Merced River Restoration Project Monitoring, Crocker−Huffman Dam to Gallo Ranch

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Technical Panel Review

Technical Review Panel's Overall Evaluation Rating:
Inadequate

Explanation Of Summary Rating

The proposal could have been ranked higher had more details been provided regarding the specific tasks and if the PIs could have generated more confidence in their abilities to carry them out. Numerous typos and editing errors distracted from the overall quality of the proposal. The objectives of the restoration projects lacked specificity and it was difficult to relate this project's tasks to the restorations' goals. Nonetheless, some of the hypotheses to be examined could yield interesting and relevant results.

Goals And Justification

The proposal lists the restoration actions and objectives, however some are so vague (eg, “improve sustainability of river”) that it is difficult to determine how they will be monitored. The conceptual model is generally clear. Hypotheses are provided but some are trivial (e.g., test whether ‘floodplain begins inundation as flow reaches designed bankfull') or potentially so complicated (‘the distribution of fines on the surface and in the subsurface can be predicted'), that it is difficult to pick out the meaningful ones that can be realistically addressed given the scope of the project and the team’s qualifications.

Approach

In general, the project is well−designed yet many details are lacking and the project's success is dependent on adequate attention to those details. Tracer gravels are proposed – where? when? how many? what kind? Velocity profiles are

proposed to test whether the flow is behaving as it should around the riffles – at what flows? at what resolution? The PIs want to determine how the quantity and distribution of fine bed material affects the mobility of the coarse gravel framework. This is an interesting question that is unlikely to be answered by this project in its present configuration. How will they control for other factors that might affect gravel mobility? Is there a reference reach? The project will extend previous monitoring but no modifications based on prior monitoring are specified. Furthermore, no data from this previous monitoring were presented. This project could potentially yield significant contributions but the ambiguity in many of the proposed tasks makes it difficult to determine whether they actually would.

Feasibility And Likelihood Of Success

As mentioned earlier, some key details are missing regarding the geomorphic monitoring. Some tasks do not appear to be technically feasible given the scope of the project and the qualifications of the team, specifically hypotheses 11 (predicting the subsurface distribution of fines) and 12 (the role of fines in gravel mobility). Neither the regional panel nor the environmental compliance panel raised any significant red flags.

Performance Measures

Because the specific goals of the restoration actions were not provided, it is not possible to determine whether this project will address them. Specific measures that will be monitored include channel shape and planform, the quantity of native woody species recruited, and bed texture. A better connection could have been made between the restoration effort’s conceptual models and the work done in this project. For example, one of the key aspects of the restoration's conceptual model was that higher temperatures were hurting the fish but there was no mention of monitoring temperature in this project (maybe this is already being monitored by someone else?).

Products

The PIs identify a unifying conceptual model that proposes that, over time, rivers will take our engineering designs and rework them and make them better. If the PIs could show that this is true (albeit 3 years is probably too short but you have to start somewhere), this could be a powerful concept. This might imply that we don't need to spend so much time and money trying to micro−engineer the channels but that we can give them some reasonable initial condition and let them do the work. The project would be linked with similar efforts on the Tuolumne. Meetings would be held with stakeholders. Graduate students from UCSB will be involved in data collection. Data will be kept with DWR and CDFG and data will be available upon request or via a website (BDAT would be a good choice). The PIs anticipate submitting their work to peer−reviewed journals however the CVs did not list any prior publications so their track record is unknown. The results could be of high−quality but not enough information was given on precisely how the data would be obtained. Nevertheless, some of their hypotheses are quite interesting and relevant and would yield significant contributions if properly tested.

Capabilities

Seventy−five percent of the hypotheses are geomorphological in nature yet only 17% of the team seems to have the necessary background to deal with them beyond the most basic level. Because some of the work necessary to address some of the hypotheses (eg, 11 and 12) is fairly technical and exploratory, we would feel better about the team's capabilities if somebody with a proven scientific track record on sediment transport processes were involved.

Budget

The budget seems high. $1000/yr for office supplies and $7000/yr for vehicle maintenance and repair seems unjustified and unreasonable.

Regional Review

Rank: medium. The panel agreed that the Merced is high−priority. The main complaint was that the PIs did not establish a tight link between the proposed fish monitoring and the restoration actions.

Administrative Review

The prior phase and environmental compliance reviews did not raise any significant red flags. The budget review requested more details regarding the contingency task.

Additional Comments

San Joaquin Regional Review

San Joaquin Regional Panel's Overall Ranking:
Medium

Summary:

It is important to monitor the investment made in the Merced but our panel had two major concerns: 1. Fish monitoring did not adequately address relationship to restoration actions on Merced or other areas 2. Some of the fish monitoring is ongoing work that is funded by other programs and should be continued to be funded by those programs.

1. Applicability To ERP Goals And Regional Priorities.

Medium to High. The Merced is a high priority stream, but the applicants could have done a better job by proposing to monitor a fuller range of habitats and species. Relative to other rivers the range of processes, habitats, species being monitored are not great. The proposal does not make good case made that juvenille monitoring will link back to restoration action on the Merced or in other CalFed priority areas.

2. Links With Other Restoration Actions.

Low to Medium. Proposal did not address this issue explicitly as called for in PSP (Section B2). The proposal's relationship to other regional monitoring programs, including its coordination with them and the applicability of its techniques and findings to other rivers, is not well explained. Better explanation of how other programs could benefit is needed. We would have liked to see better committment to data sharing and dissemination and outside expert review of results. How will this fit into long−term monitoring and data dissemination?

