Habitat Expansion Agreement

for

Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead

Questionnaire Instructions

The attached questionnaire is intended to solicit information needed by the Steering Committee to review projects relative to the criteria established in the Habitat Expansion Agreement. For each proposed action (project), please complete the questionnaire to the fullest extent possible. Please provide citations where applicable and provide a full reference for each citation at the end of this questionnaire (Section X. Supporting Documents). Specific instructions follow.

I. Contact Information

Provide the name of the agency or group making the proposal as well as a contact person for the project. Include contact information such as mailing address, phone number, and email address.

II. Project Description

Provide a descriptive name for the action (project). If the action is listed in the *Working List of Potential Habitat Expansion Actions* (provided during the January 2009 meetings of HEA parties), please include the reference number associated with the action. The project location should specify the watershed or subwatershed (e.g., Deer Creek, Beegum Creek) as well as specific areas within the watershed where the project will be located and what portions of the watershed will benefit from the project. Please include geographic coordinates of the project location(s), if applicable. The project description should be a narrative that provides as much detail as possible about the project.

III. Species Limiting Factors

In this section, indicate the factors that currently limit production of spring-run Chinook salmon and/or steelhead in your watershed. The intent is that the environmental and biological objectives of your project address these limiting factors in some way. Please check one or more of the limiting factors that apply to your watershed. In the second column, describe how and where the factor limits spring-run Chinook salmon and/or steelhead. For each factor that you check, please rank its effect on spring-run Chinook salmon and/or steelhead using the drop-down box in the last column. Finally, we also ask that you describe the source of your conclusions, such as a watershed assessment or other document. Please provide enough information that we can find the document if we need it.

IV. Project Objectives—Environmental

Environmental objectives describe how the project is intended to address the limiting factors to achieve the biological objective described in the next section. Environmental objectives should be as specific and quantitative as possible (e.g., reduce gravel embeddedness in the watershed from 75% to 25% by fencing riparian areas to exclude cattle and allow riparian forest to reestablish). Describe how you think environmental objectives relate specifically to the biological objectives. In the last column, we ask you to describe the environmental objectives as either the primary or secondary focus of the project. For example, a project to plant trees might have a primary focus on riparian/floodplain function with a secondary focus on temperature or water quality.

V. Project Objectives—Biological

Biological objectives describe the anticipated biological response from the project and should be as quantitative as possible. Indicate which species and life stages are the focus of the project. Describe specifically the general condition of the target species in your watershed relative to the historical abundance. The condition of the species should be indicated using the categories in the drop-down box. Species condition categories are defined on the last page of this form. Biological objectives should include the following information: (1) an estimate of the expected contribution of the project in terms of potential adult returns, to the extent possible (and an explanation of how the estimate was developed); and (2) an explanation of how the biological objective for the species is addressed by the action relative to the environmental limiting factors (e.g., the biological objective of an action might be to increase egg incubation survival in a watershed that is currently limited by sediment levels).

VI. Project Cost

To the extent possible, estimate the capital cost of the project, the annual operating and maintenance (O&M) cost, a description of annual O&M activities, and the project lifetime (i.e., how many years O&M activities are expected, including indefinitely, and how long until you expect the project to provide benefits). Provide any confirmed or potential funding partners, or opportunities for cost sharing with other funders or between projects. Also, identify any confirmed or potential partners that might provide maintenance support for the project (funding support or labor support).

VII. Schedule

Describe the project schedule, including a potential start date, construction period, and environmental and biological response times (i.e., the expected time to realize environmental and biological benefits). The last points refer to the maturation period for the project during which time environmental conditions develop. For example, it may take 50–100 years before full environmental benefits (e.g., shading, channel stability, water quality) of planting riparian trees are realized.

VIII. Feasibility

Describe the feasibility and challenges of the project. Feasibility issues should include primarily technical issues, success of projects utilizing similar technology, and particular challenges posed by the specific project. Other issues of feasibility that may be included are challenges associated with property ownership, permitting, zoning, and other social-economic-legal issues.

