Draft Individual Review Form

Proposal Number: 2001-K218-2 **Short Proposal Title:** Butte Creek Chinook Salmon Evaluation

1a) Are the objectives and hypotheses clearly stated?

The objectives of the project, as stated in the executive summary, are consistent with the purpose stated in the Project Description. The connection between the "Statement of the Problem" and the objectives is not established. In the problem statement, the author indicates that the proposed project is critical for evaluating the effectiveness of restoration projects that have been implemented and are planned to restore salmonid populations in Butte and Big Chico creeks, including effects of fish ladders, fish screens, dam removal, and flow augmentation.
The objectives, however, do not address effectiveness of restoration actions. Although knowledge of life history, migration timing, and rearing patterns for salmon and steelhead is needed for understanding species needs and setting management priorities, implementation of restoration actions indicates that information available was sufficient to identify priority problems.

The objective "continue to develop a long term record of adult salmon abundance" may contribute to an indirect evaluation of restoration project effectiveness. Adult abundance, however, is highly variable, responding to many factors potentially unrelated to the restoration actions. Without identifying the mechanisms leading to restoration of the salmonid population that are associated with each restoration action and the expected magnitude of population response, the usefulness of the proposed study in evaluating effectiveness of planned and implemented restoration actions is dubious.

The hypotheses are not well stated. In the executive summary, the hypotheses might be better stated as:

1. Increasing adult escapement and increasing relative juvenile abundance over time indicate recovery of spring-run chinook salmon.

2. Successful rearing by juvenile spring-run chinook salmon in the Sutter Bypass is a primary factor affecting population abundance.

3. Survival of juvenile chinook salmon rearing in the Sutter Bypass is greater than survival of juvenile chinook salmon rearing in the Sacramento River.

4. Spring-run chinook salmon are captured in substantial numbers in the ocean fishery.
The hypotheses, however, are not addressed by the stated objectives of the study.

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

The conceptual model is poorly stated. The author stated that "This research will provide a guide to the evaluation, refinement, and prioritization of restoration projects in the Bay-Delta ecosystem". The

connection between the author's statement, the project objectives, and the hypothesis being tested is not established.

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

Part of the approach is well designed and appropriate to meet the stated objectives of the project: Screw trap sampling and coded wire tag studies will increase the existing knowledge of life history, migration timing, and rearing patterns for juvenile salmon and steelhead. Estimates of adult chinook salmon escapement will contribute to developing a long term record of adult salmon abundance.

The relative abundance estimate for juveniles is questionable. The study does not include a component for testing the efficiency of the screw traps, and estimates of even relative abundance will not be possible. About all that can be determined is presence/absence of migrating juveniles. Estimated migration timing will be questionable without relative abundance estimates.

The purpose and utility of capture (or video) of adult fall-run chinook salmon and steelhead at in the fish ladders of one of the dams is unclear. The researchers indicate that sampling for steelhead will likely be incomplete and may not provide any information sufficient for estimating escapement. Neither scales nor otoliths are proposed to be collected, therefore life history information will not be developed. The fate of fall-run chinook salmon is also unclear. The author states that capture would allow fall run to be excluded from the spring run spawning area, but they fail to say how exclusion would occur and where fall-run would be released. Counts of fall run would also be in question if adults are released downstream and spawning occurs downstream of the capture facility, potentially leading to incomplete counts of fall run fish.

The study with paired release of coded-wire tagged salmon on the Sutter Bypass and the Sacramento River is unclear relative to expected information gained and scope of the study. Will this study be conducted when the system is relatively in control (I.e., minimal flow of Sacramento River water into the Sutter Bypass) or during flood events? Will the study be closely coordinated with other studies on the Sacramento River, the Yolo Bypass, and the Delta to maximize information value? Will scale or otolith samples be collected to allow estimates of juvenile growth rates?

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

The project is primarily research. The study as a whole is not well justified because a connection between the research and past and ongoing implementation of restoration projects is not established.

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

The abundance estimate components relative to monitoring spring-run chinook salmon adults will be critical in determining recovery of the species under the federal and California Endangered Species

Acts.

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

The project is research, without clear connections to restoration projects, this question is not applicable.

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

Data collection, data management, and reporting plans are well described. Data analysis, however, is not discussed in any detail. Substantial time is allocated for a data analyst in the proposed budget, but the proposal does not describe what the analyst would do. The attached report on previous studies illustrates the need to develop data analysis protocol. Hypotheses are not addressed in the report and analysis consists of presenting raw data. Clearly, for the collected data to be of value in management of Butte Creek and salmon and steelhead populations, the data needs to be analyzed in the context of stated hypotheses. It would be most beneficial, relative to the goals and objectives of the CALFED program, if those hypotheses were developed in the context of restoration actions rather than the general population issues indicated by the proposal.

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

As supported by previous studies, the proposed work is technically feasible.

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

Although names and qualifications of all project participants have not been identified, Kathy Hill's experience in conducting the preceding studies supports her competency and qualifications to manage a team that will efficiently implement the proposed project.

Miscellaneous comments

Overall Evaluation: Provide a brief explanation of our summary Rating.
Summary Rating: Fair.

Part of the CALFED mission is to restore ecological health and the goal of the ERP is to improve and increase aquatic habitat and ecological functions to support sustainable populations of fish species. As the proposal author indicates, projects have been implemented and are planned to restore salmonid populations in Butte and Big Chico creeks. The proposal author also indicated that the proposed project is critical for evaluating the effectiveness of restoration actions. However, the proposal did not advance objectives or identify hypothesis related to specific restoration projects. The hypothesis stated in the text were broad, population level hypothesis. The stated objectives focused on the type of data

collected and generally did not connect to the hypothesis. The proposed collection of escapement data will likely be useful in evaluation of species recovery over the long term, but how the collected information would be used to develop restoration actions needed or evaluate the success of implemented actions in recovery of the species is not established.