall within any established migratory corridors? What is the level of significance? How are these affected by the project?

   The following bird species either nest within the riparian habitat that will be restored, or currently migrate through the area. After restoration of the riparian habitat, such species will be more inclined to nest within the area, thus increasing the habitat value of the riparian corridor.

   - Bald Eagle (Haliaeetus leucocephalus), Threatened: The southern bald eagle (Haliaeetus leucocephalus leucocephalus) is the only locally occurring subspecies in the study area. In southern California, this species was a formerly common resident of the Channel Islands and along the mainland coast from Santa Barbara to San Diego County. Currently, the breeding range for bald eagles is largely confined to northern California. However, bald eagles are known to inhabit Aliso Canyon (Marsh 1992). A minimum of 5 individuals have been observed in the canyon. Bald eagles typically nest in large, old growth timber or dominant live trees with open branch work near bodies of open water.
   - California least tern (Sterna antillarum (albifrons browni), Endangered: The breeding range of the least tern extends from Baja California, Mexico, to San Francisco Bay. Sandy beaches close to estuaries and coastal embayments with little human activity are preferred nesting sites.
   - Least Bell's vireo (Vireo belii pusillus), Endangered: The least Bell's vireo inhabits riparian forests of southern California. Dense low growing thickets of willows (Salix spp.), mule fat (Baccharis glutinosa), blackberry (Rubus ursinus), mugwort (Artemisia douglasiana) or other similar species are an essential part of the habitat. Critical habitat has been proposed involving 10 areas totaling approximately 43,000 acres including portion of the following: Prado Basin-Santa Ana River (Riverside and San Bernardino Cos.), the Santa Ynez River (Santa Barbara Co.), the Santa Clara River (Ventura and Los Angeles Cos.), and Sweetwater River, Tijuana River, Coyote Creek, Jamul-Dulzura Creeks, San Luis Rey River, Santa Margarita River, and San Diego River (San Diego Co.) (USFWS 1986).
   - Southwestern willow flycatcher (Empidonax traillii extimus), Endangered: This species occurs in riparian habitats along rivers, streams, and other wetland habitats where dense growth of willows (Salix spp.), mulefat (Baccharis spp.), arrowweed (Pluchea spp.), buttonbrush (Cephalanthus spp.), or other similar plants are present. Currently, in California, flycatchers exist only in small disjunct groups and have been extirpated from the lower Colorado River.
   - Coastal California gnatcatcher (Polioptila californica californica), Threatened: The gnatcatcher is an obligate resident of coastal sage scrub

dominated plant communities located along the west coast from Los Angeles County to San Diego County. This endemic species appears to be most abundant in areas dominated by California sagebrush (Artemesia californica).

- Western snowy plover (Charadrius alexandrinus nivosus), Threatened: The Pacific coast population of western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Foraging habitat includes wet sand, dry sandy areas above the high tide line, salt pans, spoil sites, and edges of salt marshes and salt ponds.

3. Describe any existing habitats that support any sensitive, rare, "keystone" or declining species with known highly restricted distributions in the region or state. Does the site contain any designated critical habitat? How are these affected by the project?

   All critical habitat designations (for vireo and the gobi) are enhanced as described in the paragraphs above. Southern California native riparian habitat is in short supply. This Aliso Creek corridor, after completion of this project, will re-establish this riparian habitat from the mountains to the seal, a rarity in California, and a substantial benefit to the region and the state. Species that thrive in this habitat will finally have another location to inhabit and establish themselves and the risk of the species' extinction will be commensurately lowered.

4. What is the amount of shaded riverine aquatic (SRA) and riparian habitat to be developed, restored, or preserved?

   Over 30,000 feet of shaded riverine aquatic and riparian habitat are to be restored in this project – the major length of the Aliso Creek mainstem from Moulton Parkway to almost ½ mile upstream of the Pacific Ocean.

A4. Public benefits accrued from expected habitat improvements (60)

1. Describe present public use/access, if any. For instance, does or will the public have access for the purpose of wildlife viewing, hunting, fishing, photography, picnics, etc.