3. Local Circumstances.

Medium to High. Past work provides a good foundation for continuing ongoing activities although there are concerns about contract management issues in the past.

4. Local Involvement.

High. The applicant proposes to coordinate with the local stakeholder group. We would like to see if it is possible to incorporate more students from local schools such as UC Merced, CSU Fresno and Stanislaus as a way to strengthen local institutions' involvement in the project.

5. Local Value.

High

6. Other Comments:

Numerous Q's 1. Can funding for some of biological monitoring be from existing sources? 2. Does geomorphic monitoring need to be done every year especially if high flows do not happen annually? 3. In general does everything have to be done every year? 4. At what point can monitoring be more periodic, less frequent? 5. Some of the work proposed appears to be ongoing monitoring that is not directly related to evaluation of these restoration projects.

External Technical Review #1

Goals And Justification

The restoration actions to be monitored are channel &riparian improvements to the Merced River near Snelling, which was formerly an important spawning reach for Chinook. The objective of the restoration is to recover &increase Chinook spawning habitat, increase juvenile survival, &improve the ability of smolts to reach the ocean by restoring channel morphology &channel substrates. The underlying basis for restoration is long−term degradation of the Merced River channel &recent catostrophic events that have combined to reduce spawning &increase barriers to smolt migrations. 22 hypotheses are stated. The hypotheses are all interesting. Although it is intuitive that riparian vegetation is an important component of a river valley, the link between the proposed riparian studies &Chinook habitat is not clear within the proposal. Is the native vegetation necessary to hold the reconstructed channel in place? Does it provide more Chinook forage by facilitating higher terrestrial invertebrate production? Does it provide more shade than nonnative vegetation? Is it less likely to encroach on the channel &induce narrowing? The point here is that although riparian restoration sounds nice &likely is an important part of the bigger picture, it is not obvious how the riparian restoration will benefit Chinook. Hypotheses 13 through 16 deal exclusively with riparian restoration studies &should either be linked more closely with Chinook or should be removed from this proposal &added to a different study concerned either specifically with riparian restoration or with riparian processes or faunas. Riparian restoration is not included as an objective of this proposal (p. 4), which strongly argues for the removal of this work from the proposal.

Approach

The proposal purports to be largely a continuation of ongoing monitoring &study. This may be true but the results of previous work are not presented making it impossible to know

how the proposed project will build on previous work other than to add to the mass of data that apparently already exists. Major components of the approach are: (1) to track geomorphic changes following restoration to see if improvements persist, (2) to track Chinook spawning &smolting success. (1) Geomorphic monitoring will be accomplished along 32 cross sections that are already established. Monitoring will take place annually if annual peak discharge is high enough to suggest the channel could have changed (i.e. 1700 cfs). Otherwise cross sections will only be monitored once, after 3 years. There will be additional floodplain surveys, emphasis on potentially unstable areas, surface water profiles, remote sensing, &sediment transport modelling in association with very large floods or as deemed necessary (?). Pebble counts will also be done &trace gravels will be monitored, but the schedule &intensity of this work is not easy to discern. (2) Surveys are conducted for spawning Chinook, Chinook carcasses, &redds. Dye−marked &PIT tagged smolts from a hatchery will be released evaluate survival &downstream migration. Juvenile production is monitored with a screwtrap. Snorkel surveys will monitor juvenile habitat use. This proposed study is truly a large exploratory evaluation of river channel restoration versus Chinook productivity. It seems to have potential for documenting Chinook response, but the number of hypotheses seems unnecessary &redundant, which leads to confusion. Several of the biological hypotheses focus on the distribution of redds. Perhaps a single goal: "document all redds in the study reach, analyze their distribution at multiple spatial scales, &compare their distribution among restored &unrestored areas" would be sufficient. Similarly, a single goal: "document distribution &habitat use of juvenile Chinook from natural reproduction (actual number unknown) &from hatchery stock (actual number known) to evaluate productivity (natural reproduction) &survival (hatchery stock) as well as habitat use (both stocks)". These goals seem justified &useful but they do not constitute a test of any kind, simply an accounting of Chinook status. However, without knowning Chinook status, it would be difficult to manage Chinook populations, plan future management strategies, or evaluate future activities. Spawning locations could be mapped &compared on a year to year basis. Productivity, survival,

&habitat use could be compared from year to year. It is not obvious these comparisons will be done in the proposal or if there are historical data for additional comparisons, but if so, it would be useful information. However, these data will not necessarily prove the success or failure of the restoration per se because other factors may also influence Chinook success, such as climate &other habitat impacts such as urbanization or pollution or the benefits of other restoration activities such as canal intake screens. Some of the geomorphic hypotheses seem unnecessary. Hypothesis 1: 'project will change from baseline conditions' seems obvious. Certainly there will be change. Maybe not in 36 months, but someday. What is the value of this hypothesis? Hypothesis 7: 'spatial patterns and probability distributions of flow depth &velocity vary with discharge &can be used to characterize instream habitat' is also obvious. Discharge has 3 components: depth, velocity, &width. If discharge changes, at least one of the 3 components will change. There is no need to study this. Perhaps this hypothesis intends to document HOW instream habitat changes by measuring depth &velocity at different discharges? In fact, most of the geomorphic hypotheses seem to simply state relations that are known to exist in nature. The question should be exactly how will these relations manifest themselves in the Merced River study area &will these manifestations benefit Chinook or not? This is not to say the proposal is deficient. I just think it would be more straightforward to describe clearly exactly what geomorphic variables were affected by the restoration &then exactly how each one will be monitored for change. What is perhaps even more important is how each restoration effect is expected to affect Chinook. Was the restoration accomplished with no quantitative goals? Hopefully not. Hopefully there was a plan to add a certain amount of gravel to create a certain amount of a certain type of riffle that was gaged to be suitable for spawning. Hopefully the plan for channel restoration had a specific design for width, depth, sinuosity, complexity, etc. that was postulated to be best for Chinook. The hypotheses should specifically refer to these quantitative objectives. Was the specific goal of the restoration achieved? Did it correspond with better Chinook success? This seems to be what the proposal &hypotheses are driving at but without specifics

