

C1035

ENTRIX

Since 1984 - Environmental Excellence

ENTRIX, Inc.
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0332303

July 2, 1998

Mr. Dick Daniels
CALFED Bay-Delta Program Office
1416 Ninth Street, Suite 1155
Sacramento, California 95814

Re: Response to Proposal Solicitation Package for May 1998

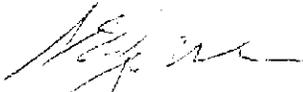
Dear Mr. Daniels:

We are pleased to submit this proposal entitled "Restoring Shallow Water Habitat for Delta smelt and Splittail in the Sacramento-San Joaquin Delta: Measuring Success" for potential funding through CALFED. The funds available from CALFED and the interest in the value of shallow water habitat indicate that many proposals will need to be evaluated for funding in this area. There is presently incomplete knowledge and understanding of the value, or even the range of values provided by shallow water habitat. This proposal would advance the formation of a scientifically based tool for CALFED to use in evaluation processes by formally incorporating the ongoing work in the shallow water habitat field into a structured classification scheme.

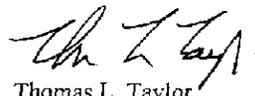
We would appreciate your thoughtful consideration of this proposal as it moves through the evaluation process. If there are any questions from any of the reviewers on the technical review panel or integration panel, I would encourage them to contact either of us by phone at (925) 935-9920.

Sincerely,

ENTRIX, Inc.



Dr. Andy Jahn
Senior Marine Biologist



Thomas L. Taylor
Senior Aquatic Biologist

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LLLLL
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LLLLL

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Restoring Shallow Water Habitats for Delta smelt and Splittail in the Sacramento - San Joaquin Delta: Measuring Success

Proposal Title:
Applicant Name: Andrew E. Jahn, Ph.D., ENTRIX, Inc.
Mailing Address: 590 Ygnacio Valley Road, Suite 200, Walnut Creek, CA 94596
Telephone: (925) 935-9920
Fax: (925) 935-5368

Amount of funding requested: \$276,000 for 1 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.

- Topics for application: 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):

- Geographic areas: 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):

- Species: 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):

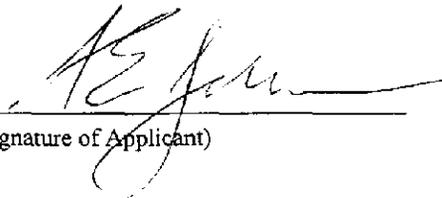
- | | |
|--|---|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input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

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

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

II. EXECUTIVE SUMMARY

Title: Restoring Shallow Water Habitats for Delta smelt and Splittail in the Sacramento-San Joaquin Delta: Measuring Success

Submitted By: ENTRIX, Inc.

Description: This proposal will assist CALFED in selecting restoration projects by defining the fishery resources and functions supported by various shallow water habitat types in the Sacramento-San Joaquin Delta and Suisun Bay. The five regions selected for investigation favor information relevant to **delta smelt** and **splittail**, which are CALFED priority species. CALFED will be evaluating proposals competing for millions of dollars in restoration funds. We propose to deliver a classification and rating system that will be a useful tool by which to choose projects that will favor species of high conservation priority without making the Delta an even better place for their competitors and predators. This proposal would help to identify and fill gaps in the emerging knowledge base on the functional value of shallow habitat types by dovetailing with ongoing studies and monitoring programs.

Approach/Tasks/Schedule: In coordination with other ongoing efforts, including the ongoing CDFG review of past shallow water studies, gaps in the regional and habitat coverage of shallow water habitat types will be identified. Tasks will include a summary of existing and emerging information, choice of study sites, exploratory sampling by multiple gear types, data analysis, and information exchange through reports and a workshop.

Of the seven "Priority Habitats" listed in the Proposal Solicitation Package, three are especially relevant to floodplain restoration in the Delta and include: Tidal perennial aquatic (freshwater), Shaded riverine aquatic, and Midchannel island and shoal habitat. Seasonal wetlands are well covered by the ongoing work of Sommers and others in the north Delta, and so are not duplicated in this proposal. In addition, a habitat not targeted for restoration but believed to be important for delta smelt, the shallow open waters of Suisun Bay, will be included.

The three main products of this work will be 1) a summary of the methods and results of past and ongoing efforts to define fish use of shallow habitats in the Bay and Delta, 2) a classification of shallow habitats based on fish community composition, and 3) a numerical scoring system for evaluating the habitat potential of shallow environments based on measurable physical features (including the physical structures provided by vegetation).

The review and integration of existing information will be completed within the first month of the contract, hopefully by late winter/early spring of 1999. The field portion of the program would then consist of surveys in spring, summer, and fall. A draft report would be completed in early 2000, with the workshop and final report finished in late winter or early spring. The purpose of the workshop will be to receive feedback from

other investigators and stakeholders on the proposed systems of classification and scoring of habitats.

