

Proposal Reviews

#33: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

California State University, Chico

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Sacramento Regional Review

External Scientific Review #1
#2

Environmental Compliance

Budget

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Initial Selection Panel Review

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)

Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

| Fund | |
|-----------------------------|---|
| As Is | - |
| In Part | - |
| With Conditions | - |
| Consider as Directed Action | - |
| Not Recommended | X |

Amount: **\$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

This proposal requested funding for various studies of oxbows and related water bodies along the Sacramento River, with a somewhat unrelated request for funding to create a Sacramento River research consortium. Certain aspects of the idea were appealing in that it would add to knowledge of some of the natural processes of the river. However, the regional and technical reviewers felt the justification for the studies was not clearly shown, and certain aspects of the study were questioned. For example, the proposal did not specify the criteria for choosing study sites. Many oxbows on the river are within the federal control system levees, and a number of ancient ones are actually outside the levees, thus the potential for landscape manipulation which would address oxbows may be limited. The relevancy to restoration and management decisions was not compelling for the size of the funding request. The consortium idea has merit, but the regional panel was concerned with the lack of local involvement with the SCRA.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP Research and Restoration Technical Panel Review Form

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;

Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;

Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

| Overall Evaluation Summary Rating | Provide a brief explanation of your summary rating |
|-----------------------------------|--|
| -Superior | This is an interesting research proposal, and the information gathered would be of interest to the scientific community. It is a monitoring study that can be considered a first step in developing hypotheses for restoration. Nevertheless, the direct benefits to CALFED for a cost of \$885,000 are too nebulous to recommend highly. |
| -Above average | |
| XAdequate | The concept of a Sacramento River Consortium is also appealing. The panel recognized the value of a group of Sacramento River researchers coordinating their efforts. It was unclear how this consortium would coordinate with existing watershed groups, regional efforts and other agencies and stakeholders. The regional panel was concerned that this project was not brought before the SRCA board prior to submittal. |
| -Not recommended | |

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

There is a clear statement of goals. The goals of the project are to inventory former channel water bodies (oxbows), document hydrologic relations between the former and current channels, measure water quality in oxbow lakes, obtain and analyze sediment cores to determine the history of sedimentation and the depth to groundwater, and sample and analyze vegetation assemblages. The goals support SR-4: Restore geomorphic processes in stream and riparian corridors in a general sense. They also support SR-7 Develop conceptual models to support restoration of river, stream and riparian habitat. However,

there are no specific hypotheses presented, and as presented this is primarily a monitoring study. The applicants refer to an on-going National Science Foundation-funded project developing a biocomplexity model for the Sacramento River. It was unclear what work has already been done during that NSF project and how this proposed project would specifically benefit from the biocomplexity model.

Another goal was to establish a Sacramento River Science Consortium to help coordinate future research in this area.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

The approach is very feasible, if permission to access a range of oxbows is granted, and if drilling apparatus can access the sites. Permits may be needed to obtain the sediment cores

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

A clear list of expected products was included. Data report maps will be published in electronic and paper form. Eventual transfer of all the information from this project to a easily accessible web site is proposed. Journal articles will be published. Technical finds will be distributed as fact sheets and news articles. No guidelines for implementing restoration are proposed. The project would advance the general state of knowledge of former channels, and was of scientific interest. However, the justification for the project was not strong, and the direct application of this research to decision-makers was unclear. What is the importance of oxbows as an ecosystem, what are the current threats, and what is the relevance of this project to restoration? For example, would the research lead to recommendations for excavating plugs, building up plugs, or otherwise modifying the oxbows, and what would the criteria for such guidelines be?

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The costs seemed high for the products that would directly benefit CALFED, but one reviewer thought they were reasonable.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

The regional review ranked this as Low. The concern was how this proposal fit with other ongoing efforts, such as DWR, and they were concerned that it was not brought before the SRCA Board.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

A 1600 agreement and consultation with the Corps may be required to obtain sediment cores. Additional funding and time would then be required to obtain the necessary permits. No budget concerns were identified in the budget administrative review, and there was no prior performance problem.

Miscellaneous comments:

None

Sacramento Regional Review:

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

Overall Ranking: ☒Low ☐Medium ☐High

Provide a brief summary explanation of the committee's ranking:

The panel rated this low. Though it may be useful, the panel felt it wasn't coordinated with the DWR oxbow work and were concerned that it was not brought before the SRCA Board. They felt it needed to connect better with ongoing research in the area.

1. Is the project feasible based on local constraints?

☒Yes ☐No

How?