IX. Project Support

Describe the support or potential conflicts associated with the project. Specifically, provide supporting and cooperating entities (e.g., agencies, non-governmental organizations). Are there cooperating agencies or groups, aside from the potential funding partners mentioned previously? Describe the degree of local support and any known opposition or conflicts with other parties.

X. Supporting Documents

Provide full references for each citation used to support the information presented in this questionnaire for your project. At a minimum, a reference should include the author(s) name; name of agency/organization (if applicable); title of the document; volume and title of journal, if the document is taken from a professional journal; and publisher, date, and location of publication.

Questionnaire

for

Information on Potential Projects to Support Spring-Run Chinook Salmon and Steelhead in the Sacramento River Basin for the Habitat Expansion Agreement

DUE: Friday, February 27, 2009

Send completed questionnaires to hea@water.ca.gov

I. Contact Information

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II. Project Description

Project Name:	Deer Creek floodplain feasibility study implementation
Reference No. or New:	NS-44
Project Location:	Lower Deer Creek

Project Description:

Complete environmental compliance documents, obtain permits, and implement all or portions of the Deer Creek floodplain feasibility study which can include 1) purchasing conservation easements, 2) moderate levee setbacks on both banks between Red Bridge and Stanford Vina Ranch Irrigation Company (SVRIC) dam, 3) replace current SVRIC dam with a seasonal dam, and 4) rebuild/expand Red Bridge.

The Deer Creek Watershed Conservancy received a grant to complete a floodplain feasibility study. The goal was to determine how to maintain regulated flood flow conveyance yet improve aquatic habitat. The study has developed two action alternatives, one of which is summarized above.

III. Species Limiting Factors

In this section, describe the limiting factors for spring-run Chinook salmon and steelhead in your watershed. The last page of this questionnaire defines the limiting factors.

Limiting Factors	Description (from back page)	Rank
☒ **Channel Form**	Good spawning and holding habitat is located in the steelhead and spring-run canyon reaches. The lower watershed is partially confined by levees and periodic maintenance cleans out material that is considered a threat during flooding (such as large woody material). The channel is therefore homogeneous and simplified. Substrate is coarse with fair to poor spawning habitat for fall-run Chinook.	High
☒ **Channel Unit Types**	Due to the levee confinement and periodic channel clean-out, the aquatic habitat is homogeneous and simplified. Few pools occur in the valley floor reach.	High
☐ **Substrate**		Select Rank
☐ **Structure**		Select Rank
☒ **Flow**	During "normal" water years there is no rearing potentail past April or May due to low flow and high temperatures. Most of the creek is diverted for irrigation in the valley reach.	Critical
☒ **Temperature**	During "normal" water years there is no rearing potentail past April or May due to low flow and high temperatures. Most of the creek is diverted for irrigation in the valley reach.	High
☐ **Water Quality**		Select Rank
☒ **Passage**	There are three diversion dams on Deer Creek, one is laddered (SVRIC). The ladders, however, do not function as designed due to downcutting of the stream at the base of the dam. Entry into the south ladder is challenging. The SVRIC and Deer Creek Irrigation Distirct work cooperatively with CDFG to release more flow in a specified period to assist with upstream migration.	Critical
☒ **Riparian/Floodplain**	The lower watershed is partially confined by levees and periodic maintenance cleans out material that is considered a threat during flooding (such as large woody material). The Riparian/floodplain habitat component is not fully developed and can not be maintained due to high/scouring flows created by levee confinement.	High

Source Documents:

Additional Notes:

IV. Project Objectives—Environmental

In this section, describe how your project will affect one or more of the limiting factors for spring-run Chinook salmon or steelhead described above.

