

1998-61054

Sponsored Programs Office/OVCR, University of California, Davis
DATA SHEET FOR CONTRACT AND GRANT PROPOSALS
 (Interim)

See Sponsored Research Manual Section 230 for Instructions

1 Principal Investigator: James F. Quinn		2 Academic Title: Professor		3 SSN* 001-36-6408	
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7 Expedited Review: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		8 Department Pickup: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, call: 4-9171 Mike McCoy	
9 Administering Department/Unit: Center For Ecological Health Research			10 Dept Account Number:		11 Mail ID Code: CEHR
12 Department Contact: Mike McCoy			13 Telephone: (530) 754-9171		14 Fax: 530-752-3350
15 Project Title: Fire Ecology and Watershed Health					
16 Sponsor Name and Address: Calfed Bay-Delta Program Office 1416 Ninth Street, Suite 1155 Sacramento, CA 95814 Attn:					
17 Sponsor Deadline: Date: 07/02/98		<input checked="" type="checkbox"/> Receipt Date <input type="checkbox"/> Postmark Date		18 PI Disclosure of Financial Interest: <input type="checkbox"/> Non-Government <input type="checkbox"/> PHS/NSF <input checked="" type="checkbox"/> Not Applicable	
19 Type of Request: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Renewal <input type="checkbox"/> Supplement <input type="checkbox"/> Revision Current Award Number (if applicable):			20 Response to RFP, RFA, RFQ: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach a copy)		
21 Project Type: <input type="checkbox"/> Basic Research <input checked="" type="checkbox"/> Applied Research <input type="checkbox"/> Developmental Research <input type="checkbox"/> Public Service <input type="checkbox"/> Other Research <input type="checkbox"/> Training <input type="checkbox"/> Equipment <input type="checkbox"/> Other					
22 Place(s) of Performance: Campus Location(s): 2120 Wickson Off-Campus Location(s): Various field plot sample and training sites					
23 Subcontract(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Institution(s):					
24 Project Period: From: 01/01/99 To: 12/31/00		25 Amount Requested: \$268,247		Matching Funds: \$605,490	

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Proposal Title: Fire, Ecology and Watershed Health
 Applicant Name: THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
 Mailing Address: UC Davis, Davis, CA 95616
 Telephone: 530-752-2075
 Fax: 530-752-5432

Amount of funding requested: \$ 268,247 for two years

Indicate the Topic for which you are applying (check only one box). Note that this is an important decision: see page ___ of the Proposal Solicitation Package for more information.

- Fish Passage Assessment
- Floodplain and Habitat Restoration
- Fish Harvest
- Watershed Planning/Implementation
- Fish Screen Evaluations - Alternatives and Biological Priorities
- Fish Passage Improvements
- Gravel Restoration
- Species Life History Studies
- Education

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Delta
- Suisun Marsh and Bay
- San Joaquin River Mainstem
- Landscape (entire Bay-Delta watershed)
- Sacramento Tributary: _____
- East Side Delta Tributary: _____
- San Joaquin Tributary: _____
- Other: _____
- North Bay: _____

Indicate the primary species which the proposal addresses (check no more than two boxes):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass

COVER SHEET (PAGE 2 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Indicate the type of applicant (check only one box):

- | | |
|--|---|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input checked="" type="checkbox"/> University | <input type="checkbox"/> Other: _____ |

Indicate the type of project (check only one box):

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> Planning | <input type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input checked="" type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

By signing below, the applicant declares the following:

- (1) the truthfulness of all representations in their proposal;
- (2) the individual signing the form is entitled to submit the application on behalf of the applicant (if applicant is an entity or organization); and
- (3) the person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section II.K) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

(Signature of Applicant)

Fay Yee
Contract & Grant Analyst

Fire Ecology Information for California (CALFED areas)

Applicant/Principal Investigator:

James Quinn, University of California at Davis

Co-Applicants/Principal Investigators:

**Mike McCoy, University of California at Davis
Kevin Shaffer, Todd Keeler-Wolf, California Department of Fish and Game
Neil Sugihara, Mark Borchert, Jo Ann Fites-Kaufman, U.S. Forest Service
John Sawyer, Humboldt State University**

Collaborators:

**California Department of Fish and Game
U.S. Forest Service, Pacific Southwest Region
Humboldt State University
University of California, Davis
California Department of Parks and Recreation
California Department of Forest and Fire Protection
California Polytechnic University, San Luis Obispo
U.S. Forest Service, Pacific Southwest Research Station
U.S. National Park Service
California Native Plant Society
Nature Conservancy**

Executive Summary

A. Project Title and Applicant Name

Title: Fire Ecology Information for California (CALFED areas)

Principal Investigator: Jim Quinn, U.C. Davis

B. Project Description and Primary Biological/Ecological Objectives

Fire has a major effect on California watersheds and their attendant aquatic and terrestrial ecosystems. Landowners, land managers, and scientists need to better understand the role of fire to make more informed land conservation, restoration and management decisions. At present fire ecology and management information is in the form of unsynthesized published and unpublished information. In its current form it is not readily available for managers. We are going to develop four inter-related venues for this type of information: 1) an internet web page that contains fundamental fire ecology, restoration and management information an annotated bibliography of fire ecology information; 2) update of **Manual of California Vegetation** to add fire ecology information; 3) a text on fire ecology of California; and 4) additions of key California biota species to the Fire Effects Information System (FEIS) database.