The project proposes technically feasible targeted research of oxbow habitats. Half of which are within federal jurisdiction with approval to sample these sites already given. The remaining study sites will be selected, in part, based on the willingness of landowners to participate in the study.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

☒Yes ☐No

How?

Yes, priorities 4 and particularly 7. The proposed targeted research focuses on the spatial extent, distribution, life span, developmental processes, and ecological characteristics of floodplain features known to support critical wildlife habitat and to contribute significantly to the biodiversity of the river system. Restoration of the floodplain and aquatic habitat and riparian habitats along the Sacramento will likely require some renaturalization of the rivers' flow regime, but at this point we don't know enough to inform the choice of flows needed to manage these features and/or develop restoration activities.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

☐Yes ☒No

How?

The project proponent is working with various independent researchers in the watershed. Is this work coordinated with DWR's oxbow work?

They proposed to formalize relationships by forming a consortium that will help coordinate activities and share research facilities and equipment.

4. Does the project adequately involve local people and institutions?

-Yes ☒No

How?

They plan to develop a consortium and hold four public workshops. The panel was concerned that this project was not brought before the SRCA board prior to submittal.

Other Comments:

None

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: **Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River**

Conflict of Interest Statements:

I have no financial interest in this proposal.

☒Correct

☐Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

| Overall Evaluation Summary Rating | Provide a brief explanation of your summary rating |
|-----------------------------------|---|
| -Excellent | This is an interesting research proposal, and the information gathered would be of interest to the scientific community. Nevertheless, the direct benefits to CALFED for a cost of \$885,000 are too nebulous to recommend highly. The concept of a Sacramento River Consortium is also appealing, but the interaction with existing regional panels, science boards, committees, etc. was not clear. A clear description of which groups cover what responsibility at present, and how a new consortium would advance regional efforts is needed. |
| XGood | |
| -Poor | |

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goals of the project are to inventory former channel water bodies (oxbows), document hydrologic relations between the former and current channels, measure water quality in oxbow lakes, obtain and analyze sediment cores to determine the history of sedimentation and the depth to groundwater, and sample and analyze vegetation assemblages. The goals support SR-4: Restore geomorphic processes in stream and riparian corridors' in a general sense. They also support SR-7 Develop conceptual models to support restoration of river, stream and riparian habitat.' There are no specific hypotheses presented.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The conceptual model of oxbow evolution is very broad and not particularly enlightening. The hydrologic connectivity of the oxbow with the main channel depends on rates of incision of the main channel and rates of sedimentation in the oxbow plug. Oxbow lakes still retain a connection to the local groundwater regime. Although it is of scientific interest to know more about these processes and functions, the authors do not relay how this information could be used to manage the oxbow systems. The authors make the assumption that oxbows need restoration, but a clear problem has not been demonstrated. Several endangered species use the oxbows as habitat, but the lack of oxbows or loss of oxbows as an ecological threat was not established in this proposal. How critical are oxbows to the maintenance of these species?

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

Task 1: inventory oxbows. The scales of the proposed GIS maps, the aerial photographs and historical maps are not given. Twelve oxbows will be chosen for more intensive study, but the criteria for choosing them, besides date of formation, is not given. Will they represent the full range of conditions, including different cut-off mechanisms? Alluvial plug elevations are proposed to be measured by photogrammetric software. Because the elevation is such an important control on hydrologic connectivity, higher resolution field survey measurements should also be used, especially if the plugs are well vegetated. **Task 2: Hydrology and water quality.** Are the stage-discharge relationships for these sites stable? Nutrient levels will be measured because, in part they influence plant distribution. Water availability probably influences plants in oxbows more than nutrient levels. **Task 3: Collect sediment cores:** This task will determine sedimentation rates in the oxbows. It was unclear how knowledge of sedimentation that occurred during past hydrologic regimes would be used by managers today in a system with a regulated hydrologic regime. **Task 4: vegetation** will be mapped to see how vegetation assemblages relate to water chemistry, notably nutrient levels.' How this task relates to the conceptual model is unclear. Also, it seems that vegetation assemblages would be controlled more strongly by water levels and the seasonal distribution of water rather than nutrient levels.

The main question with the above tasks is how the authors will extrapolate their information, based on relict landforms and sediment deposits, to the altered hydrologic regimes the channels are experiencing today. By learning about past oxbow formation under conditions we no longer see today, how will this information help us manage and restore these areas?

Task 5: Develop a Sacramento River Consortium. This task is independent from the first four. How would this consortium interact with the CalFed Science Board? In the best case scenario, we would see better coordination of research efforts and facilities. In the worst case scenario, would we create a monopoly of researchers working on the Sacramento, which would effectively preclude others from applying for grants in this region?