Justification for Project and Funding by CALFED: *The objective of the CALFED restoration initiative is to improve and increase habitats and ecological functions to support sustainable populations of diverse and valuable species. Changes in land use have altered Delta habitats from their poorly known but arguably shallower historic character, and these changes may be in some way reversible to the benefit of priority species. There is limited understanding of how existing or restored habitats function to benefit any particular species. There are compelling reasons to proceed in an adaptive management mode, in which emerging information will be used to refine and redirect the restoration effort. The justification for this project is the amount of funding that will be spent on shallow water habitat restoration in the upcoming funding cycles. There will be an ongoing need for better information on the net benefits to Delta fish species from a given restoration option.*

Budget Costs and Third Party Impacts: *The total proposed budget is \$275,918. We do not anticipate any third party impacts. Ongoing investigations would proceed unhindered, although we would solicit cooperation and selected information as input to the proposed data analysis.*

Applicant Qualifications: *ENTRIX has 14 years of experience in fish habitat studies, with a strong emphasis in freshwater and anadromous species. Messrs. Tom Taylor and Wayne Lifton, both project advisors, have decades of experience in the Delta and are acquainted with most of the workers in the field. These ENTRIX advisors are joined by Dr. Michael McGowan of San Francisco State University, currently involved in shallow water habitat evaluation in the Delta. The proposed project manager, Andy Jahn of ENTRIX, has over 20 years of postdoctoral experience in adult and larval fish sampling and identification, data management, study design, and statistical analysis; he recently completed a resource-based habitat evaluation in the vicinity of the Port of Oakland. He is joined by Messrs. Kim Laur and Chris Herrala, both with extensive sampling experience in the Bay and Delta.*

Data Evaluation: *A variety of descriptive and exploratory statistical tools will be applied by Dr. Jahn.*

Coordination with other Programs/Compatibility with CALFED Objectives: *Coordination with ongoing programs is a specific task in this proposal, and continuing liaison with other programs is a primary objective of the project management team. CALFED management has determined that monitoring, assessment, and applied research efforts are a critical component of the adaptive management process. The proposed project fits into this overall objective.*

III. TITLE PAGE

a. **Title:** Restoring Shallow Water Habitats for Delta smelt and Splittail in the Sacramento-San Joaquin Delta: Measuring Success

b. **Submitted By:** Andrew E. Jahn, Ph. D., Principal Investigator
ENTRIX, Inc.
Suite 200
590 Ygnacio Valley Road
Walnut Creek, CA 94596
Telephone/Fax: (925)-935-9920/(925)-935-5368
E-mail: ajahn@ENTRIX.com

c. **Company Type:** Private Type S Corporation

d. **Tax Identification Number:** 76-0265862

e. **Participants/Collaborators:**

Mr. Thomas L. Taylor: ENTRIX, Inc.

Mr. Wayne S. Lifton: ENTRIX, Inc.

Dr. Michael F. McGowan:
San Francisco State University

Mr. Kim Laur: ENTRIX, Inc.

Mr. Chris W. Herrala: ENTRIX, Inc.

IV. PROJECT DESCRIPTION

a. Project Description and Approach

Among the CALFED restoration objectives is one to "Improve and increase aquatic habitats so that they can support the sustainable production and survival of native and other desirable estuarine and anadromous fish in the estuary." An obvious challenge is to relate the physical structures that can be restored in a given location to the net biological benefits that can be reasonably expected to accrue from them. This proposal is to fill gaps in the existing and emerging knowledge base on fish use of shallow water habitat types in the Delta and Suisun Bay. Five general regions of the Delta will be sampled, as described in a later section. The chief product will be a tool that CALFED can use to rate and prioritize proposed restoration projects on the basis of likely benefits to fish. This will consist of a classification and scoring system based on easily measured or predicted physical habitat characteristics that is in turn based on quantitative and qualitative biological information.

Of the seven "Priority Habitats" listed in the Proposal Solicitation Package, three that are especially relevant to floodplain restoration in the Delta include: **Tidal perennial aquatic** (freshwater), **Shaded riverine aquatic**, and **Midchannel island and shoal habitat**. Seasonal wetlands, listed in the Package and relevant to restoration, are well covered by the ongoing work of Sommers and others in the north Delta, and so are not covered here. In addition, a habitat not targeted for restoration but at the same time thought to be important to delta smelt, the **shallow open waters of Suisun Bay**, will be included in this project. In a recent document, the Estuarine Ecology Team of the IEP listed seven factors, each with two or more potential states, by which to classify shallow water habitat. By organizing information on what has been done, and by cataloging the dominant habitat types that exist in each region, we will identify five or fewer locations in each region that appear to represent the most obvious gaps in existing knowledge of fish community composition using physically defined shallow water habitat types.

Key physical factors to be included in the site selection process will be (from "Definition of Shallow-water Habitat and an Evaluation of Its Potential Importance to Fish and Other Aquatic Organisms in the San Francisco Estuary", the Estuarine Ecology Team, a Project Work Team of the IEP 1998):

1. intertidal/subtidal
2. openwater/channel margin/shallow slough
3. soft/hard substrate
4. presence/absence of aquatic vegetation (emergent, floating, submerged)
5. presence/absence of riparian vegetation

In coordination with existing monitoring programs and special studies, a range of geographic locations, structural elements, and biological components will be surveyed and described. Using a variety of gear types (tow net, beach seine, and trash pump) necessary to capture larval, juvenile, and adult fishes of multiple species in multiple

microhabitats, we will gather and organize information on fish community composition in the context of restoration options. Data will be made available in IEP-compatible format, and conclusions shared with all stakeholders in written and oral communications. After a workshop in which interested parties will provide feedback on our draft recommendations, we will prepare a final report. This initial program is seen as a one-year effort, after which we would propose to refine and extend the information gathering, again in coordination with other ongoing programs.

b. Scope of Work

Task 1. Summarize Existing Data and Ongoing Efforts (separable as stand-alone task)

We are aware of ongoing efforts such as the work of Simenstad and Grimaldo in flooded islands, the USFWS continuing salmon smolt studies, Hieb's investigations of shallow water habitats in the bays and (proposed) in the western delta, McGowan's study of heavily vegetated areas, Aasen's shallow water sampling, and the efforts of Chotkowski to summarize existing data on shallow habitat fish abundance. In Task 1 we will bring this survey up to date to define the state of knowledge as it pertains to a well researched and thought out geographically balanced treatment of the different structural elements of shallow water habitats and associated use by fish.

Deliverable: An annotated spreadsheet giving temporal and spatial coverage, methods including gear types, species and life stages targeted and taken. Also included will be the key structural and water quality elements of the habitats sampled by past and ongoing programs.

Schedule: The deliverable for this task will be produced within one month of project authorization and notice to proceed.

Budget: \$9,646

Task 2. Set-Up (inseparable from Task 3)

The efficacy of a variety of gear types and logistics of access for day and night sampling will be worked out during preliminary site visits. We propose to use multi-gear sampling programs using tow nets, pumps and seines (and perhaps other gear if necessary) to characterize the seasonal abundance of fish and macroinvertebrates in a spectrum of shallow water, vegetated and non-vegetated areas of tidal perennial aquatic, shaded riverine aquatic, and the variety of remnant habitats in midchannel islands and shoals. In each habitat, we will work out methods to best represent species composition and estimates of relative abundance.

Computer-ready field and laboratory data collection forms and specimen labels will facilitate data collection and documentation. Also in task 2, we will complete the final process of obtaining necessary scientific collecting permits, special-status species take permits. Any necessary property access will be arranged. We recognize that some choices of gear type will be permit-dependent.

Deliverable: A sampling schedule, sample sites and sampling protocol will be provided.

Schedule: Upon completion of Task 1, a list of candidate sites will be prepared in each Delta sector. We then envision a two-or three-day field effort in which each site will be inspected for workability and recommended gear types. This task will be completed by the end of the second month of the project.

Budget: \$7,339

Task 3. Data Collection

Water quality data taken at each sampling location during each sampling episode will include temperature, dissolved oxygen, turbidity, conductivity and pH. A physical description of each site, including average depth, substrate texture, bottom slope, exposure to wind and waves, nearness of low-tide shallow refugia, kinds and amounts of vegetation, riparian shade, and presence/absence of subaquatic tree roots will be collected and updated, if necessary, seasonally.

Sampling will be conducted both day and night in three seasons (spring, summer, and fall). Larval fish collections will be preserved for laboratory processing. Adult and juvenile fish will be identified, measured to the nearest cm, and released alive except for specimens necessary for laboratory studies. Healthy specimens of endangered species will be returned to the water immediately. For all other species, representative specimens will be preserved and retained for possible processing in a future, follow-up study of stomach contents and condition of the fish.

In the laboratory, preserved specimens will be identified and counted. Major non-fish elements of the zooplankton will be identified but not enumerated. Voucher specimens will be archived and, if necessary, sent to specialists for confirmation of identification.

QA/QC procedures: data sheets will be checked for accuracy and completeness by a field or laboratory supervisor after each data collection episode.

Deliverable: The data base will be made available in IEP-compatible form.

Schedule: We envision all data generation to be complete by December 1999, assuming an early spring start-up for Task 3.

Budget: \$170,953

Task 4. Analysis (inseparable from Task 3)

The goal of the analysis is to produce an objective classification and scoring system for habitat types within each sector of the Delta and Suisun Bay. To meet this goal, our separate objectives will be to define the net biological values of habitat types by region, and to identify the key structural elements that support these values. We will use double data entry as the primary entry-error checking procedure and range checks as a last assurance of data quality. The first step in analysis of species abundance patterns will be to produce standard descriptive statistics by development stage for each species by gear type and habitat type. The next step will be to synthesize data from several gear types so that a community-level analysis can be conducted. An ad hoc procedure for this is to use species data from the gear type that best captures the species in a given habitat type.

Once a unified data set is made, multivariate procedures will be used to help describe habitat-fish community relationships. With these patterns known, the physical and water quality data will be employed with canonical correlation, discriminant functions, or similar procedures to attempt to separate physical habitat effects from location effects on fish community composition.