&with the vague wording in the proposal, it sounds haphazard. The descriptions of methods are vague &the large number of hypotheses is difficult to keep entirely in mind, so it is not easy to tell exactly what will be studied or what products will be generated from all the monitoring &modelling that are referred to. If the modelling is successful at tracking gravels in such a way that clearly shows how much gravel supplementation is necessary to substantially benefit Chinook, it would indeed be valuable information, but given the level of detail in the proposal it is difficult to guess whether that result is likely or not.

Technical Feasibility

The field aspects of the project, to detect change, are feasible but it is not evident what information will be generated except that "a change occurred". Modelling aspects may be feasible but there is not enough detail ,more importantly, it is impossible to guess whether models will actually be applicable. That is, will models actually turn out to be useful for predicting how much gravel addition is necessary? Are models even necessary or can current trial &error strategies adequately address this issue without the need of expensive model development? What are the assumptions of the model? Are the assumptions reasonable for the Merced River &the data that will be available? None of the field methods are described in detail. Particularly, the pebble counts are described with one sentence that doesn't even include the level of sampling effort. The trace gravel study is introduced with even less verbiage or detail. There is no information on the location of cross sections so it is not certain if there are enough cross sections to accurately evaluate change (or too many) or if they are located appropriately or if their location corresponds with any plan whatsoever. Many potential strategies (remote sensing, pebble counts) are included in the budget but the wording in the proposal does not make it clear if they will actually be performed. Similarly, the biological monitoring could use a lot more detail. I have a difficult time understanding how PIT tag monitoring differs from dye−mark monitoring. If there is reach specific sampling for PIT tagged fish, won't the

surveyors also note dye−marked fish that they collect? Juvenile production monitoring is also vaguely described. 'Infiltration cans' are a substantial component of the proposed geomorphic monitoring budget but are not described in the proposal.

Performance Measures

The performance measure is detection of a change for a number of parameters. This will allow only indirect evaluation of restoration actions because it will rely on the assumption that change was caused by restoration. Anecdotal information will either provide support for or argue against this assumption but the study will not be able to say that a change in a specific parameter caused a specific change in Chinook status. That will be a 'link of faith'. Detecting a change is easy. Understanding the implications of a change is much more difficult but much more applicable. The plan is not explicit or detailed &is encumbered by having too many hypotheses. Although a conceptual model is provided, it is not made clear how the many data sets will be integrated to provide comprehensive understanding, which appears to be the goal of the proposal.

Products

Detection of geomorphic and Chinook population change will be useful for everyone because geomorphological understanding is important as is the status of Chinook. Whether studies are necessary to answer all the geomorphic hypotheses (e.g. is bedload mobilized) is another question. The use of data by others is not explicitly described. Nor are data handling &dissemination measures. The hypotheses &proposal seem to imply that not much is known about geomorphology or Chinook ecology but in truth there is much known about both subjects. It is not clear that the proposed monitoring would contribute new information on either subject that would be suitable for peer−reviewed publication. That is not to say the information would not be valuable, because it would provide much status information on the Merced River, but such information would likely only be publishable in regional journals. As stated,

the hypotheses seem most capable of confirming geomorphic relations that are already well known. They do not seem likely to gain much detailed information because they are so general. The proposal states that it has already been shown that restoration improves Chinook spawning, so those hypotheses also seem redundant, particularly because they are stated so generally.

Capabilities

There is no reason to think the team could not easily complete the project. The modelling is likely to be the most difficult portion of the study, but making a model is easy, making an applicable model is difficult &without more information it is difficult to know how applicable the model might be. The performance record is not indicated.

Budget

The budget is large, but could be reduced if the riparian monitoring is eliminated. The troubling thing about the proposal is that with such a large budget, one would hope to see greater focus. A more compelling conceptual view of how the many types of data will be integrated, thus illustrating why each data type is critical, would greatly increase my confidence in this proposal. Beyond this, one would hope to see more specific criteria for each data type. What are the criteria for spawning gravel? What is the target gravel depth? What is the target gravel particle size? What is the target channel profile? What is the target channel planform? What is the target density of redds? What is the target juvenile survival rate? What is the target smolt migration rate? Will the findings of the monitoring tell us whether or not we have met these targets &if not how to better reach them? $2 million seems like a lot to pay simply to detect changes. Remote sensing, one years worth of channel cross sections with pebble counts(in year 3), annual redd surveys, &annual screw trap surveys seem adequate to detect change without all the additional studies. I firmly believe that the additional proposed studies could be useful &may even be critical but I have not been convinced how or why by the proposal.

Additional Comments

Perhaps the hypothesis testing format of these proposals leads to confusion. The only way a 'monitoring' study can test hypotheses is if the study is an integral part of the restoration action (i.e. before &after data are collected in the same location &in the same manner &compared to control data). Post hoc studies are only capable of monitoring conditions. Thus, it would be easier to understand pos hoc proposals if they avoided stating hypotheses &simply described in detail what information they would collect &how it would contribute to greater understanding &most importantly how they will make links between 'responses' &'restoration' because if a change is detected in a post hoc study, the task of eliminating all other factors that could have contributed to that change remains, unlike a true experiment that controls for other factors through the use of control reaches, replication, &randomization. In any case, this proposal exemplifies the difficulty of trying to place a descriptive post hoc study into a hypothesis testing framework. The authors chose to identify a very large number of hypotheses that is useful for highlighting the great variety of data they intend to collect. The difficulty with their approach is that it reduces focus on the overall objective &instead places focus on individual pieces of the project. The pieces are only important if they integrate in a meaningful way with the other pieces. This integration is the thing most lacking in the proposal, although the lack of detail for field work &model development is also a major problem. In addition, analyses such as Program Mark are not intended for post hoc studies but for experiments or studies with explicit a priori hypotheses (models). No a priori juvenile survival models are presented in the proposal. It is possible to use Program Mark in an ad hoc fashion (although frowned upon), but the ability to infer causation from the results is lost. Thus, the use of Program Mark as proposed may be useful for identifying trends that could then be studied to determine causation in future studies, but not in this study.

External Technical Review #2

Goals And Justification

The proposal identifies the monitoring outcomes of restoration actions to some degree. The geomorphic and fish habitat and abundance actions are less vague than the riparian corridor actions, which are too vague to be useful. The goals and objectives are internally consistent, but the objectives are not measurable as presented; they read more like goals. For example, "Improve the sustainability of the river" does not have the usual attributes of an objective (where, how much of what over how long time).

The conceptual model adequately serves as the foundation for restoration actions. However, the hypotheses, if they can be called that, are trivial. That is, some are not testable and will probably not lead to significantly improved understanding of the system. The monitoring has a strong exploratory aspect to it, which is understandable and acceptable given the lack of detailed knowledge about the system. But there should be some effort towards defining relationships between variables and setting target values for parameters. In other words, quantifying process. This is addressed to varying degrees in the Data Evaluation section, but there is a poor tie between the hypotheses and the Data Evaluation. Therefore, the "hypotheses" are not very relevant to knowledge gaps.

Approach

The approach is appropriate, but the design quality ("well−designed" implies quality) varies. Quality designs incorporate relevant parameters, have expected or target values of these parameters, accurate parameter measurement (efficient sample design, adequate sample size), and appropriate data analysis. The information provided in the proposal is too superficial to allow a substantive evaluation of design quality. The fish abundance aspect is the least superficial, while the riparian revegetation aspect is vague and unclear.

The project builds on previous monitoring of geomorphology, fish habitat and abundance, and riparian revegetation. There are few specifics, and it seems to be a continuation of previous work that is losing its traditional funding. The addition of PIT tag technology to monitor survival and production of young salmon is a welcome addition, as the previous work relied only on hatchery smolts at screw traps which did not provide information on wild fish. This addition shows a response to previous experiences.

The monitoring and evaluation activities should contribute to the knowledge base and be useful to decision makers, but their degree of significance is difficult to comment on because not enough information is provided on sample sizes, design, Such information would greatly increase the length and complexity of the proposal, so such an evaluation is not possible given the proposal's format and constraints.

Riparian vegetation is not mentioned in the problem statement. One can infer from the rest of the proposal what the problems are, but they should be presented in the problem statement to guide the reader.

Technical Feasibility

The project is not fully documented, particularly the methods, but as mentioned above, the format and length constraints of the proposal do not allow it. The project appears technically feasible, but some aspects depend on future streamflow meeting target or prescribed levels. This is beyond the control of the investigators, of course, but learning about geomorphic response depends on these flows being met or exceeded.

Performance Measures

Some evaluation will be possible, but there are few reference conditions presented so the evaluations could be crude. The hypotheses and objectives give no insight into what levels (say the amount of Chinook salmon spawning habitat area) would be considered successful. However, the data evaluation section for many hypotheses hints at reference or target levels. The

source of which is either untreated reaches or pre−treatment conditions measured during past monitoring. So, the rationale for performance measures is not clearly demonstrated. Likewise, the monitoring and evaluation plan is not explicit enough to assess the performance of the restoration actions, except on a crude, qualitative level. As mentioned above, length constraints of the proposal limits the amount of detail. A table showing parameter and attribute values and where they came from would be a concise way of presenting target conditions.

Products

The project will likely provide information that is useful to resource managers; it is difficult to imagine otherwise, as the primary investigators are fisheries managers. If results are placed in a proper context, they could be useful to broader−level policy makers. Much of the work is routine and may not be very useful to scientists interested in process and theory. However, new information on fish sampling may occur, and the effects of mycorrhizal inoculations on plant survival is interesting.

The proposal describes data availability adequately, and the handling, storage and dissemination measures should allow reasonable access to results by those outside the project. Several peer−reviewed papers are expected by the investigators. Given the nature of most of the work, this is not readily apparent, but with some creativity and effort, and assuming sound sampling and analysis, peer−review quality papers are possible.

Capabilities

The project team’s qualifications are commensurate with the project, and the mix of disciplines is appropriate. The Revegetation Coordination person has the least experience and this shows several ways in the proposal. The project team has past monitoring experience along the Merced River. However, their longest duration work is cited as CDFG 2003, but this reference is not listed among the Literature Cited. No other

publications or reports are apparently cited or listed either. Their most recent work will be documented spring 2005. Although I see no strong indication that they will not complete the proposed project, some of the proposed hydraulic modeling is quite advanced even for research−grade physical scientists.