Limiting Factor	Description and Objective	Focus
☒ **Channel Form**	Through levee set backs the channel can reconnect to a portion of its previous floodplain (the project does not restore the full width of the pre-1949 floodplain) and restructure itself. In time the channel will become more complex.	Primary
☒ **Channel Unit Types**	Through levee set backs the channel can reconnect to a portion of its previous floodplain (the project does not restore the full width of the pre-1949 floodplain) and restructure itself. In time the channel unit types will become more complex. The stream will become narrower and deeper; large woody material and riparian vegetation will be allowed to become a component of the aquatic habitat.	Secondary
☐ **Substrate**		Select Focus
☐ **Structure**		Select Focus
☐ **Flow**		Select Focus
☐ **Temperature**		Select Focus
☐ **Water Quality**		Select Focus
☒ **Passage**	With a deeper and narrower channel, passage will improve. If the SVRIC dam is operated on a seasonal basis, this will allow spring chinook to move upstream unimpeded. With the new dam, ladders will still be incorporated for when low water years force early irrigation. Two unladdered diversion dams are still present and will need to be addressed (both are passable at high flows).	Primary
☒ **Riparian/Floodplain**	Through levee set backs the channel can reconnect to a portion of its previous floodplain (the project does not restore the full width of the pre-1949 floodplain) and restructure itself. In time the channel will become more complex. The stream will become narrower and deeper; large woody material and riparian vegetation will be allowed to become a component of the aquatic habitat.	Secondary

V. Project Objectives—Biological

In this section, describe the objective(s) of your project relative to the goal of providing habitat for spring-run Chinook salmon and steelhead. Indicate the species and life stage that are targeted by the project. (It is okay to have more than one species/life stage target).

Target Species: ☒ Spring-Run Chinook Salmon **Population Status Specific to Watershed:** Decreasing

Target Life Stages:

☐ Spawning ☐ Egg Incubation ☐ Summer Rearing ☐ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration ☐ Adult Holding

Description of Project Objectives:

The project objectives are to improve the aquatic habitat in lower Deer Creek while still maintaining regulated flood conveyance. Habitat improvements are reconnection to the floodplain, establishment of riparian vegetation, and habitat complexity. This will increase both juvenile and adult salmonid survival as they move through lower Deer Creek.

Target Species: ☒ Steelhead **Population Status Specific to Watershed:** Relative to Historical

Target Life Stages:

☐ Spawning ☐ Egg Incubation ☐ Summer Rearing ☐ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration

Description of Project Objectives:

The project objectives are to improve the aquatic habitat in lower Deer Creek while still maintaining regulated flood conveyance. Habitat improvements are reconnection to the floodplain, establishment of riparian vegetation, and habitat complexity. This will increase both juvenile and adult salmonid survival as they move through lower Deer Creek.

VI. Project Cost

Capital Cost:	approximately $20,000,000 for full implementation
Annual Operation and Maintenance Cost:	?
Annual Operation and Maintenance Description:	?
Project Lifespan:	Not sure. Once levees are set back it is expected they will stay there (maintenance only will be required). The only infrastructure items that may have a lifespan are Red Bridge and SVRIC dam. 50+ years to indefinite.
Project Partners (Funding):	
Project Partners	Tehama County, DWR, Army Corps, private land owners

VI. Project Cost

(Maintenance):

VII. Schedule

Proposed Start:	2009 for environmental documents; 2010+ for implementation
Expected Time to Completion:	5-10 years
Expected Time to Realize Environmental Benefits:	Immediately, however since no human intervention is planned for channel restoration, it will be a longterm project. Flows and vegetation will determine rate of change.
Expected Time to Realize Biological Benefits:	Immediate with SVRIC dam replacement, 5-10 years (or sooner) for channel and vegetation changes.

VIII. Feasibility

Technical Feasibility:	High, it has been done elsewhere.
Technical Challenges:	Determining the type of seasonal dam at SVRIC.
Related Projects:	
Ownership or Permitting Challenges:	There is a question regarding the SVRIC dam replacement and ownership as it is included with this project. This should be addressed in the final feasibility study.
Conflicts with Cultural, Zoning, or Other Issues:	None known at this time.

IX. Project Support

Supporting Entities:	DWR, CDFG, USFWS, USFS,
Cooperating Entities:	UC Berkely, Deer Creek Watershed Conservancy
Degree of Local Support:	High
Known Opposition:	None known at this time. There has been a significant amount of outreach to the local community. The Team has meet individually with all the involved land owners and irrigation district.

X. Supporting Documents

Please provide a full reference for each citation used to support the information presented in this questionnaire.

Deer Creek Watershed Conservancy. 1998. Deer Creek Watershed Management Plan. Prepared for the CA State Resources Agency, State Water REsources Control Board, and the USFWS.

Draft Lower Deer Creek Ecosystem Restoration and Flood Management: Geomorphic and Ecosystem Evaluation of Alternatives. Technical Memorandum by Mark R. Tompkins and G.M. Kondolf. 2008. (I am on the Technical Advisory Committee so have access to draft copies). The final should be out shortly. Contact Holly Savage of the Deer Creek Watershed Conservancy.

USFWS. 2001. Final Restoation Plan fo rhte Anadromous Fish Restoration Program.

Definitions of Limiting Factors for Spring-Run Chinook Salmon and Steelhead

Channel Form

This attribute describes changes to the channel, including incision, aggradation, diking, armoring, and other modifications of the channel adversely affecting spring-run Chinook salmon and steelhead.

Channel Unit Types

Examples of geomorphic features of the channel that form habitat types for spring-run Chinook salmon and steelhead are pools, riffles, glides, and runs. This attribute describes changes in the frequency and size of such features. For example, removal of large wood may reduce the frequency of pools, presence of steps, or retention of gravel for riffles.

Substrate

This attribute describes changes in the composition of the substrate of the stream, including increase in fine sediment and lack of gravel recruitment.

Structure

This attribute describes the loss of structural elements in the stream such as large wood, boulders, undercut banks, and so on. Loss of structure results in a simplification of the channel and influences Channel Form and Channel Unit Types.

Flow

This attribute addresses modification of the flow regime, including decrease in summer low flow, increased "flashiness," and dewatering of the channel as a result of withdrawals.

Temperature

Change in water temperature can be attributable to human actions such as removal of riparian shading. This attribute describes the increase in summer water temperature and the loss of temperature refugia (springs or groundwater) as a result of human actions.

Water Quality

This attribute pertains to the input to the stream of toxins or pollutants that produce adverse impacts on spring-run Chinook salmon or steelhead. This can include chemical pollutants such as fertilizer and pesticides and nutrient sources such as cattle and feedlots.

Passage

This relates to the effect of impediments to adult or juvenile migration of spring-run Chinook salmon or steelhead, including dams, culverts, channel dewatering, and other structural and channel modifications. Please describe the location of the passage impediment and describe the extent of impediment (i.e., a complete or partial blockage to migration).

Riparian/Floodplain

This attribute describes the loss of functionality of the riparian forest/vegetation and the connection of the stream to the floodplain during high water and flooding.

Population Condition Definitions for Section V. Project Objectives—Biological

Increasing

Adult returns of the target species to the watershed have generally been increasing over the last several years; expectations are that the species is displaying characteristics of a rebuilding or healthy population.

Stable

Adult returns of the target species to the watershed show no clear trend over the last several years.

Decreasing

Adult returns of the target species to the watershed are declining over the last several years; the decline in abundance is a cause of concern and characteristic of a potentially unhealthy population.

Intermittent

Adult returns of the target species are occasionally seen in the watershed, but there is no viable or sustained population in the basin.

Extirpated

The population has been eliminated from the watershed although the species was present in the past.

Never Present

The species has never been known to occur in the watershed.