Using the statistical output as a guide, and existing information as a partial test, we will create a biological classification scheme as well as a separate, physically-based scoring scheme of the various combinations of structural elements that are best associated with differences in fish community structure.

Deliverable: No deliverables. The results of this analysis will appear in the draft report under Task 5.

Schedule: The analysis will be finished by the middle of December 1999.

Budget: \$23,558

Task 5. Draft Report (inseparable from Tasks 3 and 4)

A written draft report describing the methods, results, and recommendations, including the proposed classification and scoring systems, of this initial study will be provided to CALFED.

Deliverable: Draft Report

Schedule: The draft report will be finished by the middle of January 2000.

Budget: \$18,882

Task 6. Workshop (optional but highly recommended)

ENTRIX will organize and conduct a workshop to present and discuss the findings contained in the draft report. After circulating the draft report, we will invite interested parties to attend a workshop in which we will present results and recommendations, answer questions, and solicit feedback. Comments received will be organized, condensed, and incorporated into a final report. Timing of the workshop could be made compatible with the IEP Asilomar meetings in February 2000.

Deliverable: Written comments and summary of intended actions in producing a final report.

Schedule: We will attempt to schedule this workshop for February 2000, subject to change, in coordination with CALFED and IEP participants.

Budget: \$10,948

Task 7. Final Report (optional but highly recommended)

The final report will incorporate to a reasonable extent the feedback obtained in the workshop, especially as the comments advance the usefulness of the proposed restoration planning tool to be provided as the main product of this project.

Deliverable: Final Report

Schedule: The final report will be produced within one month of the workshop.

Budget: \$12,351

Task 8. Management (inseparable from Tasks 2,3,4,5, and 7)

Liaison with ongoing projects, which will begin in Task 1, will be a continuing effort of the management team. In addition, schedule and budget tracking and quarterly reports to CALFED will be done under this task, which comprises less than 8% of the total budget.

Deliverable: Four quarterly reports, beginning the quarter in which contracting is completed.

Schedule: Each quarterly report will be submitted on the 10th business day of the first month of the following calendar quarter.

Budget: \$22,241

c. Study Locations

As discussed earlier, fish communities and water quality are expected to vary with geographic location within the Delta. The effects of habitat structure will therefore not be the same in all places. Like the schemes for subdividing shallow water habitat, systems for dividing the Delta into sectors are numerous. We propose an initial division into four sectors as follows: 1) North; the main stem and tributaries of the Sacramento River, Georgiana Slough, and the north and south forks of the Mokelumne and Little Potato Slough north of Venice Island, 2) East; the dead-end sloughs of the San Joaquin River, 3) South-Central; The San Joaquin, Middle, and Old Rivers and connecting sloughs south of Frank's Tract, and 4) West; the remainder of the lower reach of the San Joaquin and all areas of the Delta east of Chipps Island. In addition, we would include as a fifth geographic region the shallows of Suisun Bay, to cover more-or-less the historic range of delta smelt habitat.

Within each sector, without duplicating or interfering with the efforts of others, we will establish study sites that cover the major structural elements that appear to define shallow habitats in the sector.

d. Expected Benefits

Channel form changes and undesirable species interactions have been identified as likely stressors to delta smelt and splittail, both primary CALFED priority species. These fish can benefit from future and ongoing shallow water restorations only if the projects result in the kinds of microhabitats that favor them without making the Delta an even better place for their competitors and predators. By producing a predictive tool for ranking potential fish use of physically defined shallow habitats, this project can help assure that restoration efforts will be truly beneficial to priority species.

e. Background and Ecological/Biological/Technical Justification

The CALFED ecosystem restoration program is the largest and most complex such program in the world. Even though the program is to be implemented over 20 or 30 years, the magnitude of the effort demands that some restoration projects begin before the specific goals of the projects are worked out. In its draft report, "Definition of Shallow-water Habitat and an Evaluation of Its Potential Importance to Fish and Other Aquatic Organisms in the San Francisco Estuary", the Estuarine Ecology Team, a Project Work Team of the IEP, wrote:

...there is little understanding of why species are found in particular places. There is even less understanding of what value restored shallow-water habitats are going to have for any particular species of fish.

It would be naive to think that habitat restoration/rehabilitation activities can be postponed until we have sufficient scientific knowledge to assure a high probability of success It would seem prudent to monitor and assess the success of such projects, so that alternative management activities can be implemented if necessary and the positive or negative effects of such projects established.

The work proposed here would provide timely data on a more complete set of combinations of habitat variables than is likely to come from monitoring of the first generation of restoration projects in the delta. Furthermore, the proposed classification and scoring system can potentially be used to redirect restoration efforts already in progress.

