

Proposal Reviews

#45: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

City of Chico

Final Selection Panel Review

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Fish Screen and Passage Technical Review

Sacramento Regional Review

External Scientific Review #1
#2
#3

Environmental Compliance

Budget

Final Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Final Selection Panel Review

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

Please provide an overall evaluation rating.

Fund	
As Is	-
In Part	-
With Conditions	-
Consider as Directed Action	-
Not Recommended	X

Amount: **\$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

none

Provide a brief explanation of your rating:

The Selection Panel received a letter from the applicant on its initial recommendation not to fund this proposal. After reviewing the letter and the proposal, the Panel agrees that the proposed project is a good idea, but still concludes that the proposal provides inadequate information to evaluate the project's specific and quantifiable benefits to salmonid fishes, or to demonstrate that it is critical to fund the project now.

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Initial Selection Panel Review

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)

Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	-
In Part	-
With Conditions	-
Consider as Directed Action	-
Not Recommended	X

Amount: **\$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

The proposal could be improved by adding more information on the magnitude of the problem for upstream-migrating salmonids. Further, there was some question of whether the proposed solution was the most appropriate alternative for resolving the fish passage problem at this location.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP Research and Restoration Technical Panel Review Form

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;

Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;

Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	The old barrier creates problems of bed load capture and probable limits to upstream migration at high flow. Failure to provide details of current limitations to migration (depth, velocity, attraction flows) and of details of salmonid use upstream weakens justification. Expected outcomes from monitoring are weakly developed. Eventual removal of an official swimming pool in a live stream is likely (for many reasons) so benefits may be of short duration. Given such eventuality of replacing the use of the stream with a municipal pool and uncertain measurement of biological benefits the proposed project may not be the best use of CalFed funds.
-Above average	
-Adequate	
XNot recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

This project is a replacement of structures to improve access of migrating salmon and allow downstream flushing of sediments currently trapped and removed from the system. Justification for the chosen alternative is not clear although a previous project evaluated several alternatives and plus/minus reported. Part of the justification may also include reduced cost of annual sediment removal by the city. Justification of improving migration was stated but details on the scope of the problem (frequency and duration of high flows, number of fish held behind, number of fish currently passing) are lacking. Further, details on the current condition of the stream bed below the current project are not described although agencies all consider the trap and removal of gravel a problem.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

The project has emphasized the construction and related elements with little or no detail on the biological or physical factors in the stream. The chosen replacement structure is a proven technology, however, and the proponents are familiar with many necessary details to insure successful construction and operation. Lack of details for before/after monitoring raise questions about whether success in these terms will be appropriately quantified.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

Monitoring before/after is needed to fully evaluate success of the project but few details or how to modify approaches were presented. For example, fish passage problems during poor visibility were resolved by merely judging adequacy based on depth, velocity profiles after construction. The project will, however, allow passage downstream of formerly removed bedload and possibly (scale of current problem unknown) improve upstream migration.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The cost for this kind of work is reasonable and there is good assistance and contribution to this and other related improvement projects locally. Some question remains as to the duration of a new structure before eventual provision of the usual municipal swimming pool on land and hence these costs compared to later costs and the time for any benefits.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

Regional review ranks this project HIGH because it meets clearly identified needs and has excellent integration with other projects in the stream. There is an obvious question of how long the city will be able to use this live stream as its municipal swimming area because of ongoing issues for species of concern and other public health/safety issues.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

Environmental permits will be needed but time and funds are allocated in the plan. The budget, however, has inconsistencies in the amount requested and must be clarified.

Miscellaneous comments:

What would be the cost to go directly to building a pool on land and abandoning all the structures in the stream?

Fish Screen and Passage Technical Review:

CALFED Bay-Delta 2002 ERP PSP Fish Screen and Passage Technical Review

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;

Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;

Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	Restoration, including improved passage and sediment transport, of this portion of Big Chico Creek has high value to several CALFED and AFRP Goals. However, the ecological and restoration benefits afforded by this proposed project may be minimal. Alternative restoration approaches for this section of the river, including removal of the dam and abandonment of the swimming area, would provide greater and more long-term benefits. A higher ranking would be considered if the City, which will realize savings from reduced maintenance costs, should consider a greater cost share.
-Above average	
XAdequate	
-Not recommended	

1. **Location in terms of potential impact on fishery.** Is the project located where it will significantly benefit the fishery? Do current fish passage barriers or water diversions there harm large numbers of fish? What species of anadromous fish are present? Is the project located where these species are in their most vulnerable life stages? Will it benefit other species of fish or the waterway's community and ecosystem? Does it restore and protect natural habitats or habitat values? Will its benefits be long-term, or short-lived? Is its biological effectiveness clearly demonstrable?

Project will replace an existing flashboard dam (One-Mile Dam, whose only purpose now appears to be to create a recreational swimming area and, during fall, winter and spring, to create adequate head to operate an existing fish ladder) with a pneumatically operated spillway gate intended to improve upstream passage of fall, late fall, and spring-run chinook salmon and steelhead and to facilitate downstream transport of sediment (gravel) that is currently trapped behind the flashboard dam and regularly removed mechanically. The project is located in valuable spawning habitat and along a migratory pathway for priority

salmonid species, however the benefits to either the fishes or the physical processes on the river may be uncertain and/or incremental.

1. Improvements in upstream fish passage may be modest and occur only during high flow events when the pneumatic dam is designed to lie flat, allowing all flow to pass. At lower flows, fish will still be required to ascend using the existing fish ladder. Benefit is incremental and may not be long term. 2. Effectiveness of gravel transport through Sycamore Pool may be uncertain and the proposal provides no technical analysis to support their claims. 3. If gravel transport through the Pool is not effected then anticipated benefits towards improving spawning habitat below One-Mile Dam are also uncertain

2. **Diversions taking a greater proportion of flow.** If the project is a fish screen, is the size of the diversion to be screened a significant proportion of the waterway's discharge?

Not applicable

3. **Implementability** (minimal legal, regulatory or technical obstacles): Does the project use proven and existing technology, or unproven and experimental technology? Can it be implemented in a timely fashion, or are protracted delays anticipated? Are project partners, including consultants and subcontractors, qualified? Will legal, regulatory, or technical obstacles impede it? Can any adverse effects be reversed or adequately mitigated? Does it enjoy public support? Is it compatible with other programs and projects, which are part of an integrated restoration program for the waterway? Does it have synergistic effects with ongoing programs?

Project appears to be feasible, implementable in a timely fashion, and the technology is reported to have been used on several other local streams (although specific stream conditions are not described). Project consultants are not identified. While the project appears to enjoy public support, and it follows on several other restoration efforts in the same area (e.g., relocation of M&T diversion site), the proposed efforts to improve fish passage and sediment transport through a recreational swimming area may not be compatible in the long-term with integrated restoration of the river in this area.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Costs appear reasonable for the amount of work proposed but may be excessive in relation to the restoration benefits.

5. **Partnerships/Opportunities.** Does the project fully involve appropriate partners? Are the applicants willing participants? Are other cost-sharing funds available, and fully exploited?

Yes, the City is contributing \$30,000, somewhat less than 10%.

6. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

High The regional panel identified several benefits of the proposed project. It addressed regional priorities, had substantial linkages to other restoration activities (funded largely by AFRP), and the panel noted that these other restoration efforts had had substantial local support. However, the panel had reservations regarding the long-term maintenance of a swimming area on a live stream, from the perspectives of fishery issues as well as public health

7. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

Not really, although the review noted that several legal or regulatory issues were not adequately addressed in the proposal.

Miscellaneous comments:

None

Sacramento Regional Review:

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

Overall Ranking: -Low -Medium **XHigh**

Provide a brief summary explanation of the committee's ranking:

The panel ranked the proposal high based upon integration with previous and ongoing restoration actions. City of Chico should however, assess the long-term life of the One-mile swimming pool being operated in Big Chico Creek.

1. Is the project feasible based on local constraints?

XYes -No

How?

The City of Chico has since about 1940, operated a municipal swimming area in Big Chico Creek. Various modifications have been made to accommodate fish passage and habitat. During the early 1990's a second upstream swimming area was abandoned partially to accommodate habitat/spawning issues. AFRP applied funds to construct a bypass for cleaning. Current operation requires some level of inundation to allow satisfactory passage, which is difficult to maintain with flashboard arrangement. Bladder dam allows rapid adjustment.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

XYes -No

How?

Proposal addresses Restoration Priorities for the Sacramento Region #2, "Restore fish habitat and fish passage, particularly for spring-run chinook salmon and steelhead trout, and conduct fish passage studies", and #4, "Restore geomorphic processes in stream and riparian corridors." Spring run chinook and steelhead must pass the one-mile pool site enroute to the upstream holding and spawning area. Other major efforts are under way, or have been completed to accommodate such.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

XYes -No

How?

Project is integral piece of spring run chinook and steelhead restoration efforts. Several previous projects have been implemented including an AFRP funded bypass, abandonment of a second swimming area, relocation of the M&T pumps, AFRP technical evaluation of upstream Iron Canyon fish ladder, partially AFRP funded acquisition of key riparian areas, and AFRP funded watershed assessment. Restoration efforts have been locally coordinated with Big Chico Creek Watershed Alliance, and City of Chico Parks and Recreation Board. Additionally, CSU Chico Foundation has been actively involved, including management of land acquisitions.

4. Does the project adequately involve local people and institutions?

XYes -No

How?

Restoration efforts have been locally coordinated with Big Chico Creek Watershed Alliance, and City of Chico Parks and Recreation Board. Additionally, CSU Chico Foundation has been actively involved.

Other Comments:

While there is a definite need to implement this project in the near-term (10-20 years) to facilitate restoration efforts for spring run salmon and steelhead, the City of Chico needs to develop a long-term solution to operation of a swimming pool in a live stream. In addition to fishery issues, public health/safety, and water quality may eventually preclude operation of a swimming pool in a live stream.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **45**

Applicant Organization: **City of Chico**

Proposal Title: **Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
X Excellent	My excellent rating reflects my emphasizing the approach and feasibility over some of the other elements that received a very good.
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

Rating: Excellent. The goal is pretty straightforward i.e., to replace the existing dam with one that allows for fish passage.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Rating: Very Good. No justification was given in this section. However, the reference was made in the introduction section to supporting the goals of CDFG and USFWS for restoring and managing the spring-run Chinook salmon and steelhead in Big Chico Creek.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

Rating: Excellent. The approach is well organized into project management, environmental compliance, construction, construction management, operation and maintenance manual, and post-construction performance evaluation and monitoring phases. These are described in sufficient detail.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

Rating: Excellent. The project is based on existing technology.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

Rating: Very Good. Performance measures are not described in this section. However, they are detailed under approach for the construction phase, which is the most crucial aspect of this project.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

Rating: Very Good. The primary product is the new dam structure. Subsequent monitoring should be proposed to ascertain the success of the bypass structure and to document the applicability of this project in other places.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Rating: Very Good. The City of Chico intends to manage the project and contract the actual construction to a qualified firm. The City's ability to provide oversight is key for this project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Rating: Excellent. This project appears to be very cost-effective. The City is sharing costs for the design and the oversight.

Miscellaneous comments:

The success of this project is dependent on the initial design for the bypass structure and dam renovation. Has this design been peer-reviewed and accepted as the best management practice?

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **45**

Applicant Organization: **City of Chico**

Proposal Title: **Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Excellent	The project suffers from lack of data on the scale of the problem to both downstream gravel conditions and upstream fish passage restrictions. It does, however, fit exactly with general assessments of the kinds of problems to fish and habitat conditions throughout the state. The relative value of benefits by construction will be hard to develop and may be unknown, thus limiting the strength of this proposal.
X Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goals for improving fish passage and downstream gravel recruitment are appropriate and clearly stated. The project meets broader goals of improving spawning and habitat in the region.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Justification for improving fish passage is somewhat weak. No data are available on whether or not fish are currently limited by the existing ladder or the general scope of the problem. The relative importance of this stream to salmon in the system is unstated. Gravel retention and removal behind the existing structure is more direct and the new facilities will largely solve this problem (including the disposal costs presently incurred by the city.) It is not clear why winter-time removal of some or all of the existing flash boards would not be used but the proponent states that several alternatives have already been evaluated.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The new construction will meet the need for gravel transport through the pool but it is unknown to what extent the alterations to the fish passage facility will improve fish passage. The issue of adequate fish passage apparently occurs at high flows although the frequency and duration of such events was not explained. There are numerous, similar flashboard-type dams elsewhere and demonstrations of success could provide knowledge for use in other locations.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

There construction and implementation of the new dam and fish passage facilities is entirely feasible and relatively modest for potential long-term benefits. The devices are relatively recent but in use elsewhere and functioning as designed.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

The proposal is straightforward in admitting limitations to demonstrating measures of improved salmon passage during high flow events. Evidence of improved fish passage will be primarily based on obtaining ranges of velocity, depth, etc. that fit published values. Existing measures would have helped show the limitations of the current facilities. The measures for gravel recruitment are standard pre-post and upstream-downstream comparisons of gravel size composition and bed form and should provide evidence of performance. The proposal is weakened by the lack of any existing data on such comparisons to show what level of difference now exists, if any. They plan to obtain such data, however, before construction. They also note that bed changes may be long term depending on the kind of runoff and bedload transport.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

The project will replace old structures and fish passage facilities with more modern ones that should allow gravel recruitment downstream and some improvement in upstream fish movement during spawning. To the degree the system improves unknown conditions now, the application of such systems to other streams may be important. There will be slight gain in information about the salmon population itself and no mention was made of collaborative work on such statistics.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

The proponent and supporting personnel seem well equipped to manage the construction and implementation of this project. The facilities are in use elsewhere and construction should be accomplished with little difficulty. Sufficient mention of methods for substrate size comparisons and channel mapping were presented to show familiarity with such techniques.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The project is relatively low cost for a construction project. The benefits of gravel recruitment are likely but the magnitude not clearly known. There will be additional benefits to the city for not collecting and disposing annual dredge materials from the pool. The benefits to fish are vague--neither the importance of the downstream area to spawners nor the likely increase in upstream passage can be demonstrated.

Miscellaneous comments:

This project is clearly responsive to agency recommendations for improving gravel quality and fish passage. The kind of structure to be replaced is contributing to the general problem noted by these recommendations and the cost is modest.

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **45**

Applicant Organization: **City of Chico**

Proposal Title: **Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Excellent	The goals and justification for the Big Chico Creek Habitat Restoration and Fish Passage Improvement Project are excellent. Numerous resource agencies have identified One-Mile Dam as a detriment to natural geomorphic processes and adult fish passage. Enhancing bedload transoprt through the project reach should improve spawning and rearing habitat downstream. Little detail was given to support the choice of a pneumatically operated spillgate but an evaluation of alternatives was conducted and the design has been applied successfully on other streams in California. The extent and duration of the monitoring and evaluation phase of the project is slightly deficient. The basic elements of a sound monitoring plan were described (hypothesized results, pre-project evaluation, post project evaluation, and comparison to reference conditions)but details were lacking and duration should be longer. However, monitoring and evaluation will be performed by consultants that may be experienced in the design and implementation of habitat improvement projects. Technical assistance from local CDFG or USFWS biologists also seems likely. This is a good proposal that certainly seems to adhere to the goals of the CalFed ERP.
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

Yes, the stated objectives of improved gravel recruitment and adult fish passage are clear and consistent. Listed or proposed species including Sacramento fall-run, late fall-run, and spring-run chinook, and Central Valley steelhead would probably benefit from the project. Seasonal dams, similar to the one proposed for modification in this proposal, are common in California are obstacles to listed salmonid recovery efforts. Course sediment removal, as is currently practiced by the City of Chico, has detrimental impacts on stream channel morphology and fish habitat. Adult fish passage impediments are also pervasive across the range of these sensitive species and can clearly limit population productivity. The problems addressed by the proposed project are timely and important.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Yes, the project seems justified relative to existing knowledge. Independent assessments of the sediment removal and fish passage issues at One-Mile Dam have been conducted by the U.S. Fish and Wildlife Service and California Dept. of Fish and Game. Both agencies concluded that dam modification is a high priority restoration action for Big Chico Creek. The proposed project also adheres to Calfed ERP and CVPIA goals of restored fish passage and geomorphic processes. The underlying basis for the proposed restoration of bedload transport downstream of the dam site is explained well. The City of Chico currently removes large quantities of course sediment from the pool behind the dam annually. Proposal states that "gravel" is removed. However, a better description of the particle size distribution might help us understand if enhanced bedload transport would provide quality substrate for salmonids. Project seeks to improve fish passage under unspecified "high flow" conditions when existing fish ladders are overtopped. There is no clear description of the frequency or duration of these "overtopping" flow events. Adult salmonids may not be inclined to migrate upstream under these flows irrespective of the impediment created by the dam.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

Yes, the approach is well designed and appropriate for meeting the project objectives. The applicant evaluated five engineering alternatives for dam modification. The approach seems reasonable and has a high probability of success. Similar pneumatically driven spillway structures have been constructed or are proposed in other Central Valley watersheds. Although similar pneumatic spillway structures exist, the proposed project could certainly enhance future efforts to modify flashboard dams through the region.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The project is feasible. The proposal contains an excellent description of construction and engineering details. Similar pneumatically operated spillways have been constructed throughout the country. The permit application process is described and it seems likely that the project will receive all necessary permits. If the height of the modified structure adheres

to the thalweg of the natural channel then enhanced bedload transport seems certain. The scale of the project is limited to the dam site and directly addresses the project's objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

Performance measures are described, but lack of detail in the monitoring component is the project's greatest weakness. Enhanced gravel recruitment to the lower reaches of Big Chico Creek is the project's first objective. Proposed monitoring of geomorphic processes in the channel include pre- and post-project surveyed cross sections both upstream and downstream of the dam site. Streambed elevations, bank conditions, and sediment particle sizes at these transects will be compared to determine project success. This approach seems reasonable but there is no specific mention about the linear extent of stream that will be monitored or the number of transects that will be established. Longitudinal surveys of the channel may be a more sensitive measure of how areas downstream of the dam responds to the influx of coarse sediment. Pebble count method may yield sufficient coarse particle size data but sediment samplers (McNeil, freeze core, etc.) might give a better representation of full range of particle sizes. The duration of the geomorphic monitoring is only one year post-construction. Proposal acknowledges short duration of monitoring. It may take many years for the channel below the dam to adjust to its new sediment regime - long term monitoring (both upstream and downstream of the structure) is justified.

The proposal describes fish passage evaluation that relies on an assessment of depth and velocity criteria for adult salmonids at the modified dam site. I agree that direct monitoring of passage during high flow conditions with poor water clarity is not possible. The proposal states that passage is currently hindered by turbulent flow that obscures attractive water velocities at the inlet (downstream end) of the fish ladders. The proposal does not clearly describe if the operation of the pneumatic spillgates will eliminate the need for ladders during the adult migration period. If the ladders will still be operational, some direct observation using video may be possible. If comparing depths and velocities to passage criteria is the only possible monitoring method, the project applicant should consider the use of acoustic current profilers - traditional flow measurement techniques may not be feasible at the dam site.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

Semi-annual reports describing the monitoring efforts will be produced. Because the monitoring phase of the project is not described in great detail it is difficult to determine the usefulness of the data. However, it is likely that any data gathered on the bed and bank conditions of Big Chico Creek at permanently established cross sections will be beneficial to fisheries biologists and hydrologists working in the area. Monitoring reports should be prepared by professional fisheries biologists, engineers, geomorphologists, or hydrologists. There is no mention of public education except involvement of citizen groups during planning meetings. The dam is used to create a high use swimming area in downtown Chico. Interpretative displays should be constructed.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

The project will be implemented by unspecified consultants. The City of Chico states that they will select a qualified contractor. Dam operations and maintenance will be performed by city personnel. An operations and maintenance manual will be developed in conjunction with CDFG personnel.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Total cost seems reasonable for a major construction project. Funds for environmental compliance and monitoring are being requested but also seem reasonable. Cost is justified by potential improvement to many miles of habitat for four sensitive salmonid populations.

Miscellaneous comments:

none

Environmental Compliance:

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

-Yes ☒No

If no, please explain:

CESA compliance (2081/Incidental Take Permit) for Spring-Run Chinook salmon is necessary. Possibly can do a consistency determination with the US Fish and Wildlife Service Take Permit.

Need a State Lands Commission Land Use Lease and Reclamation Board Encroachment Permit.

Applicant will be complying with Section 106 of the National Historic Preservation Act. List "required" next to "Other" under Federal Permits and Approvals on the Environmental Compliance Checklist.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

☒Yes -No

If no, please explain:

Budget and timelines for permits and environmental documentation very well specified and adequate.

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

-Yes ☒No

If yes, please explain:

A majority of the required permits and environmental documentation are covered but need to comply with CESA for spring-run chinook and obtain State Lands and Reclamation Board Permits.

Other Comments:

Budget:

Proposal Number: 45

Applicant Organization: City of Chico

Proposal Title: Big Chico Creek - Habitat Restoration and Fish Passage Improvement Project

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

☒Yes -No

If no, please explain:

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

☒Yes -No

If no, please explain:

MAYBE - Budget Summary has little or no detail. Work Table & Costs attachment has more detail.

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

☒Yes -No

If no, please explain:

Indirect Rates are NOT being charged.

4. Are appropriate project management costs clearly identified?

-Yes ☒No

If no, please explain:

N/A - Chico is not asking for compensation.

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

-Yes ☒No

If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

17.a. = \$376,540.00

Grand Total = \$406,540.00

6. Does the budget justification adequately explain major expenses?

☒Yes ☐No

If no, please explain:

7. Are there other budget issues that warrant consideration?

☐Yes ☒No

If yes, please explain:

Other Comments: