Stanislaus River Chinook Salmon and Steelhead Escapement Evaluation

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Technical Panel Review

Technical Review Panel's Overall Evaluation Rating:
Inadequate

Explanation Of Summary Rating

The proposal project cannot produce useful information on the efficacy of the gravel augmentation. The project team has not demonstrated or described the corrective actions that will be needed to successfully deploy the portable resistence board weir. The ability to calibrate and operate Vaki RiverWatchers has not been demonstrated. Finally, the Budget Review indicated multiple significant problems.

Goals And Justification

The proposal identifies the restoration action (gravel augmentation) whose outcomes should be monitored. However, the primary foci of the proposal are testing a portable resistance-board weir on validation of estimates of Chinook escapement and estimation of steelhead escapement rather than evaluation of the restoration actions. Escapement is the end result of a sequence of both in-stream and oceanic processes and is therefore only partly determined by gravel augmentation. The proposal presents a clear and internally consistent statement of the goals and objectives of the restoration actions; increase the abundance of Chinook salmon and Central Valley steelhead. The proposal presents a conceptual model that explains the underlying basis for restoration actions. The proposal does not present a conceptual model for the proposed project. Further, the proposal seeks to monitor and estimate escapement, which is not adequately portrayed in the conceptual model for the restoration actions. The defect here is that escapement is a function of both outmigration and ocean production, and the latter is not included in the conceptual model. Hypotheses for

the initial work are presented in Table 1. Hypotheses pertaining to the current objectives (pp. 5–9) are not apparent, and the proposal fails to explain how information that would be collected will be used. Specifically, the proposal does not explain how the work would assist measurement of success or failure of past and current gravel augmentation projects. Differentiation of effects of stream restoration and marine conditions is a significant challenge that is not addressed in this proposal.

Approach

The proposed project will not allow us to evaluate the efficacy of the restoration projects. The approach is not adequate to evaluate the effect of gravel augmentation on the abundance of anadromous salmonids. The approach will enable comparison of carcass–count and weir–count estimates of excapement. Previously, the project team attempted deployment and operation of the portable resistence board weir, and this proposal indicate that effort was unsuccessful. The proposal does not describe the nature of the failure or the corrective actions that would be taken. Therefore it is impossible for the technical review panel to ascertain whether the approach will be adequate to evaluate the utility and value of resistance weirs because the methods do not include a description of the failure of the initial attempt and an explanation of the specific corrections that SPC believes will result in a successful deployment. Calibration and use of Vaki RiverWatchers have been problematic in other systems and may continue to fail to provide useful information. The lack of information on the initial attempt to use the weir and Vaki RiverWatcher is a fatal flaw in this proposal. Because the proposal does not describe what was learned from the initial monitoring and the corrective actions, the likelihood of any significant contributions to the knowledge base remains unknown. If the unstated corrective actions would be adequate to result in successful deployment of the portable resistance board weir and the Vaki RiverWatcher, then the approach might produce reasonable estimates of escapement. However, the proposed methods would be inadequate to estimate the frequency of fallback and subsequent multiple counting of individual

fish. Therefore, this project would not produce estimates of the bias of the proposed counting methods. Fallback and counting bias could be estimated using PIT or Floy tags, for examples. The proposal describes the data that would be collected, but does not describe how those data can/would be used to evaluate gravel augmentation. It is not at all clear how improved escapement estimates might be used to assess the efficacy of gravel augmentation or other restoration actions. Escapement is a function of spawning success, outmigration and ocean production, whereas the proposal assumes that only that spawning is important. The proposal does not explain how the effects of gravel augmentation could be disentangled from other confounding factors (predation, ocean conditions, ocean harvest, etc.). The proposal describes collection of data that can be used to evaluate monitoring methods, but does not specify analyses and products for any such evaluation of monitoring methods.

Feasibility And Likelihood Of Success

The proposed project is not fully documented and therefore it is not technically feasible for the proposed project to assess benefits of gravel augmentation or other restoration actions on the Stanislaus River. The investigators have not yet demonstrated full success with either the portable resistance board weir or the Vaki RiverWatcher. Without that demonstration, or at least descriptions of successful demonstrations from other locations, the technical review panel cannot conclude that the same (undescribed) problems can be overcome. Similarly, descriptions of the proposed data analyses are extremely vague and therefore it is not clear that SPC is likely to succeed in the comparison of weir and carcass counts.

Performance Measures

The proposed performance measures (number of adults and run timing) are relevant to evaluation of the success of restoration measures. Those measures would be adequate to identify whether the AFRP doubling goal had been achieved. However, those measures are not adequate to identify why that

goal had (not) been achieved or the relative contributions of specific restoration measures (e.g., gravel augmentation) to escapement. Therefore, the performance measures will not be adequate to validate major components of the conceptual model. The performance measures will, in theory, be sufficient to evaluate the effects of flow pulses on the timing of upstream movement of adults. However, the inability to estimate fallback compromises the utility of this performance measure. The proposal lacks adequate description of inferential methods for the performance measures.

Products

The products are periodic reports and data that will be served electronically. The proposal does not prescribe coherent analysis, interpretation and publication of the results in a peer−reviewed outlet. Without publication in the open scientific literature, the peer review process is incomplete and any results will not be registered in our permanent knowledge base.

Capabilities

SPC and Tri−Dam have a long and good track record of collaboration. SPC has excellent familiarity with the watershed and they have secured all of the required permits and permissions. One locally knowledgeable technical reviewer believes SPC is the ideal candidate for this work. The investigators have not demostrated capability to install and operate the weir. They are capable of collecting routine data and periodic reporting of monitoring results. However, the proposal does not adequately describe how all of that will be accomplished. It is particularly troubling that the investigators have not described their capabilities to overcome the technical problems that were encountered in the initial attempt.

Budget

The external technical review panel generally find the budget reasonable based on each of their experiences. However, it is

noteworthy that only 2.5% of the funds are devoted to data analysis. Although this budget reflects the emphasis on weir operation and monitoring, the lack of effort to analysis and reporting is a deficiency. The inconsistency between the costs of Tasks 2.2 ($73,875) and 2.3 ($13,941) requires explanation. These seem to be partly overlapping tasks and the reason for the large cost difference was not apparent to the external technical review panel.

Regional Review

The Regional Review Panel gave this proposal a “medium” ranking. That review identified significant limitations that were also apparent to the science reviewers. Principally, “The objectives of the Lover’s Leap project are to restore the riverbed, increase gravel supplies, and increase the amount of functional floodplain. Though this project is funded and in progress, there are no guarantees it will happen. Not mentioned in the proposal, is the Knights Ferry gravel replenishment project which is an adaptively managed restoration effort to improve spawning gravel and riffle designs for salmonids. This effort was upstream of the weir location. Downstream habitat acquisition and the San Joaquin River Deepwater Shipping Channel dissolved oxygen impairment are two other related projects. Because this project will monitor the escapement of anadromous fish, it will not be able to monitor the effectiveness of many restoration project in the Stanislaus River, lower San Joaquin River, and Delta. As stated previously, the proposal does not indicate HOW the ‘success’ of these projects will be linked and measured with the weir project.” The Regional Review Panel offered the following statements about local/regional significance: “The value of this project toward assessing high priority ecosystem related restoration projects such as instream and floodplain work appears to be low as it does not demonstrate how the effects of these restoration projects would be correlated with escapement. This is mostly because of the lack of detail in the proposal identifying the methods of linking restoration project 'success' to escapement. Though escapement may be a valuable performance measure for ecosystem-wide changes, it is not appropriate for assessing the success of relatively small

scale restoration projects. The value of the project toward assessing specific measures of the ecosystem downstream of the weir location such as temperature, SDWSC DO, flow, etc, is potentially high. The results of this work would likely be utilized by many agencies such as the State Water Resource Control Board, Central Valley Regional Water Quality Control Board, US Fish and Wildlife Service, NOAA Fisheries, and California Department of Fish and Game. The results may be beneficial in assisting to make management decisions regarding flow related measures. This project also will be useful in comparing and validating standard carcass survey estimation techniques used by resource agencies. The results will be helpful at mostly nearby scale – lower San Joaquin and Stanislaus Rivers."

Administrative Review

The budget reviewer concluded that the budget detail is generally inadequate and provided detailed descriptions of major deficiencies. Due to the length of the Budget reviewer's comments, that review should be consulted directly. The Prior Phase reviewer noted that all work has been satisfactory and there are no anticipated problems. The Environmental Compliance reviewer noted uncertainties including that they "cannot determine if an exemption was filed for this project and when the applicant applies for an extension of their 1602, CDFG can determine if anything more under CEQA is required." Additional permitting from NOAA for handling steelhead may be required.

Additional Comments

The external technical and regional review panels consistently and correctly noted the inadequacy of this proposal to address assessment of the success of gravel augmentation and other restoration efforts. Further, the proposal does not provide any evidence that the the team can operate the weir and collect high–quality data. Further, the Regional Review Panel did not view this proposal as a high priority for the Stanslaus River.

San Joaquin Regional Review

San Joaquin Regional Panel's Overall Ranking:
Medium

Summary:

The proposal recieved a Medium ranking as the pannel believed the proposal itself needed improvement. The proposed work appeared to have some regional value in relating escapement to downstream water quality related issues, evaluating traditional escapement surveys, and providing escapement estimates for Central Valley steelhead. The evaluation of restoration project "success" through the use of escapement estimates did not appear feasible to the panel.

1. Applicability To ERP Goals And Regional Priorities.

This proposed project will evaluate the effectiveness of ERP and CVPIA actions on the Stanislaus River, particularly gravel augmentation and forthcoming instream and floodplain restoration projects, though it does not demonstrate how this can be done. The only notable restoration projects on the Stanislaus River to date are gravel augmentation/riffle building projects and habitat acquisitions. Because this project will be an adult salmonid counting weir, it will be providing escapement estimates. Linking escapement estimates to the effectiveness of upstream gravel augmentation efforts of fish spawned three years previously (approximately) is a bit of a stretch.

Also included in the proposal are references to additional objectives such as the evaluation of the effects of CALFED ERP efforts in the deepwater shipping channel on anadromous fish. The three tasks of the program include: 1) determine salmonid escapement, 2) evaluate effects of downstream actions on migration, and 3) evaluate traditional carcass survey estimates on the Stanislaus River by measuring returning adult Chinook salmon and steelhead, and correlating the returns to

water quality conditions in the Delta, San Joaquin River, and lower Stanislaus River. One benefit is that the results will help identify salmonid hydrologic factors thought to be stressors, such as the San Joaquin River dissolved oxygen impairment, high water temperatures, etc. This information would be useful; however, it does not evaluate ERP restoration actions.

2. Links With Other Restoration Actions.

The Weir program was initiated in 2002 with a grant from the U.S. Fish and Wildlife Service's Anadromous Fish Restoration Program (AFRP) in an effort to assess the effectiveness of the "Alaska" weir in the Central Valley Basin. The Lover's Leap Restoration Project is a current AFRP funded project expected to occur in 2005. The objectives of the Lover's Leap project are to restore the riverbed, increase gravel supplies, and increase the amount of functional floodplain. Though this project is funded and in progress, there are no guarantees it will happen. Not mentioned in the proposal, is the Knights Ferry gravel replenishment project which is an adaptively managed restoration effort to improve spawning gravel and riffle designs for salmonids. This effort was upstream of the weir location. Downstream habitat acquisition and the San Joaquin River Deepwater Shipping Channel dissolved oxygen impairment are two other related projects. Because this project will monitor the escapement of anadromous fish, it will not be able to monitor the effectiveness of many restoration project in the Stanislaus River, lower San Joaquin River, and Delta. As stated previously, the proposal does not indicate HOW the "success" of these projects will be linked and measured with the weir project.

Existing ecosystem related efforts and data collection activities will be utilized in evaluating the results of this project such as: water quality conditions currently measured in the Stockton Deepwater Ship Channel, lower San Joaquin River, and Stanislaus River and existing agency escapement monitoring. Perhaps the largest ecosystem related project it will monitor will be the Stockton Deepwater Ship Channel. This portion of the project appears feasible and would fulfill a

very important gap related to the effects of the Stockton Deepwater Ship Channel, but again, will not assess ERP projects.

3. Local Circumstances.

The project applicants have been operating the weir for the past two years, and have worked out many of the logistical issues and is feasible. Because of the direct measurement method of the project, environmental compliance issues in the past have been troublesome; however, the applicant has worked through them well and does not appear to make any inappropriate assumptions.

4. Local Involvement.

This project originates from the Stanislaus River Fish Group, an ad hoc group of technical expertise and specific knowledge of the Stanislaus River anadromous fisheries to further the restoration of anadromous fish populations in the river. Entities involved in this effort include environmental consultants, professional fisherman, State and Federal agencies (including the USBR and USCOE), and irrigation district staff. The Stanislaus River Fish Group is the only functioning watershed group on the lower Stanislaus River. The applicants currently maintain a website with weir status, catches, and environmental trends and intend to continue using the website for public information (http://stanislausriver.com/weir/data.htm). Other means of public involvement include encounters with those passing the weir on the river, and Columbia College student visitors that attend via field trips on an annual basis. In addition, because of the controversial nature of the Stanislaus River and its proximity to urban and city areas, the Stockton Record appears to have a strong affinity for reporting biological activities. These efforts appear adequate to inform the appropriate entities of the weir operation.

5. Local Value.

The value of this project toward assessing high priority ecosystem related restoration projects such as instream and floodplain work appears to be low as it does not demonstrate how the effects of these restoration projects would be correlated with escapement. This is mostly because of the lack of detail in the proposal identifying the methods of linking restoration project "success" to escapement. Though escapement may be a valuable performance measure for ecosystem-wide changes, it is not appropriate for assessing the success of relatively small scale restoration projects.

The value of the project toward assessing specific measures of the ecosystem downstream of the weir location such as temperature, SDWSC DO, flow, etc, is potentially high. The results of this work would likely be utilized by many agencies such as the State Water Resource Control Board, Central Valley Regional Water Quality Control Board, US Fish and Wildlife Service, NOAA Fisheries, and California Department of Fish and Game. The results may be beneficial in assisting to make management decisions regarding flow related measures. This project also will be useful in comparing and validating standard carcass survey estimation techniques used by resource agencies. The results will be helpful at mostly nearby scale – lower San Joaquin and Stanislaus Rivers.

6. Other Comments:

The majority of the proposal indicates the main objectives to be measuring ERP projects such as gravel augmentation and future restoration projects. The Problem, Goals, and Objectives section listed two restoration projects which would be evaluated. Yet the Scope of Work section listed three objectives that seemed reasonable and feasible in relating escapement to some downstream water quality-related factors but were not evaluating ERP projects.

External Technical Review #1

Goals And Justification

The goals and restoration actions to be monitored are stated reasonably well.

Approach

It is difficult to determine whether the approach is well-designed and appropriate from the information provided. In particular it is not at all clear whether appropriate modifications to respond to lessons learned during prior monitoring have been made. It is stated in the Short Description and in the Justification that:

"Due to challenges encountered during the first two years of weir operation, steelhead enumeration was not possible and Chinook salmon enumeration was not complete. Now, modifications to the monitoring system are anticipated to provide complete estimates of both steelhead and salmon abundance and run timing."

Unfortunately, there is no indication of the nature of the challenges in the past, and what specific remedies are proposed. It is therefore not possible to know whether the stated modifications are likely to overcome past problems.

Technical Feasibility

The project is not fully documented. As noted above, the most important lack is an explanation of the nature of past problems and how these will be overcome in the future. There is also no mention of potential problems (or the lack of them) related to high or low water levels, and the description of proposed data analyses is vague (see additional comments below).

Performance Measures

If the weir monitoring works as anticipated then it does seem that it will allow the evaluation of restoration efforts related to the river.

Products

The products as defined will apparently meet all of the objectives stated here, and these products will apparently be of a quality that will stand up to peer−reviews. The lack of details about past problems and how data will be analyzed make it hard to be sure.

Capabilities

From the information provided, the staff of S.P. Cramer and Associates have the required knowledge and experience to carry out this project in a completely satisfactory manner.

Budget

I am unable to comment on whether the budget is realistic for a project like this. I assume that if the project is approved then the budget will be carefully scrutinized before it is accepted.

Additional Comments

There is no description of proposed data analyses, other than the mention of summary tables and graphs. This is presumably because it is anticipated that fish counts will be close to 100%, so that for many purposes there will be no sampling error to be considered. There are analyses required for Objective 3 on the evaluation of the effects of environmental conditions, and it would have been nice to have some indication of the nature of these analyses.

External Technical Review #2

Goals And Justification

The main goal of this proposal is clearly stated. The main objective is "to modify the Stanislaus River Weir to provide complete estimates of both steelhead and salmon abundance and run timing." The proposal lists a set of three additional goals in the executive summary section that remain internally consistent throughout. 1. estimate the total Chinook salmon and steelhead escapement in the Stanislaus River through direct counts (recap of main goal above) 2. evaluate the effects of environmental conditions on migration timing of fallrun Chinook salmon 3. serve as a validation measure for traditional carcass survey estimates.

The problem that I see in this section of the proposal has to do with the inconsistencies. The investigators, S.P. Cramer and Associates (SPC), make grandiose claims of what we could learn from this research, but we later find that some topics they propose are never revisited in the deliverables section. An example of one of these inconsistencies is demonstrated early on in the proposal where it is stated that, "this project will measure the restoration success in the Central Valley with regard to Chinook salmon". In the justification section we learn that the restoration projects that the researchers would like to measure the effects of are gravel augmentations (occurring since 1994). I logically expected to read an objective in the "Approach and Scope of Work" section addressing how they plan to use their Alaskan Weir to accomplish this objective. Oddly enough, 17 different "tasks" and "activities" were presented, but not a single one explained how they would measure the success or failure of past and current gravel augmentation projects. Measuring the overall effect of a stream alteration project is a difficult task. If a proposal claims that this is something it will be able to deliver, then the investigators must provide the necessary details of how they propose to accomplish the task. The difficulty in clearly stating this objective is due to the inevitable uncertainties of working in a natural system. Instead of avoiding how they plan to accomplish this main

project objective, I would like to have read how they plan to differentiate between the possible benefits of the restoration work versus possible changes in marine conditions, natural shifts from one spawning reach to another, long−term versus short−term changes, etc.

Hypotheses are clearly presented from the original Stanislaus River Weir Project in 2002 (page 3; Table 1), but this proposal is less clear in defining a new set of objectives and doesn’t introduce them until page 5. It is not exactly clear why the 2002 hypotheses are introduced? Since they were introduced, it would have been informative if they provided some insight of their findings from their previous weir study.

This proposal does not include a conceptual model for the current proposed project. Because of this, the reader is often left guessing how the different objectives will be measured and quantified. More importantly, it is unclear how this research will be applied in monitoring the effectiveness of past and current restoration actions. Based on these inconsistencies, this current proposal appears to be a revised/abbreviated version of the original Stanislaus River Weir proposal that is lacking some critical components. The ability of this project to test its current objectives on the watershed scale seems uncertain based on the lack of basic organizational structure of this modified proposal.

Based on what is currently known about Central Valley steelhead, this type of study is appropriately justified. This research is very important here in the Central Valley as indicated by the current inadequacies in the way California currently measures salmonid escapement (especially steelhead). The most compelling point emphasized in this proposal is the need to validate the current carcass survey estimates, which are one of the only tools in use by fishery managers in monitoring adult wild salmonid populations. Since the Weir operation began in 2002, the investigators are proposing this project as a three−year full−scale implementation project.

Approach

I am impressed by the approach of SPC to adopt methodologies not previously used in California to help answer questions that face Central Valley fishery managers. The 'Alaskan Weir &Vaki RiverWatcher' technology sound like an impressive state-of-the-art methodology to measure Stanislaus River escapement. The Vaki monitoring system has recently received positive reviews monitoring migratory fisheries worldwide. As the name implies, the design for the Weirs is borrowed from Alaskan Fishery managers that have successfully used these structures to monitor salmonid populations on major rivers. If the combination of these two techniques are complimentary to one another and operate trouble-free throughout the chinook and steelhead spawning season, I believe this approach is capable of providing important river flow and fish migration data to state and federal biologists and water managers.

The missing part of this proposal's approach that would help strengthen it the most is background information. This proposal spends too much time detailing the "original grant proposal" from 2002, without discussing any of the findings from the first two years of Weir operation. It would have been nice to see some of the results from the 2002 pilot study at the end of the "Justification" or here in the "Approach" section to help sell the idea that the Alaskan Weir and the Vaki RiverWatcher are the best available methods to monitor salmonid escapement in this particular watershed. Weirs are passive capture sampling techniques that are problematic by nature. The use of weirs is generally restricted to small rivers and streams due to construction expenses, navigation hazards and tendency to clog with debris. Because of this, I believe it is absolutely important that the proposal provide the details of the changes that have been made to the weir structure that will enable it to collect data throughout the entire chinook and steelhead spawning run.

Similar to the missing information on the Weir, I cannot understand why there is not any information provided on how well the Vaki RiverWatcher performed during the pilot study. Since SPC has two years of data using this infrared fish

monitoring device, the reader naturally wants to know how well the system works. Since no details of its accuracy are provided, the assumption I make is that the system has some bugs that need to be ironed out. Had they simply mentioned these problems and provided an approach to minimize future problems, my concerns of whether they have indeed conceptualized a plan to deal with mechanical/operational difficulties would've been satisfied. Instead, no modifications were presented to the lessons−learned during the prior monitoring. Without this information on the Weir modifications or error estimates from the Vaki RiverWatcher during the pilot study, I consider this proposal incomplete.

Potential Contributions: I. Provide best available adult steelhead spawner enumeration w/o handling fish a. Significance – provide comparison and validation with carcass survey estimates, which will allow for accurate status assessments II. Evaluation of environmental influences on fall−run chinook salmon a. Significance −− determine if "attraction flows" benefit chinook migration, evaluate best use of water allocated for fishery enhancement

Technical Feasibility

SPC has already demonstrated that the installation of an Alaskan Weir in the Stanislaus River to monitor chinook salmon and steelhead is technically feasible and that it can be fished seasonally. The big question is whether or not it can be continually fished throughout the extended 7 month salmonid spawning run without interruption? Uncertainties and inconsistencies exist not only with SPC's ability to effectively operate the Weir, but also with the operation of the Vaki RiverWatcher fish counting device. SPC has modeled their experimental setup after the Alaskan Department of Fish and Game, but no comments were given on the success of their design in this proposal. Information that was not provided (such as the proportion of the run counted at weir that was recovered as carcasses, the ability to successfully distinguish different salmonid spp., or an explanation of why equipment malfunctioned) would greatly add to my ability in commenting on the feasibility of a full−scale project using

this technology. One can appreciate the honesty of an investigator when comments are made on the differences that exist between watersheds, but the reviewer is not given any information on the effectiveness of the Stanislaus River Weir/Vaki RiverWatcher or on any comparable data for this sampling methodology used in other river systems. I believe this lack of a 'proof of concept' raises a red flag that may or may not be warranted. It is apparent that SPC had their difficulties with this system during the pilot phase, and without any detailed information on what they have done to remedy the problem I would expect there to be a high likelihood that these same unmentioned problems will hamper future project success.

Performance Measures

This proposal includes various ways in which SPC will monitor their performance in accordance with project objectives. The data collected by the "Stanislaus River Chinook Salmon and Steelhead Escapement Evaluation" has the potential to just what the project title implies (assuming the Weir and RiverWatcher remain operational). Obtaining escapement data for steelhead alone would be a major contribution in assessing the current status of Stanislaus River steelhead. The ability for this project to serve as a validation measure for traditional carcass survey estimates will again depend on how continuous the weir operates throughout the spawning run. The Weir has already been in operation for two years, but investigators did not provide any results as to how the Weir and carcass count methodologies matched up. The third project goal is to evaluate the effects of dissolved oxygen levels on migrating chinook salmon. Correlating poor water quality in the deepwater ship canal to delayed chinook migration seems highly unlikely with the limited data that will be collected. A map of the study site and conceptual model describing how this part of the study would be carried out was not included in the proposal. Therefore, it is difficult to imagine that this aspect of the project has been carefully been thought out. Multiparameter water sampling data recorders would have to be deployed at stratified water depths to closely monitor fish behavior in response to water quality to study any

effects on migration timing.

The part that is less clear is whether or not enough detail as to how the performance measures will be quantified has been provided in this proposal. I believe none of the project objectives provide enough detail to ascertain what statistical tests will be used in analyzing the data. One part of the proposal in particular where the link between the data that will be collected (weir counts) and how the effectiveness of a particular restoration projects such as "Lovers Leap" will be measured is entirely unclear. The investigators state that the measure of success for this is "an increase in adult escapement". An increase in the number of returning spawners from one year to the next does not conclude that a restoration project is a success. It is necessary for the investigators to clearly detail how they plan to compare interannual spawning escapement estimates in order to conclude any benefits that may be a direct result of the streambed alteration. An experimental design that clearly defines how years will be grouped for comparison (by water year, ocean productivity, water quality, dam release patterns, fish age, etc.) needs to be determined a priori.

Products

This proposal includes numerous deliverables for a broad audience. Biweekly summaries, comprehensive annual reports, monthly activity summaries and semi−annual status reports will serve as performance measures to the funding agency for this project. As a way to inform agency personnel in addition to making the data readily available to the general public, SPC will post fish passage data on a near real−time basis via a website already in existence. Participation at workshops, seminars and conferences will also play an active role in distributing study findings to the scientific community. The reports and meetings are standard expected outcomes that will hopefully provide guidance to state fishery and water managers.

Capabilities

The project team, SPC and Tri−Dam, are well−qualified to carry out the work described in this proposal. The project team has a good track record and has worked together on fisheries monitoring projects for more than ten years. The Tri−Dam general manager will be responsible for project management and has experience overseeing large projects. SPC has been conducting research on Pacific salmonid issues since 1987. The SPC staff has knowledgeable salmon specialists capable of carrying out the Stanislaus River Escapement Study. SPC is the ideal candidate to carry out this study due to their familiarity with the Stanislaus River and watershed partners. All access and sampling permits have already been secured from previous work and will be renewed on an annual basis.

Budget

The budget seems pretty straightforward and appears to fairly represent the work described for the most part. The only portion of the work in which there seemed to be an imbalance was the cost of services between Task 2.2 ($73,875) and Task 2.3 ($13,941). There is greater than a five−fold difference for what appears to be quite similar tasks. Why will it require 1,350 hours (T 2.2) of technician time to determine the number and biological characteristics of each salmonid when it will only require 120 hours to review the same data for each fish in order to determine migration timing?

It would be nice to see a more detailed breakdown of the ~$24,000 conference travel allotment. Task 1.6 indicates SPC will deliver at least one Power Point presentation of study findings. Assuming SPC takes all three fishery staff members to the meeting, they have budgeted almost $8,000 per person to attend. No other workshops or seminars were mentioned in Task 1.6.

Additional Comments

Overall Evaluation + Goals were clearly defined and objectives remained consistent throughout the proposal. + Project leader

has assembled a team of fishery professionals capable of carrying out the project to completion. – Problems with the proposal stem from the lack of necessary information (no conceptual model, testable hypotheses not as clear as in original proposal–Table1) and the uncertainties that exist with the ability to measure the success of restoration projects (no a priori hypotheses presented). –Additionally, it is assumed that the Alaskan Weir and Vaki RiverWatcher will continuously operate throughout the Stanislaus River chinook and steelhead spawning run when it was plagued by problems during the two–year pilot study. –Would like to see a list of complications that were encountered during the trial phase and the remediations to the monitoring system that will alleviate those problems during this three–year project. – Are these new modifications as fool–proof as we are led to believe? – Need to clearly define how the correlations about low DO in the DWSC will be analyzed as a direct factor determining when salmonids will show up in the river. How will outliers be treated when analyzing this data?

External Technical Review #3

Goals And Justification

The proposal identifies the restoration actions that will be monitored but does not show how the data collected can be used to evaluate the actions. The objectives are clearly stated but deal mostly with comparing the resistance board weir with more conventional escapement estimating methods. The conceptual model is a clear statement of the how gravel enhancement is expected to enhance salmonid populations on the Stanislaus. The hypotheses are also clearly stated but they deal almost entirely with the general hypothesis that the weir will provide more useful information about the numbers of Chinook salmon and steelhead spawning in the Stanislaus, their run timing and other life history characteristics.

What is not clear is how the escapement data will be used to assess the restoration projects. Escapement is affected by a variety of factors such as environmental conditions in the natal streams and migration corridors, mortality in the Delta, ocean conditions, and ocean harvest. The proposal does include some reference to environmental conditions that will be considered when evaluating escapement but the details of how the evaluation will be made (and even all the variables to be included in the evaluation) is not clear.

All in all this appears to be a proposal to evaluate a particular monitoring technique, not a proposal to evaluate the effects of any particular restorations – or even the combined benefits of a suite of restoration actions.

Approach

As described in the proposal, the approach is not adequate to evaluate the effect of restoration actions on anadromous salmonid populations in the Stanislaus River. The approach may be adequate to evaluate the benefits of using resistance weirs to estimate the abundance of spawners and their run timing – at least on the Stanislaus River. The approach could also be

helpful in providing a more quantitative sampling process for obtain scales (for aging) and genetic samples. Since run size and run timing are critical information needs in Central Valley salmonid management, the information could be of considerable use to salmonid managers and biologists. The proposal may a provide a biased account of available Chinook salmon escapement estimating techniques against which the weir data would be compared. The existing escapement estimating procedures are generally inadequate, but could be vastly improved with more scientific rigor and more field staff. If comparisons are to be made between two techniques, both should be given an equal chance to prove themselves. The proposal clearly identifies our present inability to count steelhead spawners. Although not demonstrated to date, the resistance weir should provide useful data on the numbers of adult steelhead and their run timing.

Technical Feasibility

It is not technically feasible for the project to assess the benefits of gravel augmentation or other restoration projects on the Stanislaus River. As stated in the proposal, the investigators have not yet demonstrated that the weir itself is technically feasible. To date it has been only partially successful for Chinook salmon and not at all successful for steelhead. The proposal would be more comforting if it cited other locations where the weir had been successfully used.

Performance Measures

The performance measures listed in the proposal (numbers of adults and their run timing) are essential components of an evaluation of the success of restoration measures, but only one component. If one were interested only in the combined effect of all restoration, protection and mitigation measures on escapement of Chinook salmon and steelhead to the Stanislaus, the performance measures would provide an adequate assessment. For example, the numbers of Chinook salmon and steelhead spawning in the Stanislaus River could be used to determine if the AFRP doubling goal had been achieved. One would not be able, however, to determine why the goal had or

had not been met

The performance measures do not allow one to validate the conceptual model that gravel restoration and augmentation will increase the numbers of salmonid spawners in the Stanislaus. As mentioned above the performance measures may allow an assessment of the overall effects of restoration and protection actions on the Stanislaus, providing one can account for out of basin changes (for example, flow increases and pumping reductions associated the VAMP) on survival of intermediate life stages.

The performance measures listed will allow one to evaluate the effects of one action mentioned in the proposal – the effects of flow pulses on upstream movement of adults. Conventional escapement monitoring techniques are not adequate for this task in that the fish have to die before they are counted.

Products

The project can lead to information useful to managers – mainly on the usefulness of resistance weirs for estimating numbers of spawning anadromous salmonids. Based on the written description and experience with the investigators, the data collection, verification and posting process is expected to be very good. The reporting process would be strengthened if the proposal contained a statement to the effect that, if appropriate, the results would be reported in the open literature. The existing description leads me to expect that the data and results will be mostly made available through the web and oral presentations. Without taking the publication step, the peer review process is incomplete.

Capabilities

I believe the investigators to be quite capable of installing the weir, collecting fish and environmental data and storing and reporting the data. They are quite capable of providing annual and final reports to CALFED and other interested parties. They also have the capability of analyzing a broad suite of data which could be used to evaluate the benefits of

specific restoration projects: however the proposal does not adequately describe how this might be accomplished. With this installation they are somewhat at the mercy of the manufacturer and experience has shown many technical problems with equipment – problems that may result in some parts of the system being out of service at times.

Budget

The budget seems to reasonably justified as long as one considers the project to be an evaluation of a resistance weir. This emphasis is dramatically illustrated by the fact that the annual budget devotes only 2.5% of the funds to collection and evaluation of data relating to the effects of environmental factors on the observed numbers of adult salmonids.

The proposal implies that genetic samples and scales will be analyzed by DFG or others. If these data are needed as part of the evaluation, then they should be specifically budgeted, otherwise the samples are unlikely to be processed. If the samples are meant only to be archived for future investigators, this should be clearly stated,

Additional Comments

This proposal is more of a methods evaluation as compared to a proposal to evaluate the effects of restoration actions. This is not all bad in that we desperately need better methods of counting adult salmonids and understanding their run timing – especially for steelhead. To provide a fair comparison, the existing salmon escapement estimating procedures would have to be upgraded. It would have been helpful for the review to have had more detailed results of the current CVPIA funded studies available in a final project report or citations for other locations where the resistance weir had been studied.

Although not requested in the evaluation form, I would rate this project of medium priority for funding.

Budget Review

1. Does the proposal include a detailed budget for each year of the requested support?
No.

If no, please explain:

In the text there is a reference to a technician that will take 450 hrs to install weirs, that not identifed or costed out in the table.

100% Consutling, no breakdown of this cost.

Budget Detail/Administrative Overhead Fees – Budget detail combines the labor rates with the direct overhead rate. 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.

If proposal is funded, a detailed list of items included in the indirect cost rate should provided by the grantee. Grantee must provide itemized and detailed information included and charged as part of Indirect Rates (IDC) charges.

Note: No overhead or indirect rate charges on the equipment purchases should be allowed as part of the budget that shall be funded as a result of this PSP.

2. Does the proposal include a detailed budget for each task identified?
No.

If no, please explain:

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.

3. Are project management expenses appropriately budgeted?
Yes.

4. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? Are indirect rates, if used, appropriately applied?
No.

If no, please explain

In the table there is no indirect and overhead costs, yet in the text they talk about 10% profit, benefit rates, and overhead rates.

Budget Detail/Administrative Overhead Fees – Budget detail combines the labor rates with the direct overhead rate. 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.

If proposal is funded, a detailed list of items included in the indirect cost rate should provided by the grantee. Grantee must provide itemized and detailed information included and charged as part of Indirect Rates (IDC) charges.

Note: No overhead or indirect rate charges on the equipment purchases should be allowed as part of the budget that shall be funded as a result of this PSP.

5. Does the budget justification adequately explain major expenses? Are the labor rates and other charges proposed reasonable in relation to current state rates?
No.

If no, please explain:

Where is the cost of the purchase of the Alaskan weirs?

Major Expenses – If the grantee 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:

They talk about Tri−dam contributing, but from the table it looks like 100% paid consultant's.

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?
No.

If no, please explain:

No objection to the Std T's &C's.

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

If yes, please explain:

Small and new Non−profit Organizations – A financial evaluation of small and Non−profit organizations is recommended to ensure cost share funds are available and the organization has a financial capability to do business with the State.

Environmental Compliance Review

1. Is compliance with California Environmental Quality Act (CEQA) required for this project?
Yes.

2. Is compliance with National Environmental Policy Act (NEPA) required for this project?
Yes.

3. Does this project qualify for an Exemption or Exclusion under CEQA and NEPA, respectively?
Yes.

Comments

The applicant states that in the past CEQA was determined to not be required by the Streambed Alteration Agreement. The initial study is the document that is used to determine if the project is a "project" under CEQA not the 1602. Issuance of a 1602 requires a CEQA document or filing of an exemption under CEQA. So, I cannot determine if an exemption was filed for this project and when the applicant applies for an extension of their 1602, CDFG can determine if anything more under CEQA is required.

4. Did the applicant correctly identify if CEQA/NEPA compliance was required?
No.

Comments

See comment #3. Again,I can not be positive.

5. Did the applicant correctly identify the correct CEQA/NEPA document required for the project?
No.

Comments:

See above.

6. Has the CEQA/NEPA document been completed?
Yes.

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.

Comments:

Again, I think the documents have been completed. If not, I do not anticipate the CEQA document to be costly.

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 states that they have existing permits for the project. There is a new monitoring component in this proposal which includes trapping salmonids. There is no explanation of the trapping techniques. Steelhead may be incidentally taken during this trapping which will require take permits. The applicant will need to consult with NOAA Fisheries for this component of the project.

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

See comment #9.

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.

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:

Obtaining take permits for federally listed species can take a long time which could affect timing of the project.

Prior−Phase Funding Review

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

Project Title	Test and Demonstrate a Portable Alaskan Weir to Count and Characterize Runs of Anadromous Salmonids in the Stanislaus River
CALFED Contract Management Agency	USFWS
Amount Funded	659,590
Date Awarded	2002/01/01
Lead Institution	Tri−dam Project
Project Number	176

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?
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?
Yes.