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

Name:	Tricia Parker
Organization:	USFWS
Address:	10950 Tyler Road
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Phone Number:	530-527-3043 x 248
Email Address:	Tricia_Parker@fws.gov

II. Project Description

Project Name:	Increase instream flow in key tributaries (acquisitions, leases, transfers, banking, water use efficiency improvements, etc)
Reference No. or New:	New "B" (This project is related to NS-1, NS-23, NS-35, NS-36, NS-51, NS-55)
Project Location:	Northern Sacramento River watershed region: including Antelope Creek, Mill Creek, Deer Creek, Paynes Creek , Cow Creek*, Bear Creek* and Butte Creek (* for steelhead)

Project Description:

Increasing stream flows is the most significant action that could be taken to expand habitat for spring Chinook and steelhead. Several key tributary streams in the northern portion of the Sacramento River watershed would attain significant habitat expansion benefits with increased stream flows. These key tributary streams currently have many positive habitat attributes; the critical limiting factor is stream flow during critical life history stages. Overall, the other habitat attributes for these watersheds are in reasonable shape (i.e. deep summer holding pools for spring Chinook, riparian shading, substrate, juvenile rearing conditions). The primary attribute of concern is assuring flows

II. Project Description

of sufficient quantity and quality. We foresee that this project would utilize the skills and roles of several groups to put together non-regulatory packages that coordinate different tools to assure flows for spring Chinook and steelhead. We see an immediate project – the Mill Creek Water Right Acquisition, and two immediate steps – analyze the existing situations and set up needed agreements.

The high priority need is to get water into streams to benefit spring Chinook and steelhead. A comprehensive view of the various tools to attain instream water for spring Chinook/steelhead is likely the most important step we could take to protect these populations. Some of the tools that may be considered include working with willing landowners for possible water right purchase, lease, trade, banking, etc. We will also need to look carefully at each watershed as-a-whole to provide hydrologic connectivity during critical life stages for spring Chinook and steelhead population viability. This is the type of effort that we envision will need to be more fully fleshed out with the assistance of DWR. Based on a brief phone conversation with Curtis Anderson on 2/24/09, we understand that Dan McManus, DWR Red Bluff (530-529-7373) is the person to work with to get a more complete description of the current status and historic operations regarding groundwater and water acquisition in these areas.

.The project title of "increasing instream flows" is specifically general as to “how” the flows would be increased based on the need to potentially utilize many tools. Some points to consider include:

- This project would not be as far reaching as the CVPIA's Water Acquisition Program, but more of an individual landowner, case-by-case, basis. For example, today I spoke with a landowner/water right holder who may be interested in selling/gifting a 0.5 cfs water right to instream flows.
- Perhaps short term water leases could be arranged? especially to supply flows during critical life history stages? Perhaps similar actions to the pulse flows that agriculutural water users supply to instream purposes on the Shasta River in Siskiyou County?
- An example that is excerpted from the TNC Mill Creek document: Conceivably, a water right that is held by TNC, DFG, Los Molinos Mutual or another partner could be “banked” by the management group during part of the year when the water would be used for agricultural irrigation, then and during critical times of the year when more water is needed in Mill Creek for fish flows, the banked credits could be “cashed in” and much more water volume could be released into Mill Creek resulting in substantial flows that would provide tangible benefits for salmon, steelhead trout and other species.
- We also need to remain cognizant that the existing conditions include unique situations for different types of water rights, water availability, types of agriculture and willingness by landowners. Some watersheds are adjudicated, others have a water master and/or irrigation district or some combination of these attributes.