The objectives of this proposal are consistent with the CALFED ERPP, the Central Valley Project Improvement Act, and the Anadromous Fish Restoration Plan. The ERPP, Volume 1 p. 45, lists increasing acreage of natural floodplain habitat as an implementation objective. Implementation objectives for tidal perennial aquatic habitat (p. 82), Delta sloughs (p. 88), and midchannel islands and shoals (p. 92-93) all involve restoration of the habitats covered in this proposal. Similarly, the CALFED implementation objectives for delta smelt (p. 136), splittail (p. 144), white and green sturgeon (p. 148), chinook salmon (p. 154), steelhead (p. 160), striped bass (p. 165), resident species (p. 172), and aquatic foodweb organisms (p. 181) all call for some sort of shallow habitat improvement.

f. Monitoring and Data Evaluation

Not applicable to this non-construction project. However, similar work elements are described above in the scope of work.

g. Implementability

Not applicable to this non-construction project.

V. COSTS AND SCHEDULE

a. Budget Costs

The full proposed cost of this one-year project is being sought from CALFED. The need for funding is based on the goals of this project being specific to CALFED priority objectives and the lack of funding from other sources.

The accompanying budget represents costs for a one year study which we think of as the first phase of a program that will likely continue to provide benefits if it is refined in an adaptive management framework and extended into future years. Costs for future phases can not be estimated at this time.

In-kind support by outside experts will be sought through a technical workshop and through continuing liaison with agency personnel at CDFG, DWR, USBR, etc. In addition to this, the costs of this project will be highly leveraged by the integration of existing public agency data on fish use of shallow habitats in the Bay-Delta.

No subcontractor labor is proposed for the project and, therefore, no bid procedures for subcontractor work are provided.

The required breakdown of costs is presented below in Table 1.

Table 1. Cost Breakdown.

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General, Admin. and fee)	Service Contracts	Material and Acquisition Contracts	Miscellaneous and other Direct Costs	Total Cost
Task 1	118	\$3,665	\$4,781	N/A	N/A	\$1,200	\$9,646
Task 2	94	\$3,479	\$2,525	N/A	N/A	\$1,335	\$7,339
Task 3	2,840	\$38,101	\$75,818	N/A	N/A	\$57,034	\$170,953
Task 4	292	\$7,106	\$15,438	N/A	N/A	\$1,014	\$23,558
Task 5	180	\$5,709	\$12,447	N/A	N/A	\$726	\$18,882
Task 6	96	\$3,044	\$6,464	N/A	N/A	\$1,440	\$10,948
Task 7	134	\$3,690	\$8,186	N/A	N/A	\$475	\$12,351
Task 8	222	\$6,098	\$15,288	N/A	N/A	\$855	\$22,241

TOTAL: \$275,918

b. Schedule Milestones

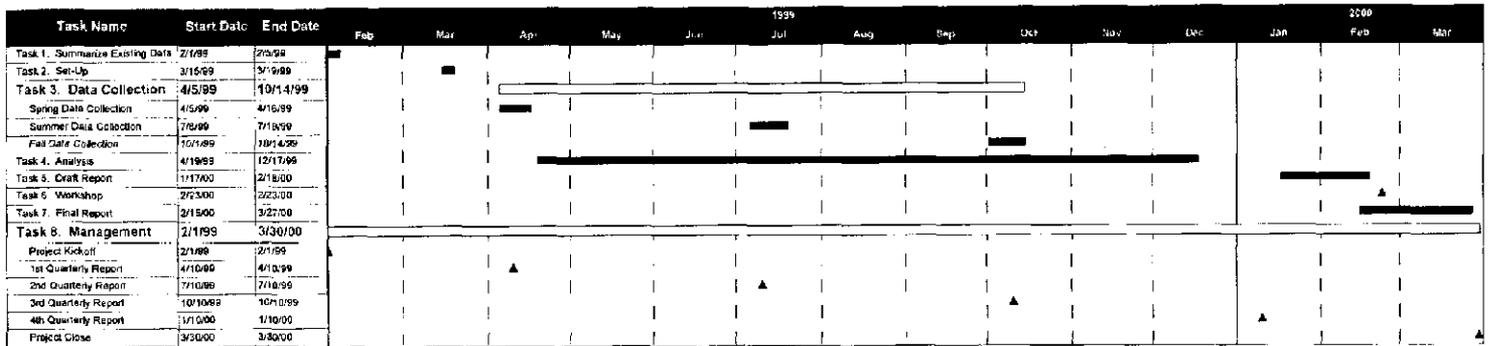
The schedule for each task is given in the scope of work section and summarized in Figure 1.

c. Third Party Impacts

There will be no direct third-party impacts as a result of the proposed work. To the extent that the work product will influence decisions about future restoration proposals, there will probably be indirect effects to third parties.