Change in fire regime and associated effects and risk of wildland fires is the primary stressor that is the focus of this project. Fire is an essential disturbance factor to the vast majority of vegetation communities in California. In turn, fire effects 1) changes in hydrology (i.e., water transport, quality); 2) sedimentation and erosion; and 3) wildlife occurrence and distribution. These ecological effects are seen from the uppermost watersheds to the San Joaquin Delta-San Francisco Bay. All upland and riparian habitat types are encompassed and include the following priority habitats: instream aquatic habitat, seasonal wetland and aquatic habitat, and shaded riverine aquatic habitat. Also, the proposed project directly relates to CALFED's Wildfire Stressor and indirectly contributes to a better understanding of, at minimal, the following stressors: Alteration of Flow and Other Effects of Water Management- *hydrographic alterations and migration barriers*; Floodplain and Marshplain Changes- *elimination of fine sediment replenishment*; Channel Form Changes (upstream); Water Quality- *increased nutrient and carbon input*; and Land Use- *forestry and agricultural practices*.

Fire or fire suppression directly affects vegetation in watersheds and riparian areas and therefore vegetation function and the integrity of aquatic habitats through shading, energy inputs, bank and soil stabilization. The primary priority species that will benefit from this project are all runs of chinook salmon and steelhead trout. It will also benefit a number of secondary priority species, including migratory birds.

The benefit to ecosystem restoration programs is that a comprehensive treatment of what fire patterns need to be restored or mimic will be developed and made widely available to the professional community and the public. Such a restoration resource is not currently available.

C. Approach/Tasks/Schedule

We are proposing four complementary and inter-related initiatives to provide this information in a readily accessible form. They are: 1) to revise Manual of California Vegetation to include information on fire ecology for each plant series; 2) to author and publish a text on the fire ecology of California ecosystems; 3) to develop an information base in the form of an Internet web page that contains fundamental fire ecology, restoration and management information; and 4) to update the FEIS to include additional key California plant species. This project encompasses all of California, including the CALFED area. This project will be jointly funded from other, multiple sources.

D. Justification for Project and Funding from CALFED

This project is applicable to the following CALFED priority species, habitats and stressors:

- a) primary priority species: all runs of Chinook Salmon and Steelhead trout;
- b) secondary priority species: migratory birds and Sacramento fall run Chinook Salmon;
- c) priority habitats: instream aquatic habitat, seasonal wetland and aquatic habitat, and shaded riverine aquatic habitat;
- d) priority stressors: alteration of flow and other effects of water management-*hydrographic alterations and migration barriers*; floodplain and marshplain changes-*elimination of fine sediment replenishment*; channel form changes (upstream); water quality- *increased nutrient and carbon input*; and land use- *forestry and agricultural practices*.

E. Budget Costs and Third Party Impacts

The overall cost of the project is \$873,737 of which we are requesting funding for \$268,247 from CALFED.

F. Applicant Qualifications

The principal investigator, Jim Quinn of U.C. Davis, is a leader in the area of development of information resources on the environment and has extensive experience in aquatic system ecology. The other co-applicants have expertise in fire ecology, information systems development, environmental education and resource management.

G. Local Support/coordination with Other Programs/Compatibility with CALFED Objectives

This proposed project is supported by several State and federal signatories of CALFED, including U.S. Forest Service, National Resources Conservation Service, Bureau of Land Management, and Department of Fish and Game. In addition, several other organizations, including the University of California, Davis, Humboldt State University, California Polytechnic State University, San Luis Obispo, National Parks Service, The Nature Conservancy, and the California Native Plant Society, support and will participate in one or more of the four project components.

Project Description

A. Project Description and Approach

Fire has a major effect on California watersheds and their attendant aquatic and terrestrial ecosystems. Landowners, land managers, and scientists need to better understand the role of fire to make more informed land conservation, restoration and management decisions. At present fire ecology and management information is in the form of un-synthesized, published and unpublished information. In its current form it is not readily available for managers. We are proposing four complementary, and inter-related initiatives to provide this information in a readily accessible form. They are: 1) to revise **Manual of California Vegetation** (MCV) to include information on fire ecology for each plant series; 2) to develop and publish a text on fire ecology of California ecosystems; 3) to develop an information base in the form of an internet web page that contains fundamental fire ecology, restoration and management information; and 4) to update the U.S. Fire Effects Information System (FEIS) to include additional key California plant species. This project encompasses all of California, including the CALFED area. This project will be jointly funded from other, multiple sources. Descriptions of the individual four products and intended approaches follow.

Part I. Revision of Manual of California Vegetation (Sawyer and Keeler-Wolf, 1996) to include disturbance factors of vegetation series, including fire.

In 1997, Dr.'s John Sawyer and Todd Keeler- Wolf published the Manual of California Vegetation, which was the culmination of a multi-agency effort to develop a comprehensive and widely accepted vegetation classification system for California. The authors are planning to revise the manual to add descriptions of disturbance factors for each series, such as flooding, and fire. The authors recognize that fire is a primary disturbance factor that has a profound influence on nearly all of the plant communities and ecosystems of California. This revision will include a brief narrative description of literature on disturbance regimes and effects on dominant and characteristic plant species. This will include life history characteristics and fire effects information for individual dominant and characteristic species related to the plant community. This product is designed for the broadest audience and would be a critical environmental education tool for watershed restoration, salmonid habitat management and restoration (i.e. fire risk). Indirectly, it will provide a tool for sediment management. The University of California, with support from the Biological Resources Division of the USGS, has recently created an on-line version of the MCV (see <http://endeavor.des.ucdavis.edu/cnps/>). Changes will also be incorporated into the on-line version, so that the resultant fire risk information is available to anyone with a Web browser.

