CALFED Science Program PSP Grant
Supplement Proposal
Technical Selection Panel Review

Grant Supplement Identification: *Drexler*

Applicant Organization: U.S. Geological Survey

Grant Supplement Title: Salinity Fluxuations in the last 7000 years in the Sacramento-San Joaquin Delta

Original Grant (Year): Rates and Evaluation of Peat Accretion Through Time (RE-PEAT) in the Sacramento-San Joaquin Delta, California (Directed Action 2005)

Review

The following review form has been broken down into three subsections: (1) technical review criteria, (2) value added review criteria, and (3) funding recommendation. It includes a review and summary rating for each of these subsections using all review criteria. Technical criteria is separated from the value added criteria because these issues will be weighed separately, but with equal importance. No supplement proposals will be funded that are rated inadequate in either criteria.

Subsection 1: Technical Review

Review about the technical merit of the supplement proposal. Criteria for consideration are:

Technical Review Criteria

- ***Purpose:*** *Are the goals, objectives and hypotheses of the supplement proposal clearly stated and internally consistent?*
- ***Background:*** *Is the underlying basis for the supplemental work clearly explained and well documented?*
- ***Approach:*** *Is the approach to the supplemental work well designed and appropriate for meeting the objectives of the supplemental project? Is it clear who will be performing supplemental tasks including management and administration of the project and are resources set aside to do so?*
- ***Feasibility:*** *Is the approach for the supplemental work fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?*
- ***Budget:*** *Is it clear how much each aspect of the supplemental work will cost*

including each task, salaries, equipment, etc.? Is the budget reasonable and adequate for the work proposed?

- ***Qualifications:*** *Is the project staff qualified to efficiently and effectively implement the supplemental project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?*
- ***Past Performance:*** *Unless informed otherwise by CALFED staff, reviewers should assume that the applicants have met the commitments indicated on their existing CALFED grant/contract*

Technical Review Summary

The technical review of this supplement proposal is provided in the space below and addresses each of the technical review criteria (above), including strengths, weaknesses, and specific reasons supporting the evaluation.

Part of the stimulus behind this proposal is the uncertainty of the historical salinity in the Delta. The purpose is well laid out and straightforward.

Purpose: The proposal is to use peat cores collected as part of the original project to assess long-term (7000 yr) salinity variation in the Delta.

Background: The techniques for assessing salinity in the cores are reviewed. The authors argue that understanding prehistoric salinity variation is important to future management of the Delta. This may be true, but unfortunately, the authors also argue that Delta smelt survival and abundance is correlated with X2, which is not the case.

Approach: While not chemical or isotope experts, the methods the authors propose to use are from the primary literature. The methodology appears quite feasible. The authors reference three other papers that successfully used the technique. Responsibilities for project management are not detailed but presumably follow those in the original project.

Feasibility: The approach is well documented and appears quite feasible. The authors do not clearly state whether the additional cores to be analyzed come from subsided or unsubsided peat. Likelihood of success seems high. One factor not discussed in detail is the resolution in time of salinity.

Budget: Costs of sample analyses are detailed. Most of the budget is for salaries and overhead.

Qualifications: Project's staff is well qualified. Background of a new team member who will be involved in this project is described in detail. Project is supported by the infrastructure of U. S. Geological Survey. There should be no difficulty in the authors completing this project.

Technical Rating Criteria

Rating of the technical merit of the supplement proposal based on the following scale:

- ***Superior**: Outstanding in all respects with no technical concerns. Complete confidence proponents will accomplish the project goals.*
- ***Above Average**: A very good proposal with no significant technical concerns. Very confident proponents will accomplish the project goals.*
- ***Sufficient**: A reasonable proposal with some technical deficiencies but nothing critical. Fairly confident proponents will accomplish most of their project goals.*
- ***Inadequate**: A technically deficient proposal with serious impediments or concerns. Little confidence proponents will accomplish many project goals.*

*Please **X** the appropriate technical rating:*
___X__ Superior
_____ Above Average
_____ Sufficient
_____ Inadequate

Explanation of rating and additional comments:

Project is well described and uses cores already collected. Project's scientific staff is well qualified to undertake the work.

Subsection 2: Value Added Review

Review about the value added of the supplement proposal. Criteria for consideration are:

Value Added Review Criteria

- ***Purpose:** Is the new study justified relative to existing knowledge? Are new results likely to add to the base of knowledge? Is the supplemental project likely to generate novel information, methodology, or approaches? Is it clear how the purpose of the supplemental work differs from the work in the existing grant/contract?*
- ***Relevancy:** Is it clear how the supplement proposal evolved from and relates to the existing grant/contract? Does the supplement proposal clearly and directly address one or more of the objectives/priorities in the existing grant/contract? Does the supplement proposal identify new relevancies to CALFED priorities not identified in the existing grant/contract?*
- ***Timeliness:** Does the supplement proposal clearly illustrate the need for immediate funding before the next Science Program PSP cycle (1 to 2 years)?*