Budget

The budget is ureasonably high for some items and inadequate for others. Two tasks appear to be over−funded: Project Management and Geomorphic Monitoring. It is not clear to me why Task 1 (Project Management) needs to have the proposed levels. This project is not that complex, many of the implementing personnel are highly trained, and similar work has been on−going with apparently the same people. Task 1 overlaps with Task 2 (Public Participation), contract administration, and other activities alluded to but not identified. The annual funding for Task 1 is about $60K, while indirect costs, which traditionally cover basic administration, is about $92K per year. Somewhat related to this is the Supplies and Expendables line, which is $4K per year. These funds are slated for "photocopier, printer, paper, pencils, phone, etc". Will a printer and photocopier be purchased yearly? The only subcontractor is the California Department of Water Resources, so administrative complexity is low. A Project Management Task should be funded, but I have been involved with much more complex projects where a project manager had oversight on 8 projects that equaled or exceeded the complexity of this one for about the same salary ($50K).

Task 2 (Geomorphic Monitoring) is inefficiently funded. Three to five Associate Engineers are slated to do work that requires a moderate amount of training (e.g., pebble counts, land surveying). Students from the UC Santa Barbara are to help with these tasks. The transects areas to be surveyed do not have much impeding vegetation and look to be straightforward, and there are only 25 of them. If target flows do not occur, only one year of geomorphic monitoring is proposed to be done, so this is a contingency item. There is already about $60K each year earmarked for "Contingency". One

Associate Engineer and a few technicians/graduate students should be able to manage Task 3 at significantly less cost.

Travel for field work is largely unfunded; only the surveys in Task 3 have travel associated with them, and this seems to be for UC Santa Barbara students. Are primary personnel (Associate Engineers, Environmental Scientist, etc.) expected to travel to the field, and is their travel covered by other funds? Why the token participation by UC Santa Barbara graduate students? Hopefully they will do more than count rocks, hold survey rods, etc., otherwise there is not much educational value for them.

A new stream gage has been (or is going to be ?) installed at the upper end of the project site. There is no funding identified for maintaining this gage and its data. There should be if it is not funded by other means.

PIT tags will be purchased every year, so I am assuming they are left in the fish (as usual) and do not last more than three years. If so, their cost should be moved to Supplies and Expendables. The same goes several other items listed in the Equipment category (e.g., oars, waders).

Additional Comments

The revegetation monitoring is ambitious given the level of funding. For example, measuring growth and competition on many species of differing life forms is not easy. There are many treatments, but there only seams to be six replications (“management areas”). The general experimental design is difficult to glean from the proposal, and I get a feeling that the overall understanding of efficiently and accurately measuring vegetation is a little “sketchy”. There is not one citation about Merced River or Central Valley riparian vegetation or vegetation science methodology. Perhaps, without being to presumptuous on these matters, I could recommend a practical, thorough, and cheap text on measuring and monitoring plant populations. The last 5 words comprise the title, and it is by C. Elzinga, D. Salzer, and J. Willoughby. Published in 2001, it is available from Blackwell or as a pdf

from the Bureau of Land Management Denver Service Center library. Willoughby is from the BLM California State Office.

External Technical Review #3

Goals And Justification

It is not very clear which restoration actions would be monitored by this proposal. A list of 20 restoration projects is given in Table 1, but only the source and amount of funding are given, not the specific restoration action taken. In addition, the budgets for some of the projects are listed as "Not fully Expended", so it is impossible to tell whether the results of these projects could even be monitored at this time. It is not clear from the initial descriptions whether the "Crocker−Huffman Dam to Gallo Ranch" reach, which would be monitored by this proposal, is the same as the "Robinson Reach" where many of the restoration projects have apparently taken place, or whether the proposal covers a greater length of the river.

The goals of the project are clearly listed on page 4. However, many of the goals are vague, such as "improve sustainability of the river", and no indication is given of how much change or improvement would be indicative of success. For example, for the goal "increase the quantity and quality of rearing habitat for Chinook salmon" what is the target for habitat, and what is the target for the number of Chinook this restored habitat might support? Five objectives are listed to address seven goals, and each objective is not explicitly linked to a goal. It appears that Obj. A addresses Goal D, Obj. B addresses Goal B, Obj. C addresses Goal G, Obj. D addresses Goal C, as does Obj. E. It appears that Goals A, E, and F are not addressed.

The Justification/Conceptual model section is well written – here I wonder if this section was written for a previous RFP or other report, particularly since Figure 2, which outlines the conceptual model, was developed in draft by a consulting firm in 2002, and Figure 3 was developed during the MRSHEP process.

For hypotheses to be tested we are referred to 7 tables (#3−9)describing 22 hypotheses and the proposed actions

associated with each, but only two sentences in the main text to explain them. In Section 3 (Previously Funded Monitoring) we are informed that previous monitoring has already focused on hypotheses 1−6, and 13−16, apparently leaving hypotheses 8−12, and 17−22 to be addressed by this proposal, although I cannot see where this is made clear.