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The approach is very feasible, if permission to access a range of oxbows is granted.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

Peer-reviewed journal articles will be prepared from this research, as well as regular progress reports. Presentations will be made to the CALFED Science conference and other technical meetings which can also provide a more informal peer review. How will this information be applied?

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

A clear list of expected products was included. Data report maps will be published in electronic and paper form. Eventual transfer of all the information from this project to a easily accessible web site is proposed. Journal articles will be published. Technical finds will be distributed as fact sheets and news articles. No guidelines for implementing restoration are proposed. How would the need for restoration be demonstrated? Would the research lead to recommendations for excavating plugs, building up plugs, or otherwise modifying the oxbows?

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

The proposal team is well qualified to conduct this work. Three California campuses are collaborating on this proposal, so their facilities are available to the researchers.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The costs are high for the products that would directly benefit CALFED. For example, the Ground Penetrating Radar unit would cost \$24,000 to rent and operate, almost \$18,000 is requested to support travel just from the campuses, and \$15,000 to purchase an earth drill. Task 6, Project Management, which includes bimonthly meetings, costs \$87,400, some of which could be done by conference calls.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: **Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

| Overall Evaluation Summary Rating | Provide a brief explanation of your summary rating |
|-----------------------------------|---|
| -Excellent | This is an excellent monitoring study as the initial step in developing hypotheses for restoration. If there are well developed hypotheses documented in the NSF-funded study they should have been presented here and approached accordingly. |
| X Good | |
| -Poor | |

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

This is primarily a monitoring study to gain knowledge of the channel processes. The goal is to characterize and document the historical evolution of off channel habitat features along the Sacramento River. As such no hypotheses are presented. However reference is made to a NSF funded project that is developing a biocomplexity model for the Sacramento River and a statement made that the data on hydrology and geomorphology of oxbow lakes will be linked to models of riparian forest succession and habitat for bird communities. More discussion of this potential linkage should have been given in order to state hypotheses and make this a rigorous research study. This monitoring effort is needed and certainly is timely.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

This is basic research as little is known about the relation of river hydrology and channel migration and evolution of side channels and oxbows. The study is justified as providing fundamental information on geofluvial processes in the Sacramento River. There is no conceptual model provided beyond the simple (and generally accepted) concepts provided in figures 1 & 2 and therefore no fully explained underlying basis. This is certainly more research oriented rather than a pilot or demonstration project. I prefer to classify this as monitoring as no hypothesis testing is presented. Hopefully specific hypotheses will result from this study.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach presented is sound and should provide the information necessary to document the historical evolution of off channel habitats at sites along the Sacramento River. In association with studies by the Nature Conservancy and the NSF-funded study the promise is good for generating novel information and approaches useful for decision-makers in future restoration efforts.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The approach appears technically feasible and is consistent with their objective of documenting the historical evolution of off channel oxbows.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

As this is a monitoring study the performance measures are periodic reports and scientific papers describing the geomorphological processes as they evolved in the Sacramento River. No specific restoration is proposed. Rather restoration strategies are assumed to result from the monitoring and synthesis of data.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

The products should be valuable from the viewpoint of advancing the scientific understanding of geofluvial processes. Hopefully restoration strategies will result that can be implemented and tested (This is not specifically emphasized!)

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

The investigators are knowledgeable of the science and collaboration with the French investigators is excellent.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Budget appears reasonable for the 12 sites proposed.

Miscellaneous comments:

None

Environmental Compliance:

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

-Yes **X**No

If no, please explain:

If additional sediment cores are to be taken, a 1600 agreement and consultation with the Corps may be required. Contact DFG and the Corps for permit requirements.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

-Yes **X**No

If no, please explain:

Need to allow funding and time to obtain permits if necessary.

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

-Yes **X**No

If yes, please explain:

If necessary permits are obtained, project is feasible. Project proponents indicate that additional cores samples may not be needed, in which case no additional permits will be required.

Other Comments:

Budget:

Proposal Number: 33

Applicant Organization: California State University, Chico

Proposal Title: Geomorphic and Ecological Investigation for Conservation and Restoration of Former Channels along the Sacramento River

1. Does the proposal include a detailed budget for each year of requested support?

XYes -No

If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

XYes -No

If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

XYes -No

If no, please explain:

4. Are appropriate project management costs clearly identified?

XYes -No

If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

XYes -No

If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

6. Does the budget justification adequately explain major expenses?

XYes -No

If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes ☒No

If yes, please explain:

Other Comments: