

Proposal number: 2001-D202-2

Short Proposal Title: Non-Structural Alternative at the San Joaquin River National Wildlife Refuge: Refinement for Habitat Enhancement.

1a) Are the objectives and hypotheses clearly stated?

The objectives and hypotheses are stated in several sections of the proposal and are not clear in their entirety to this reviewer. The objective of applying a hydrodynamic model to predict the patterns of overflow behind breached levees is clear. An objective of relating the modeled flow patterns to anadromous fish is not clearly stated in any one place, but seems to be an assumed primary objective throughout the proposal.

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

The conceptual model discussion references a second conceptual model in a concurrent proposal for the larger wildlife refuge project that this proposal would in effect monitor. That model describes generalized, predominately terrestrial, effects of levee breaching, and does not add to an understanding of this proposal.

Otherwise the conceptual model consists of the preliminary findings of recent investigations on the lower Cosumnes River and in the Yolo Bypass, referenced to personal communication. These studies have shown the presence of larger juvenile salmon on off-channel flooded areas than nearby, which is hypothesized to mean that the floodplains produce more adult salmon than other areas. The studies have also shown that some salmon can be stranded on floodplains as they dry. The conceptual model drawn from these references explains an underlying expected purpose for the proposed study, which is to develop a way of predicting physical conditions that might lead to salmon either growing or dying on floodplains. The proposed study does not intend to test the model hypotheses, but rather to apply it as a guide to restoration and as a means of assessing the effectiveness of restoration.

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

The approach appears well-designed from the point of view of hydrodynamic modeling, as described in Section 2b, Approach.

On the biological side, the approach outlined is somewhat vague. Its design consists primarily of an intention to consult with “agency staff, the public/stakeholders, and scientific experts” on how to proceed. This would include the assembly of “an expert review panel” to help develop and review biological methods that are not described in the proposal.

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

There does not appear to be an attempt to address this in the proposal. The application of any model will have elements of a research project. It is doubtful that a pilot or demonstration project would serve the purposes of this project, so not having a direct answer to this question is not a deficiency in the proposal.

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

Yes. The hydrodynamic modeling will generate predictions of the inundation resulting from the project under various hydrological conditions, which may be used for managing land-forms and vegetation. The modeling may also provide substantial information on the possibility of stranding fish under various hydrological regimes, and information both on operation and topographical modifications that might help avoid stranding. If it is accepted *a priori* that floodplain inundation is a defining element of anadromous fish ecology, then the modeling can be used to gauge the success of the project by predicting frequency and duration of inundation.

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

The project is in its best aspects an information assessment project that will clearly aid in assessing the outcome of the parent project by helping predict where water would flow under probable long-term hydrological conditions. The proposed biological evaluation, however, appears to rely on speculative interpretations of fragmentary data, and on a panel of experts rather than on data collection.

There may be some mix-up in the coordination of two, or possibly three proposals for this area. The proposal refers to a monitoring plan for fish “being proposed by the Refuge” in a year 2000 PSP. The year 2001 PSP for the refuge proposal includes the statement that “anadromous fish population and their immediate habitat (other than shaded riverine aquatic) will not be specifically monitored as part of this project”, and refers back to what is apparently this modeling program proposal as providing project monitoring. It appears that there is some confusion about monitoring and assessment plans, with each proposal assuming the other responsible for necessary element

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

No detailed information is presented on data collection, data management, data analysis, or reporting.. It may be assumed that standard procedures exist for collecting the physical data necessary for the proposed modeling, and that the lack of a detailed description of these procedures is not a deficiency in the proposal.

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

The proposed hydrodynamic modeling appears to be technically feasible, since it has been approved or is in use by federal agencies concerned with floodplain management, and will be carried out by qualified professionals. Determination of the usefulness of floodplain management to anadromous fish through hydrodynamic modeling will not be feasible until more is known about the use of floodplains by anadromous fish and how it relates to the entire life-cycle of these fish and to their use of areas other than floodplains.

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

The participating consulting firm appears eminently qualified to carry out hydrodynamic hydrological modeling. The proposal does not include information on the expertise of participants in the area of salmon ecology. To the extent that knowledgeable agency, stakeholder, and academic biologists are able to participate in the project, the proposed association of hydrodynamic modeling with benefits to anadromous salmonids may be moderate and realistic.

Miscellaneous comments

The hydrodynamic modeling would probably be very useful in planning and managing seasonal wetlands behind the levees, and could be a useful tool in evaluating potential stranding problems as discussed in the proposal. The potential benefits to wetland wildlife habitat management should be explored if there is any revision of the

proposal, because this is an area where refuge personnel have solid practical experience, and where it is possible to directly monitor the population effects of a restoration project.

The proposal's biological element relies on an untested hypothesis that observation of comparatively large juvenile chinook salmon in some flooded areas shows that salmon and steelhead populations in the San Joaquin River are limited by the availability of floodplain habitat. This hypothesis should be investigated scientifically before it is used to evaluate and operate restoration projects.

**Overall Evaluation
Summary Rating**

Provide a brief explanation of your summary rating

- Excellent
- Very Good
- Good
- Fair**
- Poor

Fair. The proposal to provide a model of the inundation of the project area under varying hydrological conditions is good. The proposal to tie the water modeling to an estimate of the amount of anadromous fish habitat provided is over-optimistic about the current state of scientific knowledge, however, and would tend to prematurely lend authority to untested hypotheses about the role of floodplains in San Joaquin River chinook salmon ecology.