   Currently most of the stream area is surrounded by regional parks and open space. There is public access and recreation trails along much of the stream. Following implementation of the project, public access will be retained and the public will have access to greater opportunities for wildlife viewing, photography, picnics, hiking, etc.

2. Discuss areas on the site that are critical for successfully implementing landscape or regional conservation plans. How will the project help to successfully implement the plans?

   The project is part of the overall regional ecological restoration plans that will create Southern California riparian habitat along the stream corridors.

Currently, many streams in Southern California have been channelized with concrete linings. Aliso Creek is one of the few opportunities available in the region, where riparian habitat can be created in conjunction with flood control and channel stabilization. This is a unique opportunity to create regional habitat that is rare in this day and age in Southern California and that can be a state and national resource for years to come.

3. Describe the surrounding vicinity. Include the presence or absence of large urban areas, rapidly developing areas, and adjacent disturbed areas with non-native vegetation and other anthropogenic features. Do any surrounding areas detract from habitat values on the site?

   Prior to the 1930s, the Aliso Creek Watershed was largely undeveloped and the primary land use was agricultural. By the end of the 1930s, the 90 square kilometer (35 mile) watershed was merely 1% developed. Development slowly increased to 15% by the early 1970s. Development doubled over the 70s and 80s and by 1990, watershed development had increased to nearly 60%. In 1998, the 8,961 hectare (22,144 acre) watershed was approximately 74% developed, with approximately 88% of the remaining undeveloped land in regional parks and the Cleveland National Forest, leaving only approximately 1457 hectares (3,600 acres) potentially open to development. The watershed is nearly fully developed at this time.

   The resident population of the watershed is projected to grow by 16,747 by the year 2020 (from 144,304 people in 1997 to 161,051 people in 2020). Over the same time period, housing units are projected to increase by 8,872 units (from 53,590 units in 1997 to 62,462 units in 2020). Of the increase in housing units, there is a projected breakout of 5,098 new single-family units and 3,774 new multi-family units.

   Employment of watershed residents is projected to increase from 55.2% employed in 1997 to 55.8% employed in 2020. The median income of watershed residents is expected to increase from $57,751 in 1997 to $58,506 in 2020. Total employment within the watershed is projected to increase from 31,062 jobs in 1997 to 60,802 jobs in 2020, with most new jobs anticipated in the service sector.

   The dramatic rates of development in the watershed corresponded with similar time frames of increasing low flow volumes recorded by the Aliso Creek streamflow gauge at Jeronimo Road. These increased low flows not only contribute to flooding and erosion damages, but also contribute to water quality problems throughout the watershed because of sediments and pollutants carried with this urban runoff.

   Development of the watershed has resulted in the placement of structures and utility/ transportation infrastructure in the Aliso Creek floodplain where they are exposed to risks of inundation and erosion damage.

4. Describe compatibility with adjacent land uses.

The directly adjacent land use to the creek is generally park and open space. Riparian habitat restoration and flood control and stream stabilization is consistent with the use of surrounding lands as park and open space. Additionally, the residential communities throughout the watershed are clamoring for improvement of the watershed habitat value for recreation, improved water quality, lower annual maintenance costs, and a generally perceived increased quality of life associated with the presence of riparian habitat and the living stream. The stakeholder process used to develop this project resulted in a project that all stakeholders felt was consistent with surrounding current and future desired land uses.

A5. Viability/sustainability of habitat improvements (40)

1. Describe any future operation, maintenance and monitoring activities planned for the site. How would these activities affect habitat values?

   Future operation, maintenance and monitoring activities associated with this project include:

   - Periodic removal of invasive exotic species.
   - Period replanting and re-establishment of any blown out native vegetation.
   - Routine water quality monitoring. There are currently 35 water quality monitoring stations on the creek as directed by the Regional Water Quality Control Board (RWQCB)

   Implementation of the project operations, maintenance, and monitoring activities will not adversely impact habitat value at all. In fact, it will improve and enhance habitat value through the removal of exotic invasive species and monitoring of water quality.

2. Does the site contain large areas of native vegetation or is it adjacent to large protected natural areas or other natural landscapes (for example, a large stand of blue-oak woodland adjacent to public land)?

   The site could be entirely native vegetation, but currently is not. Some of the site includes native vegetation. Upland surrounding areas include native upland scrub and chaparral, which will be preserved throughout the project. Implementation of the project will improve and increase the amount of native riparian vegetation to levels not seen since before the movement of people into the area.

3. Is the watershed upstream of the site relatively undisturbed or undeveloped and likely to remain so into the foreseeable future? Describe its condition.

   The watershed at the farthest upstream reaches is largely undeveloped and within the Cleveland National Forest. This portion of the watershed is likely to remain undeveloped into the foreseeable future. This land is currently wild open space and is managed by the U.S. Forest Service. No grazing or mineral extraction takes place on the land. It is in relatively pristine condition.

4. Describe any populations of native species or stands of native habitats that show representative environmental settings, such as soil, elevations, geographic extremes, or climatic conditions (for example, the wettest or most northerly location of a species within the state.)

   This stream is currently not noted as an extreme range of any particular specie. After the project, it will be a significant habitat resource for a number of endangered and threatened species as described in this document.

B. (340xF_a points) Agricultural Land Conservation Benefits

B1. Potential productivity of the site as farmland (120)

1. Describe the quality of the agricultural land based on land capability, farmland mapping and monitoring program definitions, productivity indices, and other soil, climate and vegetative factors.

   Less than 1 percent of the watershed is used for farming or agricultural purposes. Upstream portions of the watershed are within the Cleveland National Forest which may be managed as rangeland at times by the U.S. Forest Service. The watershed area has undergone rapid development in the last 20 years and is primarily residential with some commercial use and open space/parkland.

   Aliso Creek is primarily an urban stream, although it has not been highly channelized as many Southern California urban streams have.

2. Are projected agricultural practices compatible with water availability?

   Yes.

3. Does the site come with riparian, mineral, and/or development rights?

   No.

4. Is the site large enough to sustain future commercial agricultural production?

   No.

5. Does the site contain any adverse or beneficial deed restrictions affecting agricultural land conservation?

   No.

6. Describe the present type of agricultural use including the level of production in relation to the site's productivity potential. What is the condition of the existing infrastructure that supports agriculture uses?

   There is no current agricultural use of the project site itself. A small amount of the watershed is still used for agricultural purposes.

B2. Farming practices and commercial viability (40)

1. Does the area possess necessary market infrastructure and agricultural support services?

   Yes.

2. Are surrounding parcels compatible with commercial agricultural production?

   No. Surrounding parcels are suburban residential and commercial land uses.

3. Is there local government economic support in place for agricultural enterprises including water policies, public education, marketing support, and consumer and recreational incentives?

   No. This is primarily a suburban (urban) community.

4. Describe any present or planned future environmentally friendly farm practices (no till, erosion control, wetlands avoidance, eco-friendly chemicals, recycling wastes, water conservation, biological pest control).

   Not Applicable.

B3. Need and urgency for farmland preservation measures (70)

1. Is the project site under a Williamson Act contract?

   No.

2. Describe the surrounding vicinity. Include the presence or absence of large urban areas, rapidly developing areas, low density ranchette communities, and adjacent disturbed areas with non-native vegetation and other human-induced features. Do any surrounding areas detract from agricultural values on the site?

   The surrounding vicinity is dominated by urban uses. The amount of land available for development is currently limited as the watershed approaches full "build-out". Approximately 74% of the total watershed area can now be classified as urban.

   The Aliso Creek watershed partially encompasses nine separate jurisdictions: the Cities of Laguna Beach, Laguna Niguel, Laguna Hills, Laguna Woods, Aliso Viejo, Lake Forest, and Mission Viejo; the County of Orange, the State of California; and the U.S. Forest Service. From upstream to downstream Aliso Creek originates within the Cleveland National Forest then enters the unincorporated region of Orange County (including Whiting Ranch Wilderness Park) before crossing into the jurisdiction of the City of Mission Viejo. Just south of the Foothills Transportation Corridor the creek flows into the City of Lake Forest where it remains before entering the city of Mission Viejo north of the San Diego Freeway. South of the freeway, the mainstem passes briefly through Laguna Hills, Aliso Viejo, and Laguna Niguel before entering Wood Canyon Regional Park (Orange County). The Creek remains

within the park until it exits the canyon in Laguna Beach (South Laguna) and enters the Pacific Ocean (State of California).