Figure 1 - Schedule

Shallow Water Habitat Restoration Project



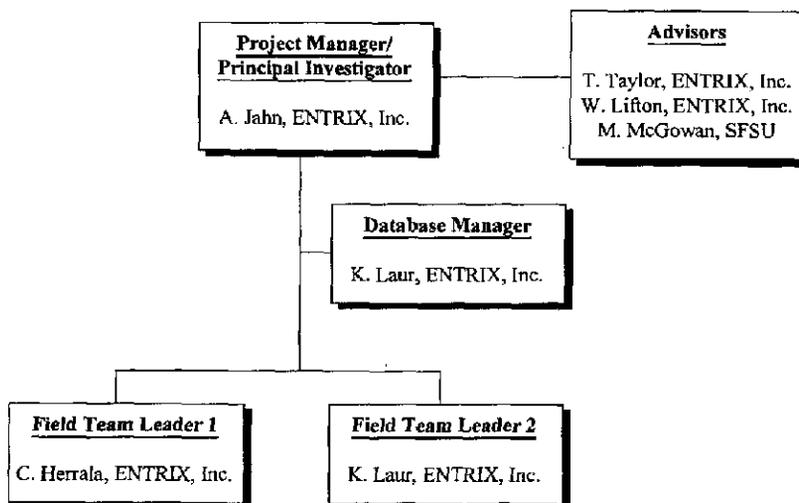
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Milestone ▲ Summary ■
Fixed Delay ■ Slack

I-009627

VI. STATEMENT OF QUALIFICATIONS

The project will be managed by Dr. Andy Jahn, a fish biologist with more than 20 years experience in faunal surveys, habitat evaluations, and statistical analysis. Dr. Jahn will be advised by Messrs. Thomas Taylor and Wayne Lifton, both experts on fish habitat requirements and restoration, and both long-time participants in the Bay-Delta proceedings. Also serving in an advisory capacity will be Dr. Mike McGowan of SFSU, a fisheries ecologist who is currently conducting studies of fish use of subaquatic vegetation for the Department of Boating and Waterways. Field teams will be led by Messrs. Kim Laur and Chris Herrala, both with extensive fish sampling experience in the Bay and Delta.



Staff	Sampling Design	Bay Delta Experience	Aquatic Habitat Evaluation Experience	Fish Identification	Larval Fish Sampling and Identification	Native Species Life History	Threatened and Endangered Permits	Data Management	Statistical Analysis	Project Management	CALFED Process	Agency Coordination	IFP Participation	Years of Experience
C. Herrala		X	X	X		X	X	X		X				7
A. Jahn	X	X	X	X	X			X	X	X		X		22
K. Laur		X	X	X		X		X				X	X	6
W. Lifton	X	X	X	X		X		X	X	X	X	X	X	25
M. McGowan	X	X	X	X	X			X	X	X	X	X	X	19
T. Taylor		X	X	X		X	X			X	X	X	X	21

Key Project Personnel

Andrew E. Jahn, Ph.D., Senior Aquatic Ecologist, ENTRIX. Dr. Jahn, is an established bio-statistician, project manager, and field biologist. His peer-reviewed publications include papers on larval and adult fish ecology, statistical methods, plankton, and oceanography. He has organized and conducted field projects in mid-ocean, coastal ocean, mountain stream, and estuarine environments, as well as in the intertidal zone of the open coast. His investigations of larval fish ecology usually integrated data from multiple samplers. He recently designed and managed a habitat evaluation project in the Port of Oakland in which multiple gear types were used to sample fish and crustaceans in a variety of habitats, including nearshore structures and vegetation. Andy has more than 20 years experience in computer programming and data analysis, including inferential statistics, interval estimation, and various multivariate procedures. He has experience with several habitat evaluation systems and is well practiced in turning data into honest and useful applications.

Wayne S. Lifton, Senior Aquatic Ecologist, ENTRIX. Mr. Lifton has 25 years of consulting experience during which he has focused primarily on the evaluation of water use on fish resources and aquatic habitat and has considerable experience with fishery issues in the Central Valley. Mr. Lifton has participated in the Bay-Delta hearings as an expert witness on fisheries and water quality issues related to the SWP and CVP. As part of his work, Mr. Lifton was responsible for advising clients on fishery issues and participating in interagency groups including the Five-Agency Salmon Team, the Delta Salmon Team, and the San Joaquin Salmon Team among others. Mr. Lifton has been responsible for several mitigation and enhancement plans for San Joaquin River tributaries and reservoirs. He conducted analyses regarding the effectiveness of the Old River barrier on DO in the San Joaquin River as part of previous assignments. He has also reviewed the status of the Delta smelt, longfin smelt, splittail and assisted in a review of information related to the biology of the winter-run chinook salmon. Mr. Lifton worked on evaluating the potential impacts of the proposed ISDP and helped plan mitigation measures. As part of that work, Mr. Lifton utilized many of the modeling tools available for upstream and Delta fisheries and was responsible for developing new assessment approaches.

Michael F. McGowan, Ph.D., Senior Research Scientist, Tiburon Center for Environmental Studies, San Francisco State University. Dr. McGowan is a quantitative ecologist with experience managing large projects as part of interdisciplinary teams of planners, scientists, agency managers, and the public. He has published more than two dozen peer-reviewed articles and book chapters on fishery-related issues in freshwater, estuarine, and salt-water environments including a review of the long-term environmental effects of oil development. On numerous projects he has contributed statistical study design, database analysis, literature review, evaluation of project alternatives, QA/QC plans and made site visits to the field to personally observe operations for QA/QC. As chief scientist on numerous research cruises at sea, in San Francisco Bay, and the Delta, he is familiar with a variety of fish sampling techniques. He is a member of the

Estuarine Ecology Team advising the Bay-Delta Interagency Ecological Program, and he is also participating in a multi-agency effort (FWS, NMFS, CDFG, EPA) to establish wetlands habitat goals for the San Francisco Bay region.

