

Draft Individual Review Form

Proposal number: 2001-K203-2

Short Proposal Title: Merced River Water Temp

1a) Are the objectives and hypotheses clearly stated?

The objectives and central hypothesis of the study are clearly stated, however the data required to address the hypothesis is not well defined. Task 1 (the only task relating directly to the hypothesis and collection/interpretation of data) does not provide a specific description of what types of data will be collected. Task 1 merely states that “all pertinent physical and biological data” will be compiled. It appears that no new data or information will be collected. Instead, existing information will be organized/compiled, and then plugged into a conceptual model. Unfortunately, a conceptual model is unlikely to resolve the complexities of the myriad factor influencing water temperatures in the study area. The proposal does not make a convincing case for how their approach will resolve the considerable complexities of the system. If existing data is available to sufficiently describe and predict water temperatures, then why has it not been done previously? Why is there not more emphasis on using the existing temperature model or in developing a new one (if necessary)? A detailed, quantitative temperature model seems the only approach which could conceivably incorporate all of the hydrologic, hydraulic, physiographic and meteorologic factors effecting Merced River water temperatures.

1b1) Does the conceptual model clearly explain the underlying basis for the proposed work?

The setting of the problem is clearly explained, but the proposal does not explain in detail the way in which factors interact to affect water temperatures within the project area. This is probably a consequence of this being a feasibility study, and perhaps because many of the details are either unknown (e.g. effect of reservoir elevation on upstream residence time) or considered common knowledge (e.g. air temperature impacts). However, if greater consideration/understanding for these factors were reflected in the proposal it would enhance credibility of the conceptual model based approach. As it stands, the proposal does not make a convincing case that a conceptual model or other simple qualitative interpretation of collected information will be sufficient for understanding water temperatures, or for developing projects which improve river temperatures for salmonids.

1b2) Is the approach well designed and appropriate for meeting the objectives of the project?

See responses to 1a and 1b1 above. Since the proposed study appears to be based on existing data it is difficult to determine, without detailed knowledge of the system and extent/quality of existing information, whether the goals of the project can be met by the current study design. Since the remainder of the proposal (essentially solicitation/development of proposals for further study) is predicated upon Task 1, it is essential that the best possible information be incorporated at this phase (even if means collecting NEW data and developing new or functional temperature models). It is not clear whether the current study design meets this burden. If excellent data and calibrated models are not currently available, it may take several years to gather the required data- of course, this would crimp the proposal's time line.

1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project?

The proposal does not classify the project into one of the above categories, instead it is characterized as a “feasibility study”. The proposed study is probably most similar to a pilot project except that no actual field projects are proposed, only development of theoretical operational/engineering alternatives to improve thermal conditions.

1c2) Is the project likely to generate information that can be used to inform future decision making?

Yes. The report generated through Task 1 would be useful in identifying holes in existing information (if any) and in guiding the development of operational changes and/or construction projects to improve water

temperature management. Task 2 would develop several specific temperature improvement alternatives for the lower Merced River.

2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project?

Quoting from the proposal, “As a feasibility study, this project does not include specific monitoring methodologies.” Although the proposal does not require the collection of new data (i.e. monitoring), it does involve the consolidation and analysis of considerable data on hydrology, water temperatures, meteorology, etc. No provision is made in the proposal for how these data will be collected, quality controlled, analyzed or stored. The proposal cross references the Scope of Work, Budget and section on ‘Monitoring Plan and Data Collection Evaluation Approach’ for further information on this topic, but none of these areas of the proposal provide details of how this data will be managed and analyzed. The report to be generated in Task 1 (a summary of existing information) appears to be the only data product of the study. Depending on the types of data to be gathered, a database containing all physical data would be desirable product- especially since temperature/hydrologic occurs in 1 to 3 dimensional time series data and are notoriously susceptible to variable analytical interpretations. Having the data stored in this format would also facilitate development of more sophisticated models which may be required later.

2b) Are data collection, data management, data analysis, and reporting plans well-described, scientifically sound and adequate to meet the proposed objectives?

The proposal does not require collection of new data. However, collection, organization and analysis of existing information is key component of Task 1. As discussed above the protocols for management and analysis of this data are not specified in the proposal. It is unclear whether the information to be collected and analyzed will be sufficient to address the objectives of the study because: 1) the quality/extent of existing data is unknown to this reviewer, and 2) the complexities of local hydrology, channel/reservoir morphology, etc will determine whether the conceptual model approach will be sufficiently rigorous to reach the desired objective.

3) Is the proposed work likely to be technically feasible?

Yes. The main obstacle to completing the work and achieving a satisfactory outcome will be in gathering sufficient data and interpreting it such that processes and features effecting Merced water temperature can be thoroughly understood. Efforts to coordinate project efforts with other interested parties and agencies will also be a challenge, but this concern is well addressed in the proposal.

4) Is the proposed project team qualified to efficiently and effectively implement the proposed project?

The proposed project team appears well qualified for project management and fisheries assessment. Unfortunately, while concern for salmonid fisheries is the motivation for the proposed project, the substance of the project depends heavily on expertise in hydrology, engineering, and temperature modeling. Since none of the project team members appear to have extensive expertise in these areas, the team does not appear adequately qualified to execute the proposed project. The lack of experience in these areas might prove particularly problematic during the critical Task 1, where data must be collected and interpreted to achieve a thorough understanding of complex factors influencing observed or projected water temperatures. The lack of expertise in the subject area could result in a poorly developed conceptual model or reliance on a conceptual when a more sophisticated model is required to capture the complexities of the system. Of course, problems with Task 1 (the building block of the project) would cascade through the remaining project elements.

Miscellaneous comments

- If data is currently available on physical project specifications, operating strategies/requirements and thermal/flow information why has it not already been summarized and interpreted?
- What is the scope and problems (if any) with DFG’s water temperature model and why is there not more emphasis on using this or other models?
- The price tag for Task 2 seems excessive and is not explained or justified in the proposal

**Overall Evaluation
Summary Rating**

- Excellent
- Very Good
- Good
- X Fair
- Poor

Provide a brief explanation of your summary rating

Rating: Fair. The proposal is well intentioned and addresses a subject of critical importance to salmonids in the lower Merced River. However, its is unclear whether the methods to be employed (conceptual model of existing data) will be sufficient to characterize complex factors affecting water temperatures. The proposal is short on details of how data will be handled and interpreted. The lack of detail in approach and data interpretation (Task 1) probably stems from the fact that the project team does not include an expert in hydrology or flow/temperature modeling . Completing Task 1 independent of subsequent tasks would allow information to be organized, interpreted and findings evaluated before additional work is funded or carried out.