A mixture of land uses, including residential, commercial, open space and recreation, and agriculture, generally characterize the area. In general, jurisdictions define their existing and future land uses through their general plan and zoning ordinances. During the past 35 years, rapid urbanization and associated infrastructure (e.g. roads, underground utilities, sewer lines) have been built in the watershed. The current land use distribution illustrates the transition from a primarily agricultural landscape to an urbanized watershed.

Agriculture currently accounts for less than 1 percent of the total area while residential developments encompass just over a third. The most extensive land use is the vacant classification totaling nearly 9.880 acres or 45% of the watershed. However, this classification is a combination of dedicated open space areas (Cleveland National Forest and Aliso Wood Canyon Regional Park) and lands that are currently undeveloped but that will most likely be developed in the future. Also noteworthy is the acreage of land classified as under construction (1,813 acres), which shows the continuation of development within the watershed. Since the latest update of land use mapping by Orange County (1992), the land classified as under construction is likely now completed development and additional area is currently under construction.

According to the Orange County General Plan, future land use in the watershed will include almost complete build-out of those areas not currently designated as permanent open space. Because of the importance of not increasing the peak or volume of stormwater runoff to the creek in regards to the issues of both environmental degradation and water quality, future development is expected to be required to retain any increases in either excess peak volume of runoff onsite, until a runoff event has passed.

3. What types of conversion or development are likely on neighboring parcels? What are the land uses of nearby parcels? Describe the effects, if any, of this project to neighboring farming operations or other neighboring land uses.

   This project will not impact the current or planned uses of adjacent parcels. The project conforms to the current general plans of the affected municipalities and the County. These entities have been involved as participating stakeholders in the development of this project. As described above, surrounding parcels have either been developed, are planned for development, or are preserved as open space and recreation. Future development plans will require that parcels be developed to retain peak storm flows and prevent increases in current stream flows during storm events irrespective of whether this project is completed.

4. Describe the relationship between the project site and any applicable sphere of influence.

   The project site is a riparian corridor that receives runoff from surrounding properties. It also creates environmental value through the retention of water within the riparian corridor and the creation of habitat for biological resources, which are enjoyed directly and indirectly by the surrounding communities. The project will improve the habitat value and reduce erosion and flooding damages in the stream and enhance the sphere of influence around the riparian corridor.

5. Is the agricultural land use on the project site consistent with the local General Plan? Does the General Plan demonstrate commitment to long-term agricultural conservation.

   The planned agricultural use on the project site is consistent with the General Plan. The General Plans do not call for increased agricultural uses, but rather for preservation of the lands in the regional parks along with urban development.

B4. Compatibility of project with local government planning (50)

1. Is the agricultural land use on the project site consistent with the local General Plan? Does the General Plan demonstrate commitment to long-term agricultural conservation?

   Land use of the project site is consistent with the local General Plan. The local general plan does not designate the site as agricultural. The Watershed Management Plan provides overall guidance to the various public agencies for long-term conservation actions.

2. What is the present zoning and is the parcel developable?

   The present zoning of the parcels are generally parks and open space.

3. Is there an effective right to farm ordinance in place?

   No

4. Is the project description consistent with the policies of the Local Agency Formation Commission?

   Yes. A local stakeholder group was formed that consisted of the affected municipalities, county agencies, water districts, wastewater districts, other utility districts, environmental advocacy groups, citizens, and other special interest groups. This stakeholder group developed the project as it is currently proposed through a series of facilitated discussions over four years led by the County and ACOE technical staff. The stakeholder group achieved consensus on all the project elements while the technical agency staff developed feasibility studies of the alternatives developed by the stakeholders. This led to the current project, which is technically feasible, meets the cost/benefit

criteria of participating agencies, and meets the policies of local agencies and other stakeholders.