Part II. Develop and publish a text on fire ecology, restoration and management of California ecosystems

This proposal is for a comprehensive fire ecology text for California that addresses fire regimes, fire history, fire effects and especially how they can be applied to management. This will encompass a multiple-scales treatment that provides flexibility for managers in applying the information to meet their needs. The multiple scales include: 1) bioregions (i.e. Sierra Nevada), 2) zones (i.e. alpine, subalpine, montane), 3) landscapes, 4) formations, subformations, and series. Some of the dominant formations in the Sierra Nevada bioregion, montane zone include: conifer forests, deciduous hardwood forests, riparian forests,

chaparral, and wetlands. Examples of series in the Sierra Nevada bioregion described in the Manual of California Vegetation are: Douglas fir - Douglas-fir - ponderosa pine. Landscapes encompass the varied series and formations that occur together across broader areas, such as watersheds.

There is nothing like this text currently available. Managers must seek the information from widely scattered and often obscure sources. Fire ecology information is often interpreted inconsistently and incorrectly by managers because of difficulty in accessibility and lack of consistent synthesis by fire ecology experts.

The text will include:

- *major elements of fire regimes (frequency, intensity, seasonality, size, diversity)*
- *landscape relationships and patterns*
- *fire effects*
 1. *plant species*
 2. *plant communities*
 3. *landscapes*
- *management and restoration interpretations:*
 1. *interrelationships between effects on vegetation and soils, sediment, water quality and quantity*
 2. *interrelationships between effects on vegetation and wildlife habitat and species*
 3. *air quality*
 4. *fuel loading and fire hazard*

Our approach is collaborative and inclusive of scientists, managers, and researchers, which is unprecedented. This includes professionals and managers from agencies and organizations including: California Department of Fish and Game; U.S. Forest Service, Pacific Southwest Region; Humboldt State University; University of California, Davis; California Department of Parks and Recreation; California Department of Forest and Fire Protection; California Polytechnic University, San Luis Obispo; U.S. Forest Service, Pacific Southwest Research Station; U.S. National Park Service; California Native Plant Society; and The Nature Conservancy. The principal coordinators and editors are: Neil Sugihara, Kevin Shaffer, Mark Borchert, and Jo Ann Fites-Kaufman.

Part III. Develop an information base in the form of an Internet web page that contains fundamental fire ecology, restoration and management information.

This will provide a network of linkages and information from the MCV, text, FEIS, bibliographies and any other available relevant information (i.e. manager bulletin board). It will include linkages to and synthesis of fire ecology information by major vegetation classifications commonly used by managers, such as Wildlife Habitat Relations (WHR), Bailey, Holland, and CALVEG that are not included in the text or MCV update. It will include links to other relevant web sites such as fire behavior modeling sources, and fire effects monitoring data sets and sites (i.e. maintained by the National Park Service). The linkages and subject matter will be continuously updated as new research and information becomes available.

Our approach is to provide a dynamic, flexible, and easily accessible tool for managers needing information on fire ecology, fire effects, fire restoration, and management implications.

Part IV. Update the U.S. Fire Effects Information System to include additional key California species (plant, animal, invertebrate, fungi, microbes).

Currently, the U.S. Forest Service maintains an electronic database and website of fire effects information for individual plant and animal species called the Fire Effects Information System (FEIS). The intent of FEIS is to be a comprehensive, synthesized reference for the effects of fire species. Given the rich flora of California, relatively few species are represented currently in the FEIS database. This is a heavily used resource and adding more dominant and characteristic species (i.e. plants, insects, amphibians, anadromous fishes) would greatly improve the utility to managers.

Our approach is to contract with the US Forest Service Missoula Fire Lab that maintains the database to add additional species. Species locations, authorities, and special status, if any, will be linked through the biodiversity databases maintained by UC Davis (<http://ice.ucdavis.edu>) and the CalFlora database (<http://galaxy.cs.berkeley.edu:8080:8080/calflora/>)

B. Proposed Scope of Work

The specific tasks, the associated deliverables, timelines, and budget are summarized in Table 1. The literature search, including development of an annotated bibliography is central to all of the four major portions of work. It provides common information source for the development of the four different venues of information on fire ecology.

This is planned as a cooperative project with multiple sources of funding. In the Scope of Work table, funds requested from CALFED are shown in black and the total funds sought in gray. We are seeking multiple sources of funding because the project encompasses all of California, not just the CALFED area.

C. Location and/or Geographic Boundaries of the Project

The project encompasses all of California, since a comprehensive, synthetic, and consistent treatment of fire ecology is needed for restoration efforts throughout California, not just the CALFED area. Only covering fire ecology information in the CALFED area would provide an arbitrary boundary for fire ecology information.