Approach

The tasks described in this section of the proposal are not specifically related back to the objectives, making the section extremely confusing and difficult to assess. In section 4.1 reference is made to the eventual testing of a "unifying conceptual model", through the development of "innovative monitoring techniques and modeling approaches and by performing spatially explicit analyses". It is not clear whether this will be done within the bounds of this proposal, nor who on the project team might be qualified to develop these techniques and approaches. The text then goes on to state that the "primary objectives of the proposed work" include the estimation of sediment transport rates, which was not specifically mentioned in the objectives on page 4. After some comparison, I believe that Objectives A, B, C, D, and E, are addressed by Tasks 3, 5, 6, 7, and 8, respectively. Task 4, regarding riparian monitoring, does not relate to a specific objective, but does appear to relate to Goal E.

It is unclear what monitoring has already been done, so it is difficult to tell whether the currently proposed monitoring will build upon previous work. Since the text does not explain which Objectives and Tasks are related to the Hypotheses in Tables 3−9, it is impossible to tell whether the proposed tasks would address knowledge that is currently missing.

Technical Feasibility

It is very difficult to tell whether this project is feasible. In Section 5 the proponents note that considerable funding is already funding much of the work, but as I mentioned regarding the Approach, it is unclear which hypotheses will actually be addressed with the requested CalFed funding. No mention is

made regarding permits and access to the reaches for monitoring purposes.

I have serious concerns about the PIT tagging work that is proposed. The authors state that they will have 5 PIT monitoring stations at a cost of $10,000 each, but they fail to elaborate on the size of tags they're using, and the type of antenna required to detect the tags. Are they tagging 0+ or 1+ Chinook smolts? I would expect 0+ smolts may be too small to tag (i.e., total length less than approximately 55 mm), but 1+ smolts may only be large enough to receive a 12 mm PIT tag. If that is the case, the antenna detection range under field conditions would likely be only about 8", necessitating a fairly small loop antenna (e.g., 6' by 3'). Several antennas would likely have to be set up side by side to span the river. The proposal does not give detailed information on what the width and depth of the river at the proposed PIT interrogation sites is expected to be at the time of Chinook outmigration. Thus, there is no way to determine whether the cost of the PIT antennas is reasonable, particularly since the number and type of PIT antennas is not given, nor is there any indication of whether the antenna/reader/logger systems will be purchased custom made, or manufactured with in−house CDFG labor.

Performance Measures

Performance Measures are also difficult to assess. In Section 4.2 (page 14) the authors refer to the hypotheses in Tables 2−5, but Table 2 does not contain any hypotheses, yet Tables 6−9 do. It is completely unclear how the authors intend to evaluate the results of their Tasks relative to the Hypotheses contained in Tables 6−9. Unfortunately, the authors do not indicate clearly which hypotheses they plan to test, and do not present a well−defined plan of how they will use their results to assess the performance of the restoration actions, and to reevaluate their conceptual models.

Products

Data analysis methods are given rather short shrift (one sentence on page 14). The authors discuss data analysis, and

state that they will use ANOVA or non−parametric tests to evaluate differences in relative abundance of habitat, and presumably in fish observations. The use of linear mixed effects models might prove to be a more powerful method of analyzing a data set such as is likely to be generated by this project, given the repeated measures over time, the potential for autocorrelation between samples taken along the length of the river, and the loss of degrees of freedom in order to compensate for the autocorrelations.

The proposal notes that reports will be made public, and that talks will be presented at CalFed and other conferences. Data storage and dissemination is to be handled by CDFG but the development of this system appears to be out of the hands of the project team, and thus vulnerable to state budget cuts and the vagaries of institutional funding priorities.

Capabilities

Unfortunately, while the research and monitoring proposed is very important for the recovery of the Merced River Chinook stocks, I am concerned as to whether the project team is qualified to undertake this project. Some sections of the proposal appear to have been cut and pasted from reports written for other purposes, and by other people (consultants?). The main body of the proposal is poorly written, and hard to follow, calling into question the proponents' understanding of the experimental design, knowledge of field techniques (particularly PIT tagging), and ability to adequately analyze the results.

Budget

The budget seems extremely inflated in terms of labor costs. Hours are included for the semi−annual and annual reports for every sub−task, and the number of hours required to complete the reports seems very excessive, particularly given that Data Analysis labor costs are included separately from the time allocated for preparing reports. I am not sure why it would take 4 months (640 hours) to produce a report on spawning habitat. And another 4 months for a report on salmon marking?

And another 4 months for a report on juvenile production monitoring? And yet another 4 months for a report on snorkel surveys?? Likewise for Supplies and Expendables, office costs of $1000 per year are allocated for every sub−task. I would expect that there would be some economies of scale to be had.

Similarly, costs for PIT tags are listed at $6.50 each. I believe they are commonly available for $5.00 each, on purchases of approximately 100 or more. One would think that an order of 4,000 tags would qualify for at least the standard rate. This may seem trivial, but the price difference amounts to a $6,000 inflation of costs, not including any overhead charges that may apply.

Additional Comments

This is a frustrating proposal to review. The work evidently needs to be done, particularly in light of funds already expended, and the necessity of ongoing monitoring for adaptive management purposes. However, for the reasons noted in the above sections, I seriously question whether the project team will be able to deliver. Sadly, I think that CalFed's limited funds would be better spent on other projects.

Budget Review

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

If no, please explain:

Comments: 1. Budget does not provide detail for Project Management Task 1 and Contingency Task 9. 2. Budget does not specify dollar value that will be subcontracted to DWR for Tasks 3 &4. 3. Budget does not provide Task for Project Close Out (which should be the last task of each proposal. 4. Budget does not explain what contingency task 10% of overall budget will be used for &how it will be used. Note: Contingency task is not usual or customary in agreements – need to determine if this is acceptable. 5. Project Mgmt &Contingency Tasks represents 10% of total costs for Task 2 thru 8. 6. Budget breakdown very detailed and well presented.