5. Will the project as proposed impact the present tax base?

   No. No homes will be lost. No planned development will be stopped due to the project. The project will reduce flooding and erosion damage and increase habitat values. The project will make way for recreation areas to be established adjacent to the riparian corridor. This should increase surrounding property values and increase the ultimate tax revenue from the existing development in the area.

B5. Quality of agricultural conservation measures in the project (50)

1. For agriculture lands proposed for conservation, describe any additional site features to be conserved that meet multiple natural resource conservation objectives, including wetland protection, wildlife habitat conservation, and scenic open space preservation where the conservation of each additional site feature does not restrict potential farming activities on the agriculture portions of the site.

   The project is restoring riparian wetland habitat. This project does not restrict potential farming activities. However, the project site itself is currently not used for agricultural purposes nor does the current general plan for the area call for agricultural uses. Wetlands are protected. Wildlife habitat is restored and conserved. Scenic open space is created through the formation of the riparian corridor. Although this particular project does not specify the development of recreational areas adjacent to the stream, related projects do call for the development of such open-space style recreational areas.

2. What are the present biological/ecological values to wildlife? How are these values affected by the proposed project?

   Native Southern California vegetation and wildlife will obtain an improved riparian corridor where they will be encouraged to establish their habitat and this habitat will be conserved. Active planting of native species, eradication of exotic invasive species, and creation of sufficient stream bank moisture to sustain habitat will take place. All this will create as wildlife corridor that has not existed in the region for over 50 years.

3. Is the project proponent working with any local agricultural conservancies or trusts?

   No.

4. Does conservation of this site support long-term private stewardship of agricultural land? How does this proposal demonstrate an innovative approach to agricultural land conservation?

   No. The project site itself is not currently used for agriculture nor does the current general plan designate the area as future agricultural. Upstream of the

project within the watershed is the Cleveland National Forest, which may be managed as agricultural rangeland by the National Forest Service.

5. Without conservation, is the land proposed for protection likely to be converted to non-agricultural use in the foreseeable future?

   The land is currently not used for agricultural purposes. A portion of the upstream watershed is within the Cleveland National Forest, which is managed by the U.S. Department of Agriculture National Forest Services and may be used in part for rangeland leases. Downstream portions are either developed or reserved as parklands. Further areas of the downstream portions may undergo further urban development, but are not currently used for agricultural purposes.

VI. (320 points) Miscellaneous Benefits and Quality of Proposal

A. Size of request, other contributions, number of persons benefiting, cost of grant per benefited person (40)

Estimated Total Project Cost	$25,000,000
Amount of FPCP Grant Funds Requested	$5,000,000
Amount of Local Funds Contributed	$2,750,000
Amount of In-kind Contributions	$1,000,000
Additional Funding Sources (ACOE)	$16,250,000
Number of persons expected to benefit	1,309,000
Flood Protection Corridor Funds per person benefited.*	$3.82

(* Count as beneficiaries those receiving flood benefits, recreational users of habitat areas protected by the Project, and consumers of food products from agricultural areas conserved by the Project.)

B. Quality of effects on water supply or water quality (90)

1. Will water stored by the project provide for any conjunctive use, groundwater recharge, or water supply benefit?

   No

2. Does the project fence cattle out?

   No

3. Does the project pass water over newly developed fresh water marsh?

   No

4. Does the project trap sediments?

Minor amounts of sediments may be retained at the pool structures, but are likely to be moved during higher flow events from those pools structures to the mouth of the stream, where littoral processes will move such sediments down-coast and replenish beaches.

C. Quality of impact on underrepresented populations or historic or cultural resources (60)

1. Does the project benefit underrepresented populations? Explain.

   No. The surrounding communities do not have significant proportions of underrepresented populations.

2. Are historical or cultural resources impacted by the project? Explain.

   Generally, cultural and historical resources within the project area have been identified and will not be adversely impacted by the project due to the implementation of cultural resource protection mitigation measures. Such mitigation measures will include pre-construction surveys, monitoring during construction, and removal and preservation of any discovered resources that would be impacted by construction activities.