D. Expected Benefit(s)

Change in fire regime and associated effects and risk of wildland fire is the primary stressor that is the focus of this project. Fire is an essential disturbance factor to the vast majority of vegetation communities in California. In turn, fire effects 1) changes in hydrology (i.e., water transport, quality), 2) sedimentation and erosion, and 3) wildlife occurrence and distribution. These ecological effects are seen from the uppermost watersheds to the San Joaquin Delta-San Francisco Bay. All upland and riparian habitat types are encompassed and include the following priority habitats: instream aquatic habitat, seasonal wetland and aquatic habitat, and shaded riverine aquatic habitat. Also, the proposed project directly relates to CALFED's Wildfire Stressor and indirectly contributes to a better

understanding of, at minimal, the following stressors: Alteration of Flow and Other Effects of Water Management- *hydrographic alterations and migration barriers*; Floodplain and Marshplain Changes- *elimination of fine sediment replenishment*; Channel Form Changes (upstream); Water Quality- *increased nutrient and carbon input*; and Land Use- *forestry and agricultural practices*.

Fire or fire suppression directly affects vegetation in watersheds and riparian areas and therefore vegetation function in integrity of aquatic habitats through provision of shade, energy inputs, and bank and soil stabilization. The primary priority species that will benefit from this project are all runs of chinook salmon and steelhead trout. Secondary priority species that will benefit include migratory birds and many amphibians and non-anadromous native fish.

The benefit to ecosystem restoration programs is that a comprehensive treatment of what the fire patterns are that need to be restored or mimic will be developed. Such a restoration resource is not currently available. For example, information on season of burning and historic fire return intervals are key to restoring fire as an ecosystem process to reverse or minimize the negative impacts of altered fire regimes on biological resources. A recent watershed analysis of the Deer, Mill, Antelope watersheds that are critical because they contain the last native salmon runs in the Sierra Nevada, showed that fire risk is one of key upper watershed issues that threaten the salmon run. Sediment inputs from roads and mechanical treatments are another primary issue so that restoration of fire is likely to be the most appropriate restoration tool to reduce fire risk because of reduced mechanical impacts on soils. However, there is insufficient information compiled to rapidly or comprehensively develop and support a sound restoration plan based on reintroduction of fire that would reduce catastrophic fire risk in these key watersheds. This project would provide the tools to make fire restoration plans more scientifically defensible and rapid.

With a long history of fire suppression in the CALFED area, there has been a tendency to narrow the range of variability in riparian ecosystems by excluding fire. For example, conifer densities are increased in riparian areas of many upper watersheds, at the expense of deciduous hardwood trees and shrubs that are key for energy and nutrient inputs to streams. This problem persists and is becoming exacerbated because of lack of information on the historic role of fire and the effects of fire in riparian areas and the surrounding landscapes. Recent experience with catastrophic wildfires such as the Cottonwood burn on the Tahoe National Forest is that the riparian areas often burn more severely than any other areas on the landscape, in part because of their topographic configuration—they form chimneys that accelerate fire behavior. In many upper-watersheds, there is a tendency to avoid treatments to restore fire to riparian areas because of their sensitivity. However, this exacerbates the likelihood of drastic reduction in riparian function in the event of catastrophic fire.

We need to understand the dynamics of ecosystems to manage them. This project will benefit many watershed management and restoration projects. It will provide a series of tools for environmental education on the importance and role of fire in restoration of watershed and riparian condition and function.

E. Background and Ecological/Biological/Technical Justification

Currently, there is no alternative sources of comprehensive information on fire ecology of California ecosystems. Information is widely scattered and not readily accessible.

Further, when watershed assessments are conducted, interpretations on fire ecology are inconsistent, due to a lack of access to comprehensive information and fire ecology expertise to synthesize complex and incomplete information.

The specific ERPP objectives addressed include:

Objective	Page	Objective	Page
<i>I. Suisun Marsh/North San Francisco Bay Ecol. Zone</i>		<i>IX. Yolo Basin Zone</i>	
chinook salmon	114	upper watershed	331
steelhead trout	114	resident fish species	335
<i>II. Sacramento River Zone</i>		chinook salmon	336
chinook salmon	160	steelhead	336
steelhead	163	<i>X. Eastside Delta Tributaries Zone</i>	
<i>III. N. Sacramento Valley Zone</i>		seasonal wetlands	359
land use	186	land use	365
chinook salmon	188	chinook salmon	366
steelhead	190	steelhead	367
<i>IV. Cottonwood Creek Zone</i>		resident fish	368
upper watershed processes	201	waterfowl	369
chinook salmon	203	<i>XI. San Joaquin River zone</i>	
steelhead	205	seasonal wetlands	386
<i>V. Colusa Basin Zone</i>		agricultural lands	387
upper watershed processes	214	land use	389
agricultural lands	215	chinook salmon	391
<i>VI. Butte Basin Zone</i>		waterfowl	395
upper watershed	239	<i>XII. East San Joaquin Basin</i>	
ag lands	241	upper watershed processes	426
land use	243	land use	431
chinook salmon	245	chinook salmon	432
steelhead	247	steelhead trout	432
<i>VII. Feather River/Sutter Basin Zone</i>		waterfowl	436
upper watershed	270	neotropical migratory birds	436
ag lands	271	<i>XIII. West San Joaquin Basin Zone</i>	
land use	273	upper watershed processes	448
chinook salmon	276	perennial grassland habitat	449
steelhead	277	resident fish species	451
waterfowl	277	California red-legged frog	451
<i>VIII. American River Basin Zone</i>		neotropical migratory birds	452
upper watershed	307	waterfowl	452
seasonal wetlands	307		
perennial grasslands	309		
ag lands	309		
chinook salmon	312		
steelhead	313		

The project is in the formative stages. A group of fire ecologists in California have been meeting for over a year and have developed a strategic plan for synthesizing current state of knowledge on fire ecology for use by land managers for restoration and for environmental education. The strategic plan includes the four products identified in this proposal. Only conceptual work has been completed on each of the four products at this time.