- ***Approach:*** *Is it clear how the approach of the supplemental work differs from and adds to the work in the existing grant/contract?*
- ***Products:*** *Are products of value likely from the supplemental project that differ from those proposed in the existing grant/contract? Is there a plan for widespread and effective dissemination of information gained from the supplemental project?*
- ***Budget:*** *Is it clear that supplemental funds are going to new or revised tasks or equipment relative to those proposed in the existing grant/contract? Considering the amount of funding requested in the proposed budget, is there a high value in terms of knowledge gained for the CALFED Program relative to other proposals you are familiar with (i.e. "bang for the buck")?*

Purpose: The authors rightly point out that historic and prehistoric variation in salinity in the Delta has been a subject of debate recently and that salinity (and other variation) will likely be an important aspect of future Delta management. Understanding long-term salinity fluctuations in the Delta will be of considerable scientific interest. How important prehistoric salinity fluctuations will be for future management is less certain as the Delta is, and will remain, very different in topography from any historic landform. Prehistoric salinity will give further information on conditions to which native species must have been adapted, but may not provide a clear picture of conditions that will assure their future survival. The purpose of this supplemental grant clearly represents an extension of the previous grant.

Relevancy: Covered above.

Timeliness: Presumably the cores could be kept for some time. Although the data would be relevant to future decisions the authors do not make the case for an immediate need. The research can be delayed for some time without losing the benefit of the data. There would be some modest savings in doing it now because the staff is currently active.

Approach: New analytic tools will be used and the temporal variation in salinity will complement the other temporal data series.

Products: The main product will be long term variation in salinity in the western and central delta. There is no specific plan for information dissemination.

Budget: Given that the project uses cores already collected the analysis is economical. Overall value hinges on the importance of understanding prehistoric salinity variation. Given the amount of debate and disagreement about this issue, the results would be important but might not completely stop the debate. However, the budget seems reasonable for the work.

Value Added Review Rating

Rating of the value added merit of the supplement proposal based on the following scale:

- ***Superior****: Outstanding scientific value with a pressing need for immediate funding and expected to add substantial new thinking/concepts to our knowledge/understanding on one or more highly relevant CALFED topics for a very reasonable supplemental cost.*
- ***Above Average****: At least high scientific value and a clear need for rapid funding. Expected to add solid basic new thinking/concepts to our knowledge/understanding on one or more highly relevant CALFED priority research topics for a very reasonable supplemental cost.*
- ***Sufficient****: A supplement proposal with a fair amount of scientific value and need for timely funding and expected to add some basic new thinking/concepts to our knowledge/understanding on one or more adequately relevant CALFED topics for a reasonable supplemental cost.*
- ***Inadequate****: A supplement proposal that has little scientific value or need for timely funding. Not expected to add significant new thinking/concepts to our knowledge/understanding on relevant CALFED topics or the supplemental cost is unreasonable for the knowledge gained.*

Please select the appropriate rating with an **X**:
_____ Superior
___**X**__ Above Average
_____ Sufficient
_____ Inadequate

Explanation of rating and additional comments:

These proponents are looking for longer-term salinity changes rather than short term, because the width of the peat samples they are taking are not fine scale. However, this is a good project scientifically. It may not have immediate application for management, but it could provide some very useful information further down the line; the results could potentially lead to some unforeseen managerial benefits given the basic nature of the information**.**

<u>There was not much discussion in the proposal about how labile some of these isotopes are.</u>

The researchers indicate that they will focus on those islands not highly subsided, but this is not described well. There is some uncertainty about the exact sampling sites.

Thinking on these time scales is illuminating and helps put things in perspective. This proposal is more far-reaching and supplies basic science in the Delta – helps describe what it is to start with. It is a fundamental geochemical quantity to obtain – what was the salinity. To get at some management issues for CALFED should be some ecological counterpart on the same time scale. Putting some context with the ecology could be an important next step. This study could be part of a thread of research to understand how the Delta evolved.

It was not clear but they do have some fairly strong evidence the Delta used to be much saltier, but they shy away from drawing inferences in the proposal related to

this observation. Some discussion of the implications of this salinity would have helped provide context for the research.

The evidence that this system used to be much saltier is intriguing, but begs for additional discussion.

Weaknesses seen can be excused to some extent, because they had to squeeze it into five pages.

The project has considerable scientific value, but it is not clear that the subject needs immediate attention.

Subsection 3: Funding Recommendation and Justification

Funding recommendation for this supplement proposal and a justification of this recommendation.

Select one of the following three funding recommendations with an **X**:

__X__ Fund in Full
_____Fund with modifications
Suggested Funding Amount $_____
_____Do not fund

Justification to recommendation. If the recommendation is to <u>fund with modifications</u>, modifications the applicants must make in order to receive funds are listed.

This is a good project scientifically and uses cores already collected. The project could provide some very useful information. The results could potentially lead to some unforeseen managerial benefits given the basic nature of the information**.**