   In the El Toro USGS Quad area, Aliso Creek incorporates additional flow from an unnamed northern fork, which joins Aliso Creek at a point where El Toro Road makes a sharp bend. With the exception of a small, unsurveyed section of Aliso Creek, the southwest corner of the quadrangle map is known to be heavily populated with prehistoric archeological sites. There is a relatively uniform distribution of sites along Aliso Creek beginning near El Toro Road between the Atchison, Topeka, and Santa Fe Railroad and Trabuco Road. A strong clustering of sites is evident near the point where the three drainages meet the eastern boundary of the El Toro Quad. Aliso Creek has about 25 sites on or adjacent to it. Overall, approximately 33 archeological sites may be involved with any potential alternatives in this area. Generally speaking, the sites within this area are very low density, highly disturbed, and non-descript.

   Three sites along Aliso Creek may be important if they have not already been excavated. Prehistoric site CA-ORA-176, is categorized as a typical Milling Stone Horizon site about 6 m (20 ft) above the west bank of Aliso Creek. The site produced a number of stone tools as well as two sharks teeth. The site was recorded as being 152 m (500 ft) long by 61 m (200 ft) wide. Site CA-ORA-859, located adjacent to the west bank of Aliso about an 0.2 km (1/8th mile) north of Trabuco road is recorded as being 400 x 400 m in size. The artifact inventory includes 10 metate fragments, 15 mano fragments, 3 scrapers planes, 1 hammer stone, numerous utilized flakes, debitage and shatter. Ted Cooley, the site's recorder remarked that chipping debris found in rodent extrusions indicate possible depth. The site was depicted as being mostly intact when recorded in 1980. The third site that may still have intact deposits is CA-ORA-743, located in a flat area between Aliso Creek and north of

Cañada Road in Section 13. The site, tested and recorded by SRS in 1978, was estimated to be approximately 80 cm deep. ORA-743 was described as "a large surface of artifacts, parameters as yet undefined." The site's recorder recommended salvage or preservation.

An additional tributary of interest to this project is English Canyon Creek. English Canyon has three sites within the designated area of interest.

In the San Juan Capistrano USGS Quad area, twenty-four prehistoric sites have been recorded along this extensive reach of Aliso Creek. Of those 24 sites only 8 exhibit a proximity to the Creek to a point where they could be affected by project related construction or planting. The sites closest to Aliso Creek are: CA-ORA-398, east of the Creek; ORA-389, adjacent to the Creek; ORA-423, bisected by the junction of Aliso and Sulphur Creeks; ORA-580, near Aliso Creek; and ORA-1357, along the east bank of Aliso Creek. With the exception of ORA-1357, which was recorded in 1993 the rest of the sites were recorded in the 1970s.

Only two of these sites had important deposits. ORA-1357 is recorded as 200 x 25 m in size and contains numerous Cottonwood Triangular and leaf-shaped projectile points, a scraper, a biface preform, small chopper, bifacial mano, scraper plane, core fragment, and a graver. The site's recorder determined the site to be a hunting camp with episodic occupation. The site is directly across the creek from ORA-389 which is 137 m x 46 m. Both sites were subsequently test excavated for the San Joaquin Hills Transportation corridor. Both sites were probably misrecorded and were actually one site. It is highly unlikely that the other sites are now currently in existence. They were recorded because specific projects required a survey before construction, or they are only minimal surface deposits.

D. Technical and fiscal capability of the project team (60)

1. Does the project require scientific or technical expertise, and if so, is it provided for in the grant proposal?

   Yes. ACOE is a key partner in the project and will provide a substantial proportion of funding, technical expertise, and project management expertise. Additionally, the County of Orange Watershed and Coastal Resources Division of the Public Facilities & Resources Department (PFRD) will provide in-kind support services.

2. Grant funds will be available in phases. What monitoring and reporting mechanisms are built into your administrative plan to track progress, initiation, and completion of successive phases?

   The team consists of the ACOE and the County of Orange. ACOE will conduct all design activities and construction activities. The County of Orange will provide in-kind services and funding to ACOE. The ACOE project management processes will be used to track the phased milestone progress, and completion of successive phases.

A cost-loaded Critical Path Method (CPM) schedule for design and construction will be developed prior to initiation of the project and will be updated on a monthly basis to compare actual progress against baseline. Within the schedule will be milestones. Milestones will include key deliverables required by granting agencies and grant disbursement request procedures to authorize further phases of work. No phase of work will be initiated unless funding for that phase of work is appropriately secured.