F. Monitoring and Data Evaluation

This is not applicable to this type of project.

G. Implementability

There are no issues regarding implementability with this project. There are no other similar CALFED projects that need to be coordinated with. We have established a broad set of collaborators so that we are coordinating with other agencies or persons that would be likely to propose similar projects in the future.

Costs and Schedule to Implement Proposed Project

A. Budget Costs

This is a project of large magnitude that is not practical to fund from any one source. Further, it will benefit a vast array of environmental education needs, watershed assessments, and watershed restoration plans across multiple ownerships. We have already gathered commitments from the California Department of Fish and Game and the U.S. Forest Service for some of the funding needed. In addition, we have tentative commitments for funding support from the other agencies participating as collaborators. The specific breakdown of costs are shown in Table 2.

B. Schedule Milestones

Milestones for the different tasks are shown in Table 1.

C. Third Party Impacts

This is not applicable with this proposal.

Applicant Qualifications

A. Planned Organization of Staff and Resources

The U.C. Davis Information Center for the Environment will provide the Principal Investigator and administrative staff. The co-applicants from other agencies will work by subcontract with the U.C. Davis Center.

B. Key Individual Biosketches

James Franklin Quinn - Principal Investigator James Quinn has degrees from Harvard (A.B. Biology, 1973) and the University of Washington (PhD, Zoology, 1979). He joined the faculty of the University of Pennsylvania in 1979, and moved to the University of California at Davis, where he is now a full professor, in 1981. He has worked on a wide variety of problems in community ecology and conservation biology, including the effects of land use patterns and habitat fragmentation on biodiversity and extinction risks, strategies for inventory and monitoring studies, the design of systems of nature reserves, and estimation of demographic rates for fisheries management. He is the author of more than 60 scholarly publications.

Professor Quinn is a principal investigator for the California Rivers Assessment (CARA), a program to identify and assess the status of critical aquatic resources in California and to provide a database center and access point for environmental data from a variety of collaborating organizations. More than 28 federal, state, and private resource agencies and environmental organizations are partners in the program. CARA works closely and shares computer facilities with the EPA Center for Ecological Health Research. Projects in the Center under Professor Quinn's direction include estimation of extinction risks, modeling biological effects of hydrological processes in several California rivers and lakes, and developing decision support tools for resource managers.

Professor Quinn also co-directs the Information Center for the Environment (ICE) at the University of California at Davis. Under his direction, the Center has developed the principal biodiversity databases for the U.S. National Parks (NPFauna and NPFlora), UNESCO Biosphere Reserves worldwide (MABFauna and MABFlora) and a variety of public and private lands in California. The Center works closely with over 20 public agencies on monitoring information, databases, and Web services (<http://ice.ucdavis.edu>) involving biodiversity, water quality, and land use, both in California and internationally.

Professor Quinn serves on a number of advisory groups for California environmental policy, including the Source Water Assessment Program, the Clean Water Action Plan, the Science Coordinating Committee for the California Biodiversity Council. He is a member of the board of the Point Reyes Bird Observatory. He also advises several national and international data standards groups, including the National Biological Information Infrastructure, Office of Science and Technology Policy, the UNESCO Biosphere Reserve Inventory and Monitoring program, and the Inter Americas Biological Information Network.

Jo Ann Fites-Kaufman Jo Ann recently received her PhD from the University of Washington from the College of Forest Resources, in the area of Ecosystem Analysis. The primary focus of her research was on historic fire ecology of mixed-conifer forests on the Eldorado National Forest, including riparian areas. She has worked for the U.S. Forest

Service as an ecologist in the Sierra Nevada for over 10 years. She was a primary collaborator on the old-growth assessment for the Sierra Nevada Ecosystem Study Project. She has participated in watershed assessments across numerous upper watersheds in the CALFED area including: Deer, Mill and Antelope watersheds on the Lassen National Forest; several watersheds in the Feather River Basin; several watersheds in the American and Consumes Basins; and several watersheds in the Yuba Basin. She is co-leader of the Forest Health Pilot Monitoring program, tracking effects of forest health and fire restoration treatments on the Lassen and Plumas National Forests, and the Sierraville District of the Tahoe National Forest. Currently, she is conducting a fire history study across the Plumas National Forest, including some riparian areas. She is in the progress of developing vegetation classifications for meadow and forested riparian areas across the northern Sierra Nevada.

Mike McCoy Mike is Co-Director of the Information Center for the Environment at UC Davis, one of the largest public natural resource information providers in the United States. Mr. McCoy has 23 years of experience in information development and education. He has developed over 500 short courses and conferences including the co-development, with Dr. Harold Biswell, of the University Extension course sequence on fire ecology. Over the past 3 years he has served as Principal Investigator, Co-Principal Investigator or Academic Administrator for \$2.1 million in contracts and grants awarded to projects involving the aggregation and dissemination of environmental information via the internet. His current projects include development of the interagency fire ecology information technology forum, studies of watershed health, and the development of solutions to data aggregation and distribution problems for the California Biodiversity Council, the National Park Service, the United Nations Man and the Biosphere (MAB) and the National Science Foundation Long Term Ecological Research project (LTER). He is supported by a staff of 23 programmer analysts, biologists, GIS specialists and ecologists in this work.

Kevin E. Shaffer Kevin has a M.A. from Humboldt State University in Biology and B.S. in biology from Cal Poly, San Luis Obispo. He has spent the last six years working in plant conservation, natural community and endangered species protection, and fire ecology for the Department of Fish and Game. Prior to that, he taught at biology at HSU and biology and environmental sciences at Redwood Community College and conducted research on mammal and salmonid biology through HSU. Currently, Kevin is working on various multiple agency coordination efforts related to fire ecology and fuels management.

Neil G. Sugihara Neil has a PhD in Wildland Resource Science from the University of California, Berkeley, and an MA in Biology, and BA in Botany from Humboldt State University. He has over 15 years of experience as an ecologist and botanist with the USDA Forest Service, University of California, Berkeley, Humboldt State University and USDI National Park Service. He has over 20 publications many aspects of plant ecology in California including fire ecology, watershed rehabilitation, forest ecology, plant community ecology and mycorrhizal associations. Neil is currently the fire ecologist with the US Forest Service for California. Current interests are development of the field of an interagency and university fire ecology work group and a series of university level fire ecology classes.

Table 1

ID	Task Name	Start	1st Half		2nd Half		1st Half		2nd Half		1st Half		2nd Half			
			Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
1	Create Common Bibliography	Fri 4/1/99														
2	Literature Search	Fri 4/1/99														
3	Manual of California Vegetation	Mon 3/1/99														
4	Regional Meeting 1	Mon 3/1/99														
5	Regional Meeting 2	Thu 5/27/99														
6	Regional Meeting 3	Tue 8/24/99														
7	Regional Meeting 4	Fri 11/18/99														
8	Regional Meeting 5	Wed 2/16/00														
9	Regional Meeting 6	Mon 5/15/00														
10	Regional Meeting Reviews	Thu 3/4/99														
11	FEIS	Thu 7/1/99														
12	Identify and Prioritize Species	Thu 7/1/99														
13	Populate Database	Mon 1/3/00														
14	Create Fire Ecology In California Reference	Fri 1/1/99														
15	Develop Interagency Outline	Fri 1/1/99														
16	Individual Sections Authored	Thu 4/1/99														
17	Peer Review	Thu 7/1/99														
18	Editorial Review	Thu 8/23/99														
19	Publish	Mon 10/2/00														
20	Create Web Info-Base	Fri 10/1/99														
21	Design	Fri 10/1/99														
22	Populate	Mon 1/3/00														
23	Feedback	Mon 7/3/00														
24	Redesign	Tue 10/3/00														
25	Complete	Mon 1/1/01														

Project: Fire and Watershed Health
Data: Thu 7/2/98

Task		Milestone		Rolled Up Split		External Tasks	
Split		Summary		Rolled Up Milestone		Project Summary	
Progress		Rolled Up Task		Rolled Up Progress			

	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor	Service Contracts	Material and Acquisition Contracts	Miscellaneous and other Direct Costs	In-kind Match Share	USFS and CDFG	CalFed	Total
1) Literature Search and Review	4,313	\$ 179,249	\$ 35,117		\$ 4,208	\$ 6,554	\$ 81,294	\$ 70,299	\$ 70,299	\$ 221,892
2) Manual of California Vegetation Revision.	2,966	\$ 157,164	\$ 30,898		\$ 3,894	\$ 6,319	\$ 71,598	\$ 61,914	\$ 61,914	\$ 195,426
3) Web Infobase	4,970	\$ 216,524	\$ 41,610		\$ 4,849	\$ 3,637	\$ 112,439	\$ 64,821	\$ 97,231	\$ 274,491
4) Fire Effect Information Service	-		\$ 9,450		\$ -	\$ 50,000	\$ -	\$ 59,450		\$ 59,450
5) Fire Ecology in California Reference	2,912	\$ 96,593	\$ 19,301		\$ 2,841	\$ 5,528	\$ 44,872	\$ 38,803	\$ 38,803	\$ 122,477
Total	15,161	\$ 649,530	\$136,376	\$0	\$15,792	\$72,038	\$310,203	\$295,287	\$268,247	\$873,737

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Personnel Services				Total	In-kind Match Share	USFS and CDFG	Calfed Share
Job Title	Hours	Rate	Total				
Salary							
Program Representative	615	\$ 18.29	\$ 11,249	\$ 11,249		\$ 5,624	\$ 5,624
Program Assistant	683	\$ 14.06	\$ 9,607	\$ 9,607		\$ 4,803	\$ 4,803
Editor	2,050	\$ 9.76	\$ 20,000	\$ 20,000		\$ 10,000	\$ 10,000
USFS Ecologists	4,100	\$ 20.00	\$ 82,000	\$ 82,000		\$ 41,000	\$ 41,000
USFS Fire Ecologist	2,050	\$ 34.15	\$ 70,000	\$ 70,000	\$ 70,000		
UCD Professor VII	513	\$ 41.46	\$ 21,250	\$ 21,250	\$ 21,250		
CSUS Professor	1,025	\$ 31.71	\$ 32,500	\$ 32,500		\$ 16,250	\$ 16,250
Academic Research Director	1,563	\$ 38.05	\$ 59,479	\$ 59,479		\$ 27,208	\$ 32,271
PGR	2,050	\$ 13.92	\$ 28,536	\$ 28,536		\$ 11,414	\$ 17,122
Programmer Analyst	2,050	\$ 21.95	\$ 45,000	\$ 45,000		\$ 18,000	\$ 27,000
CDFG Biologist	2,050	\$ 26.83	\$ 55,000	\$ 55,000	\$ 55,000		
CDFG Ecologist	2,050	\$ 31.71	\$ 65,000	\$ 65,000	\$ 65,000		
USFS Ecosystem Ecologist	1,025	\$ 25.67	\$ 26,316	\$ 26,316		\$ 13,158	\$ 13,158
			Total Salaries	\$ 525,935	\$ 211,250	\$ 147,458	\$ 167,228
			Benefits				
Program Representative			\$ 2,643	\$ 2,643		\$ 1,322	\$ 1,322
Program Assistant			\$ 2,258	\$ 2,258		\$ 1,129	\$ 1,129
Editor			\$ 4,700	\$ 4,700		\$ 2,350	\$ 2,350
USFS Ecologists			\$ 19,270	\$ 19,270		\$ 9,635	\$ 9,635
USFS Fire Ecologist			\$ 16,450	\$ 16,450	\$ 16,450		
UCD Professor VII			\$ 4,994	\$ 4,994	\$ 4,994		
CSUS Professor			\$ 7,638	\$ 7,638		\$ 3,819	\$ 3,819
Academic Research Director			\$ 13,978	\$ 13,978		\$ 6,394	\$ 7,584
PGR			\$ 6,706	\$ 6,706		\$ 2,682	\$ 4,024
Programmer Analyst			\$ 10,575	\$ 10,575		\$ 4,230	\$ 6,345
CDFG Biologist			\$ 12,925	\$ 12,925	\$ 12,925		
CDFG Ecologist			\$ 15,275	\$ 15,275	\$ 15,275		
USFS Ecosystem Ecologist			\$ 6,184	\$ 6,184		\$ 3,092	\$ 3,092
			Total Benefits	\$ 123,595	\$ 49,644	\$ 34,653	\$ 39,298
			Total Personnel Services	\$ 649,530	\$ 260,894	\$ 182,110	\$ 206,526
			Operating Expenses				
Long Distance Telephone Calls/Month	12	\$ 100	\$ 1,200	\$ 1,200		\$ 600	\$ 600
Duplication of Literature	20000	\$ 0.10	\$ 2,000	\$ 2,000		\$ 652	\$ 1,348
USFS Contract FEIS Species Data	50	\$ 1,000.00	\$ 50,000	\$ 50,000		\$ 50,000	

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Workshop Room Rental Days	20	\$	300	\$	6,000	\$	6,000	\$	3,000	\$	3,000		
Supplies for Workshops	10	\$	309	\$	3,094	\$	3,094	\$	1,547	\$	1,547		
Air Transportation	20	\$	170	\$	3,400	\$	3,400	\$	1,700	\$	1,700		
Other Travel	100												
	In-State Travel	Miles/Days											
	Mileage	10000	\$	0.32	\$	3,199	\$	3,199	\$	1,600	\$	1,600	
	Per Diem	37	\$	85	\$	3,145	\$	3,145	\$	1,573	\$	1,573	
	Total Operating Expenses					\$	72,038	\$	-	\$	60,671	\$	11,367

Property Acquisitions

Project Data Storage - Network System Hard Drive and Adapter	\$	2,000	\$	2,000	\$	1,000	\$	1,000					
Project Data Entry Stations	\$	5,000	\$	5,000	\$	1,748	\$	3,252					
Internet Computer Server	\$	4,292	\$	4,292	\$	1,622	\$	2,670					
Printer/Plotter	\$	2,000	\$	2,000	\$	1,000	\$	1,000					
Digitizing Equipment	\$	2,500	\$	2,500	\$	1,250	\$	1,250					
	Total Property Acquisitions					\$	15,792	\$	-	\$	6,620	\$	9,172

Overhead	Base		Rate							
	\$ 217,893		18.9%							
	\$ 242,781		Total Overhead	\$	136,376	\$	49,309	\$	45,886	\$
\$ 260,894		Grand Total	\$	873,737	\$	310,203	\$	295,287	\$	268,247

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I-012252

APPLICATION FOR FEDERAL ASSISTANCE

TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction Preapplication <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction <input type="checkbox"/> Non-Construction		2. DATE SUBMITTED 7/2/98	Application Identifier
		3. DATE RECEIVED BY STATE	State Application Identifier
		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICATION INFORMATION			
Legal Name: Regents, University of California		Organizational Unit Department of Environmental Science and Policy	
Address (give city, county, state, and zip code) Office of Research UC Davis Davis, CA 95616		Name and telephone number of the person to be contacted on matters involving this application (give area code) <u>Administrative Contact</u> <u>Technical Contact</u> Mike McCoy James F. Quinn (916) 754-9171 CONTRACTUAL: Fay Yee, 530-752-2075 fyyee@ucdavis.edu	
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 9 4 - 6 0 3 6 4 9 4		7. TYPE OF APPLICANT: (enter appropriate letter in box) <input type="checkbox"/> 1	
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in boxes(es) A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify):		A. State H. Independent School Dist. B. County I. State Controlled Institution of Higher Learning C. Municipal J. Private University D. Township K. Indian Tribe E. Interstate L. Individual F. Intermunicipal M. Profit Organization G. Special District N. Other (Specify):	
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: TITLE: NONE		9. NAME OF FEDERAL AGENCY: Calfed	
12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.) California		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Fire Ecology and Ecosystem Health	
13. PROPOSED PROJECT: Start Date: 1/1/98 Ending Date: 6/30/01		14. CONGRESSIONAL DISTRICTS OF: a. Applicant 3rd b. Project All California	
15. ESTIMATED FUNDING: a. Federal \$136,039 b. Applicant \$ c. State \$ d. Local \$ e. Other \$ f. Program Income \$ g. TOTAL \$136,039		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? a. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: N/A DATE _____ b. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.		17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation. <input checked="" type="checkbox"/> No	
Typed Name of Authorized Representative Fay Yee		Contracts & Grants Analyst 530-752-2075	
Signature of Authorized Representative		7/2/98	