Subcontracting – Proposals for work to be performed by subcontractors or other entities in excess of the 25% of the total project dollars the grantee is required to provide a justification for subcontracting services. If subcontractors are pre−selected and identified in the proposals as part of the project team, the grantee should provide a justification on how each subcontractor was selected. Grantee shall identify labor rates and indirect costs rates paid to each identified subcontractor to ensure that labor rates are comparable to State rates.

The Subcontracted work should be identified with a rate and hours and attributed to each task and deliverable for each year. A performance evaluation is also recommended for subcontractors that receive more than 50% of the grant funds. If the subcontractor has not been identified, a position description complete with education level, experience, and abilities be submitted and the rate and hour associated with that position will be attributed to a task, and deliverable. The grantee must also comply with the State competitive bidding process as stated in the PSP.

Cost Sharing – Grantee shall provide information regarding its financial capability and stability as well as it's level of commitment for any proposed cost share funds. A detailed budget of the project's proposed cost share funds should be provided prior to grant funds being awarded. A financial evaluation is recommended for grant agreements that state/claim over 30 % or $250,000 (which ever is less) of matching funds. The evaluation will avoid likelihood of the grantee requesting an amendment to increase project funding due to lack of or miscalculation of matching funds to complete the project.

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

If no, please explain:

1. Budget Summary does not provide detail for project mgmt &contingency tasks. However, Table 10 &11 provides line item details. Would recommend that Budget Summary provide minimum "roll up" amounts for labor, benefits, travel, etc. for Tasks 1 and 9. 2. Budget Summary does not show consultant $$ funds allocated for DWR to perform Tasks 3 &4. Recommend that funds for DWR work be included under the Services/Consultant column.

The labor rate, benefits and indirect rate should be itemized in the format provided by the PSP to enable reviewers to better evaluate and ensure that proposed labor rates are comparable to state rates.

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Tasks &Deliverables − Grantee must provide detailed info for all work including subcontractor work for each specific task, services, &work to be performed with the appropriate &corresponding deliverables or end product for each task(s) and/or sub−task(s). Cost associated with each task &deliverable should be evaluated based on what is considered reasonable costs for performing similar services.

3. Are project management expenses appropriately budgeted?
Yes.

If no, please explain

10% of total costs for Tasks 2 thru 8 seems reasonable and appropriate.

4. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? Are indirect rates, if used, appropriately applied?
Yes.

If no, please explain

DWR IDC &OH rates is at 47.55% which seems high − using DGS review standards for IDC &OH rates. DFG's IDC &OH rates is at 25% reasonable; however, based on prior experience this rate may still need to be justified to DGS before agreement is approved.

The Grantee should charge a reduced indirect cost rate to the state for services that will be subcontracted by the grantee.

(Researching SCM Section 3.06 B).

5. Does the budget justification adequately explain major expenses? Are the labor rates and other charges proposed reasonable in relation to current state rates?
Yes.

If no, please explain:

1. Note $158k is allocated to fund equipment purchase/maintenance, etc. 2. Ensure that applicant follows State bidding rules to procure equipment &services. 3. Vehicle maintenance &repair is $7k per year, verify method of choosing vendor if vehicles are not state property.

Major Expenses – If the grant is awarded a detailed list of equipment purchases should be provided by the grantee so reviewers can better evaluate whether it is more cost effective for the state to purchase large dollar equipment items through the state procurement process. If the equipment list is available within the State inventory or stock, then purchase of some or all of the listed items may be provided, loaned, or leased by the state to the grantee. In the event, that the equipment is purchased by the grantee, the grantee shall maintain an inventory of major equipment for auditing purposes and potential use for future projects. Grantee shall follow State Contracting Manual [SCM] Section 7.61 thru 7.62 rules pertinent to equipment purchase, lease, etc.

6. Are other agencies contributing or likely to contribute a share of the projects costs?
Yes.

If yes, when sufficient information is available, please sum the amount of matching funds likely to be provided:

Proposal indicates the following cost share partners &contributions: DWR − $896,404 for monitoring activities through the year 2017. USFWS−CVPIA − $132,268 for spawning survey through year 2006.

Task and Deliverables – Grantee must provide detailed information for all work including subcontractor work for each

specific task, services, and work to be performed with the appropriate and corresponding deliverable or end product for each task(s) and/or sub−task(s). Costs associated with each task and deliverable should be evaluated based on what is considered to be reasonable costs for performing similar services.

Major Expenses – If the grant is awarded a detailed list of equipment purchases should be provided by the grantee so reviewers can better evaluate whether it is more cost effective for the state to purchase large dollar equipment items through the state procurement process. If the equipment list is available within the State inventory or stock, then purchase of some or all of the listed items may be provided, loaned, or leased by the state to the grantee. In the event, that the equipment is purchased by the grantee, the grantee shall maintain an inventory of major equipment for auditing purposes and potential use for future projects. Grantee shall follow State Contracting Manual [SCM] Section 7.61 thru 7.62 rules pertinent to equipment purchase, lease, etc.

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bidding process as stated in the PSP.

Cost Sharing – Grantee shall provide information regarding its financial capability and stability as well as it's level of commitment for any proposed cost share funds. A detailed budget of the project's proposed cost share funds should be provided prior to grant funds being awarded. A financial evaluation is recommended for grant agreements that state/claim over 30 % or $250,000 (which ever is less) of matching funds. The evaluation will avoid likelihood of the grantee requesting an amendment to increase project funding due to lack of or miscalculation of matching funds to complete the project.