Corrective actions will be developed to keep the project on schedule and within budget. Decisions on corrective actions will be made on a monthly basis depending on the progress measured and how it compares with the baseline CPM schedule. Costs will be tracked on an accrual basis – as a purchase order or work authorization is issued by the project manager, the cost will be considered accrued and entered into the cost-loaded CPM progress schedule to compare against the budgeted cost. A Cost Performance Index (CPI) will be developed each month to evaluate if each major task and the project are performing within budget or are excessively over or under budget. Under budget tasks suggest that work is not being accomplished and the task could fall behind schedule. Corrective actions will be developed and implemented monthly as necessary.

3. Please outline your team's management, fiscal and technical capability to effectively carry out your proposal. Mention any previous or ongoing grant management experience you have.

   ACOE and the County of Orange staff have managed many billions in dollars of infrastructure development work similar in technical nature to the proposed project. The County of Orange staff, in particular, has managed many millions in dollars of grant-funded capital public works. The County is organizationally experienced in accounting for expenditures and managing projects in accordance with various grant criteria.

E. Coordination and cooperation with other projects, partner agencies, and affected organizations and individuals (80)

1. List cost sharing and in-kind partners and any other stakeholders involved with your project and indicate the nature of their contribution, if any. Address the team's ability to leverage outside funds.

   ACOE is providing 65% of the total funding for this project. ACOE will provide 50% of the planning, engineering, permitting, and design funding and sufficient construction funding to fund 65% of the total project. The County of Orange is providing the remaining 35% of the funding necessary to complete the project, through in-kind services, and cash disbursements to ACOE.

2. Does your project overlap with or complement ongoing activities being carried out by others (such as CALFED, the Sacramento and San Joaquin River Basins Comprehensive Study, the Delta levee program,

local floodplain management programs, the Reclamation Board's Designated Floodway program, or a multiple objective regional or watershed plan)? If so, indicate any coordination that has taken place to date or is scheduled to take place in the future.

Yes, the watershed restoration approach utilized in this project complements the efforts of the CalFed Watershed Committee as well as the goals of the San Joaquin River Basins Comprehensive Study. Informal coordination and contact has been made with Martha Davis (CalFed) and Jim Van Haun (San Joaquin River).

3. Will this application, if approved, begin the next phase of a previously approved project or advance an ongoing project substantially toward completion?

   Yes. The planning, engineering, and design stage of this project has been approved and the County of Orange has been providing in-kind services to ACOE for this stage of the project. Additional funding is needed by the County of Orange and partners to complete the planning, engineering and design stage of this project. ACOE is fully funded for their portion of the planning, engineering and design stage.

4. Describe how the proposal demonstrates a coordinated approach among affected landowners, local governments, and nonprofit organizations. If other entities are affected, is there written support for the proposal and a willingness to cooperate?

   A stakeholder outreach process was used to develop this project. An Aliso Creek Study Management Team was formed that included all affected municipalities, the County of Orange, ACOE, local water and utility districts (including wastewater), regulatory and resource agencies, non-profit groups with an interest in the watershed, and private individuals. Over the course of several years this Team met and discussed the issues facing the watershed and potential solutions to the watershed issues. ACOE and County of Orange provided engineering and technical support to the stakeholder process in order to develop technically feasible solutions and perform engineering evaluations of stream and environmental processes.

   This group developed consensus-based solutions that met all their needs. The project developed is believed to be the best solution that meets all the stakeholders needs and will be able to obtain all necessary permits from resource agencies. This project represents a truly integrated stakeholder-led watershed management project.

Thank you for taking the time and effort to fill out this application. Please send one hard copy with required signatures by 3:00 p.m. on February 14th, 2003 to:

Earl Nelson, Program Manager
Flood Protection Corridor Program
Division of Flood Management
1416 9th Street, Room 1641
Sacramento, CA 95814

Please also send an electronic copy by 3:00 p.m. on February 14th, 2003 to:

Bonnie Ross at bross@water.ca.gov

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