Thomas L. Taylor, Senior Aquatic Biologist, ENTRIX. Mr. Taylor has over 20 years experience in the management and restoration of aquatic resources. He has worked as a consultant to state and federal resource agencies, local governments, electric utilities, industry, water purveyors, and environmental advocates. Mr. Taylor's understanding of resource and regulatory issues is enhanced by his 15 years as an employee of the California departments of Fish and Game and Parks and Recreation. His experience in the Sacramento-San Joaquin Delta spans twenty years and includes population studies on catfish and striped bass and habitat associations of the resident fishes. Mr. Taylor typically conducts aquatic habitat assessments, aquatic habitat and wetland restoration planning, implementation and monitoring, quantitative fish population surveys and multi-year monitoring programs. Mr. Taylor qualifications include a long standing interest in the physical aquatic habitat needs of native fishes as well as the management of native fishes. He is also experienced in life history assessments for Central Valley chinook salmon, delta smelt, and splittail.

Christopher W. Herrala, Staff Scientist, ENTRIX. Mr. Herrala's experience includes work in estuarine and marine ecology, fisheries biology and environmental compliance/permitting. He has helped to design and conduct estuarine/marine habitat evaluation studies and has provided technical evaluations of marine and estuarine communities in support of ongoing consultations with trustee agencies. He also has extensive experience conducting marine and estuarine entrainment studies, intertidal and subtidal transect surveys, trawl surveys, plankton surveys, soft and hard-bottom benthos surveys, dive reconnaissance surveys, fish population assessments, in-stream flow studies, aquatic habitat suitability studies, riparian assessments, and environmental monitoring.

Kim Laur, Staff Scientist, ENTRIX. Mr. Laur has over five years of experience in fisheries biology disciplines such as instream flow, habitat suitability criteria, population evaluation studies, fish barriers, and diversion facilities. Mr. Laur has extensive experience sampling and analyzing fish populations in around the Delta. Locations sampled include the temporary barriers, Georgiana and Montezuma sloughs, Clifton Court Forebay, Grant Line Canal, and Old River. Sampling methods have included radio-telemetry, recording Global Position System (GPS) points, kodiak/otter trawls, boat electrofishing, and various other fish-catching mechanisms. He has worked extensively with endangered, threatened and sensitive aquatic species, including the winter-run chinook salmon, delta smelt, tidewater goby, coho salmon, splittail, and steelhead trout.

VII. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

U.S. Department of the Interior

**Certifications Regarding Debarment, Suspension and
Other Responsibility Matters, Drug-Free Workplace
Requirements and Lobbying**

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used or use this form for certification and sign. (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

CHECK IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE

- (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 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.

PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

CHECK IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

DI-2010
June 1995
(This form replaces DI-1893, DI-1864,
DI-1866, DI-1868 and DI-1869)

PART C: Certification Regarding Drug-Free Workplace Requirements

CHECK IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or 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 every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. 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 may insert in the space provided below the sites for the performance of work done in connection with the specific grant:

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

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

PART D: Certification Regarding Drug-Free Workplace Requirements

CHECK IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

- (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 grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

DI-2016
June 1988
ITNs form replaces DI-1963, DI-1964,
DI-1965, DI-1966 and DI-1967

Figure 1
Standard Form 424

OMB Approval No. 0348-0043

**APPLICATION FOR
FEDERAL ASSISTANCE**

1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction <input type="checkbox"/> Non-Construction		2. DATE SUBMITTED 7/2/98	Applicant Identifier N/A
		3. DATE RECEIVED BY STATE N/A	State Application Identifier N/A
		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICANT INFORMATION			
Legal Name: ENTRIX, INC.		Organizational Unit:	
Address (give city, county, state, and zip code): Contra Costa County, CA 94596		Name and telephone number of person to be contacted on matters involving this application (give area code)	
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 7 6 - 0 2 6 5 8 6 2		7. TYPE OF APPLICANT: (enter appropriate letter in box) M	
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es): <input type="checkbox"/> <input type="checkbox"/> A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify):		A. State B. County C. Municipal D. Township E. Interstate F. Intermunicipal G. Special District H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify):	
		9. NAME OF FEDERAL AGENCY: US Fish and Wildlife Service	
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: TITLE: N/A		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:	
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Contra Costa, Sacramento and San Joaquin Counties			
13. PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF:	
Start Date 1/99	Ending Date 12/99	a. Applicant 10	b. Project
15. ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?	
a. Federal	\$ 276,000	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____	
b. Applicant	\$.00	b. NO. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
c. State	\$.00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No. If "Yes," attach an explanation	
d. Local	\$.00		
e. Other	\$.00		
f. Program Income	\$.00		
g. TOTAL	\$ 276,000		
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.			
a. Type Name of Authorized Representative Valerie Clark		b. Title West Coast Regional Manager	c. Telephone Number (925) 935-9920
d. Signature of Authorized Representative <i>Valerie Clark</i>		e. Date Signed July 1, 1998	

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Standard Form 424 (REV. 4-81)
Prescribed by OMB Circular A-102

**PART E: Certification Regarding Lobbying
Certification for Contracts, Grants, Loans, and Cooperative Agreements**

CHECK IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND THE AMOUNT EXCEEDS \$100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT; SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.