7. Does the applicant take exception to the standard grant agreement's terms and conditions? If yes, are the approaches the applicant proposes to address these issues a reasonable starting point for negotiating a grant agreement?
Yes.

If no, please explain:

Accepts T

8. Are there other budget issues that warrant consideration?
Yes.

If yes, please explain:

1. Explain &provide info on how contingency funds will be used &parameters that will guide its disbursement. 2. Budget does not include project close out tasks. If this task has been integrated into the overall project mgmt tasks, then this should be specifically identified &so stated.

Other comments:

ADMINISTRATIVE &CONTRACT RELATED COMMENTS: 1. Project Mgmt task needs to provide more detailed description of work, tasks,etc. 2. Tasks 2,3,4 likewise need more specific detail &description of work. 3. None of the tasks provide a list of deliverables or end products. 4. Proposal (narrative) will

need a lot of re−work to convert into SOW for an agreement with specific and defined deliverables. 5. Ensure that equipment/services are bid in accordance with State Contracting rules.

GENERAL COMMENTS: 1. How does this proposed work contribute to previously funded and/or ongoing monitoring projects? 2. Proposal did not address which tasks can be funded separately, if the full amount requested is not approved.

END OF REVIEW

Environmental Compliance Review

1. Is compliance with California Environmental Quality Act (CEQA) required for this project?
No.

2. Is compliance with National Environmental Policy Act (NEPA) required for this project?
No.

3. Does this project qualify for an Exemption or Exclusion under CEQA and NEPA, respectively?
Does not apply.

4. Did the applicant correctly identify if CEQA/NEPA compliance was required?
Yes.

Comments

The project previously funded and completed did require CEQA/NEPA but the monitoring component does not require a new CEQA/NEPA document.

5. Did the applicant correctly identify the correct CEQA/NEPA document required for the project?
Does not apply.

6. Has the CEQA/NEPA document been completed?
Does not apply.

7. If the document has not been completed, did the applicant allot enough time to complete the document before the project start date?
Does not apply.

8. If the document has not been completed, did the applicant allot enough funds to complete it?
Does not apply.

9. Did the applicant adequately identify other legal or regulatory compliance issues (Incidental Take permits, Scientific Collecting permits, etc,) that may affect the project?
No.

Comments:

The applicant plans a new monitoring component under Task 6 which includes marking/recapture of Chinook salmon. The applicant does not specify which run of Chinook salmon. Some runs are federally endangered, and in such case a federal take permit or consultation would be necessary.

Identify those additional permits that may be needed by this project:

Possibly a federal take permit (see comment above).

10. Does the proposal include written permission from the owners of any private property on which project activities are proposed or, if specific locations for project activities are not yet determined, is it likely that permission for access can be obtained?
Yes.

Comments:

No letter was attached, but the private landowner is identified on the environmental compliance checklist. On the land use checklist, the applicant states: "Applicant has legal authorization to access project sites"

11. Do any of these issues affect the project's feasibility due to significant deficiencies in planning and/or budgeting for legal and regulatory compliance or access to property?
No.

Comments:

If required, the take permit could be a long process taking several months.

Prior−Phase Funding Review #1

Project Title	Stanislaus River Water Temperature Model Development
CALFED Contract Management Agency	GCAP
Amount Funded	$670,000
Date Awarded	2002/01/01
Project Number	ERP−02−P28

3. Have negotiations about contracts or contract amendments with this organization proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?
Yes.

4. Are the status, progress, and accomplishments of the organization's current CALFED or CVPIA project(s) accurately stated in the proposal?
N/A

5. Has this organization made adequate progress towards these project(s)' milestones and outcomes, without unreasonable divergences from project schedules or poor−quality deliverables?
Yes.

6. Is the applicant's reporting, record keeping, and financial management of these projects satisfactory?
Yes.

7. If this application is for a next phase of a project whose contract your agency currently manages, will the project(s) be ready for next−phase funding to monitor and evaluate project outcomes in fiscal year 2005/6, based on its current progress and expenditure rates?
N/A

Prior−Phase Funding Review #2

List the CALFED or CVPIA funded phases of this project for which your agency manages contracts:

Project Title	Merced River Salmon Habitat Enhancement (Phase III)
CALFED Contract Management Agency	USFWS
Amount Funded	$2,433,759
Date Awarded	1999/01/01
Lead Institution	Dept. Water Resources
Project Number	ERP−98−F11

List the other CALFED or CVPIA grants received by this applicant for which your agency manages contracts:

3. Have negotiations about contracts or contract amendments with this organization proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?
No.

There have been delays with prior contract actions, such as amendments.

4. Are the status, progress, and accomplishments of the organization's current CALFED or CVPIA project(s) accurately stated in the proposal?
Yes.

5. Has this organization made adequate progress towards these project(s)' milestones and outcomes, without unreasonable divergences from project schedules or poor−quality deliverables?
Yes.

6. Is the applicant's reporting, record keeping, and financial management of these projects satisfactory?
No.

Their contracting office has not provided quarterly reports and invoices in a timely manner.

7. If this application is for a next phase of a project whose contract your agency currently manages, will the project(s) be ready for next−phase funding to monitor and evaluate project outcomes in fiscal year 2005/6, based on its current progress and expenditure rates?
N/A

Other comments:

DFG's work is good, however they have staff limitations, which affect their ability to collect data and produce reports on a timely basis.