Previous Editions not Usable

Standard Form 424 (REV 4-88)
 Prescribed by OMB Circular A-102

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Standard Form 424A

OMB Appr. No. 0348-0044

BUDGET INFORMATION - Non-Construction Programs

SECTION 2 BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Fire Ecology and Ecosystem Health				\$268,247		\$268,247
2.						
3.						
4.						
5. TOTALS	N/A					

SECTION 3 FUND CATEGORIES

6. OBJECT CLASS CATEGORIES	GRANT PROGRAM, FUNCTION OR ACTIVITY					Total
	(1) Year 1	(2) Year 2	(3) Year 3	(4) Year 4	(5)	
a. Personnel	\$83,614	\$83,614			\$167,228	
b. Fringe Benefits	\$19,649	\$19,649			\$39,298	
c. Travel	\$2,436	\$2,436			\$4,872	
d. Equipment	\$6,502	\$2,670			\$9,172	
e. Supplies	\$3,247	\$3,247			\$6,495	
f. Contractual						
g. Construction						
h. Other						
1. Total direct Charges (sum of 6a-6h)	\$115,449	\$111,617			\$227,065	
f. Indirect Charges	\$20,591	\$20,591			\$41,182	
k. TOTALS (sum of 6l and 6j)	\$136,039	\$132,208			\$268,247	
7. PROGRAM INCOME						

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SECTION D - FORECASTED CASH NEEDS					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.					
9.					
10.					
11.					
12. TOTALS (sum of lines 8 and 11)					
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$136,039	\$38,162	\$33,108	\$33,108	\$31,660
14. NonFederal					
15. TOTAL (sum of lines 13 and 14)					
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.					
17.					
18.					
19.					
20. TOTALS (sum of lines 16 - 19)					
SECTION F - OTHER BUDGET INFORMATION (Attach additional Sheets if Necessary)					
21. Direct Charges: \$227,065		22. Indirect Charges: \$41,182			
23. Remarks:					

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ASSURANCES — NON-CONSTRUCTION PROGRAMS

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§ 4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§ 1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§ 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. § 3601 et seq.), as amended, relating to non discrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-644) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted program. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply with the provisions of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§ 276a to 276f), the Copeland Act (40 U.S.C. § 276c and 40 U.S.C. §§ 874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 327-333) regarding labor standards for federally assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C. § 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§ 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§ 4801 et seq.) which prohibits the use of lead based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act of 1984.
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	TITLE Fay Yee Contract & Grant Analyst
APPLICANT ORGANIZATION THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	DATE SUBMITTED JUL 2 1988

CERTIFICATIONS REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS; DRUG-FREE WORKPLACE REQUIREMENTS AND LOBBYING

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 26, "Governmentwide Debarment and Suspension (Nonprocurement)" and "Governmentwide Requirements for Drug-Free Workplace" and 15 CFR Part 28, "New Restrictions on Lobbying." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Commerce determines to award the covered transaction, grant, or cooperative agreement.

1. DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

As required by executive Order 12543, Debarment and Suspension, and implemented at 15 CFR Part 26, for prospective participants in primary covered transactions, as defined at 15 CFR Part 26, Sections 26.105 and 26.110--

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. DRUG-FREE WORKPLACE REQUIREMENTS Alternate 1. Grantees Other Than Individuals

As required by the Drug-Free Workplace Act of 1988, and implemented at 15 CFR Part 25, Subpart F, for grantees as defined at 15 CFR Part 26, Sections 25.605 and 25.610--

A. The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about--

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will--

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title to the Director, Office of Federal Assistance, Office of Federal Assistance and Management Support, HCHB Room 6054, U.S. Department of Commerce, Washington, DC 20230. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted--

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

B. The grantee shall insert in the space provided below the steps for the performance of work done in connection with the specific grant:

Place of Performance: (Street address, city, county, state, ZIP code):

DAVIS, Yolo, CA 95616

Check if there are workplaces on file that are not identified here.

Alternate II. Grantees Who Are Individuals

As required by the Drug-Free Workplace Act of 1989, and implemented at 15 CFR Part 25, Subpart F, for grantees, as defined at 15 CFR Part 26, Sections 26.605 and 26.610 -

(A) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant.

(B) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the Director, Office of Federal Assistance, Office of Federal Assistance, Office of Federal Assistance and Management Support, HCHB Room 6054, U.S. Department of Commerce, Washington, DC 20230. When notice is made to such a central point, it shall include the certification number(s) of each affected grant.

3. LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 23, for persons entering into a grant, cooperative agreement or contract over \$100,000, or loan guarantee over \$150,000, as defined at 15 CFR Part 23, Sections 23.105 and 23.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant,

the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-L.L. "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-L.L. "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification(s).

NAME OF APPLICANT

THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA

AWARD NUMBER AND/OR PROJECT NAME

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Fay Yoo
Contract & Grant Analyst

SIGNATURE



DATE

JUL 2 1998