CHECK IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL LOAN EXCEEDING THE AMOUNT OF \$150,000, OR A SUBGRANT OR SUBCONTRACT EXCEEDING \$100,000, UNDER THE LOAN.

The undersigned certifies, 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, and 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-LLL, "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 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.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

Valerie Clark

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

Valerie Clark, West Coast Regional Manager

TYPED NAME AND TITLE

July 1, 1998

DATE

06-2010
June 1996
(This form replaces 06-1963, 06-1964,
06-1965, 06-1966 and 06-1967)

Figure 2
Standard Form 424A (cont'd.)

SECTION C. NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$	\$	\$	\$	
9.					
10.					
11.					
12. TOTAL (sum of lines 8 - 11)	\$	\$	\$	\$	
SECTION D. FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 231,500.00	\$ 24,000.00	\$ 56,000.00	\$ 56,000.00	\$ 95,500.00
14. NonFederal					
15. TOTAL (sum of lines 13 and 14)	\$ 231,000.00	\$ 24,000.00	\$ 56,000.00	\$ 56,000.00	\$ 95,500.00
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.	\$ 44,500.00	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$ 44,500.00	\$	\$	\$	
SECTION F. OTHER BUDGET INFORMATION					
21. Direct Charges:			22. Indirect Charges:		
23. Remarks:					

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Standard Form 424A (Rev. 4-92) Page 2

1-009636

1-009636

Figure 3
Standard Form 424B

OMB Approval No. 0348-0040

ASSURANCES — NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET, SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

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 cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of 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 nondiscrimination 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. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with 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.

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Standard Form 424B (Rev. 4/92)
Prescribed by OMB Circular A-102

Standard Form 424A (cont'd.)

INSTRUCTIONS FOR THE SF-424A (continued)

narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

Section C. Non-Federal Resources

Lines 8-11 Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

Column (a) - Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

Column (b) - Enter the contribution to be made by the applicant.

Column (c) - Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d) - Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e) - Enter totals of Columns (b), (c), and (d).

Line 12—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

Section D. Forecasted Cash Needs

Line 13 - Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14 - Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15 - Enter the totals of amounts on Lines 13 and 14.

Section E. Budget Estimates of Federal Funds Needed for Balance of the Project

Lines 16-19 - Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

Line 20 - Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

Section F. Other Budget Information

Line 21 - Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22 - Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23 - Provide any other explanations or comments deemed necessary.

Figure 3
Standard Form 424B (cont'd.)

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a - 7), the Copeland Act (40 U.S.C. §§276c and 18 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 undangered 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 or OMB Circular No. A-133, Audits of Institutions of Higher Learning and other Non-profit Institutions.
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 <i>Valerie Clark</i>		TITLE <i>West Coast Regional Manager</i>	
APPLICANT ORGANIZATION <i>ENTRIX, Inc.</i>		DATE SUBMITTED <i>July 2, 1998</i>	

Standard Form 424B (Rev. 4/92) back

Figure 4
Standard Form 424C

OMB Approval No. 03-48-0041

BUDGET INFORMATION — Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case you will be notified

COST CLASSIFICATION		a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Column a-b)	
1.	Administrative and legal expenses	\$.00	\$.00	\$.00	
2.	Land, structures, rights-of-way, appraisals, etc.	\$.00	\$.00	\$.00	
3.	Relocation expenses and payments	\$.00	\$.00	\$.00	
4.	Architectural and engineering fees	\$.00	\$.00	\$.00	
5.	Other architectural and engineering fees	\$.00	\$.00	\$.00	
6.	Project inspection fees	\$.00	\$.00	\$.00	
7.	Site work	\$.00	\$.00	\$.00	
8.	Demolition and removal	\$.00	\$.00	\$.00	
9.	Construction	\$.00	\$.00	\$.00	
10.	Equipment	\$.00	\$.00	\$.00	
11.	Miscellaneous	\$.00	\$.00	\$.00	
12.	SUBTOTAL (sum of lines 1-11)	\$.00	\$.00	\$.00	
13.	Contingencies	\$.00	\$.00	\$.00	
14.	SUBTOTAL	\$.00	\$.00	\$.00	
15.	Project (program) income	\$.00	\$.00	\$.00	
16.	TOTAL PROJECT COSTS (subtract #15 from #14)	\$.00	\$.00	\$.00	
FEDERAL FUNDING					
17.	Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X _____%			\$.00

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