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**		Select Rank
☐ **Channel Unit Types**		Select Rank
☐ **Substrate**		Select Rank
☐ **Structure**		Select Rank
☒ **Flow**	Since spring Chinook adults migrate into the tributaries in early summer, water diversions for irrigation can adversely impact their	Critical

III. Species Limiting Factors

	upstream migration.	
☒ **Temperature**		High
☐ **Water Quality**		Select Rank
☒ **Passage**	Sufficient flows to provide hydrologic connectivity for downstream passage is critical for successful downstream migration of juvenile spring Chinook..	Critical
☐ **Riparian/Floodplain**		Select Rank

Source Documents:

see below

Additional Notes:

Additional flow in Cow, Bear and Paynes Creeks would be targeted for steelhead benefits. It would also assist with temperature control for rearing juveniles. For Paynes Creek, BLM may have some water rights available to sell at this time (Kelly Williams 530-224-2159) kelly_williams@ca.blm.gov

A unique situation exists on Butte Creek: Populations of spring Chinook in the Butte Creek watershed could benefit from the action to fix the M & T pumps on the mainstem Sacramento River. As I understand it, two issues exist. A) One concern is that the current 40 cfs water transfer agreement is not as legally firmed up as it could be -- so in some situations M & T can still take water from Butte Creek and B) when the M&T pumps are fixed more "certain" water will remain in Butte Creek. If these flows were to stay in Butte Creek, it would benefit spring Chinook.

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**		Select Focus
☐ **Channel Unit Types**		Select Focus
☐ **Substrate**		Select Focus
☐ **Structure**		Select Focus
☒ **Flow**	Surface water diversions can severely fragment, and therefore destroy, key habitat. Early irrigation during low water years interfers/delays upstream migration of adults, and affects juvenile outmigration and stranding.	Primary
☒ **Temperature**		Secondary
☐ **Water Quality**		Select Focus
☒ **Passage**	Barriers to upstream and downstream migration include gravel/sandbars at the mouth of the stream and very low or discontinuous surface flow.	Primary

IV. Project Objectives—Environmental

☐ **Riparian/Floodplain** Select Focus

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:

1) Increasing instream flows would improve spring Chinook access to existing habitat thereby potentially increasing escapement and spawning.

2) Successful emigration of juvenile salmonids would be increased if their migration channel maintained water.

Target Species: ☒ Steelhead **Population Status Specific to Watershed:** Stable

Target Life Stages:

☐ Spawning ☐ Egg Incubation ☒ Summer Rearing ☐ Winter Rearing

☒ Juvenile Emigration ☐ Adult Immigration

Description of Project Objectives:

Successful emigration of juvenile salmonids would be increased if their migration channel maintained water.

To benefit both spring Chinook and steelhead, the two steps for this project are : analyze the existing water situation/opportunities and set up legal agreements. The Mill Creek Land Conservation and Water Right Acquisition (May 2008) would be the Pilot Project.

VI. Project Cost

Capital Cost:	More information is needed for these cost categories.
Annual Operation and Maintenance Cost:	unknown
Annual Operation and Maintenance Description:	n/a
Project Lifespan:	Varies

VI. Project Cost

Project Partners (Funding):	Likely NOAA, DFG, WCB, TNC, etc
Project Partners (Maintenance):	n/a

VII. Schedule

Proposed Start:	Immediately (especially on the Mill Creek Water Right Acquisition).
Expected Time to Completion:	Variable
Expected Time to Realize Environmental Benefits:	Immediate
Expected Time to Realize Biological Benefits:	Immediate

VIII. Feasibility

Technical Feasibility:	Various versions of this project are currently underway at some locations. Also, Jake Jacobson, Project Director with The Nature Conservancy may be able to provide much needed detail 530-897-6370 x 207, jjacobson@tnc.org In the past, Dick Jewell, FWS, was very active with Water Acquisition (retired in 2008). We believe that the Flow Acquisition Model that he developed may be available for use. We will also need to look at examples such as the incentive-based, non-regulatory project in Rudio Creek in Oregon's John Day Basin that increased the quantity and quality of spawning and rearing habitat for steelhead and spring Chinook. .
Technical Challenges:	Coordination amongst various entities
Related Projects:	See also NEW project Questionnaire "A" for flow gauges (Brenda Olson, contact)
Ownership or Permitting Challenges:	The steps will be to analyze what flows are needed, analyze what flows are available, set up transfer agreements and dedicate to instream flow. Each situation is unique and will need to be assessed.
Conflicts with Cultural, Zoning, or Other Issues:	Likely not.

IX. Project Support

Supporting Entities:	CDFG, USFWS, DWR, NOAA
Cooperating Entities:	To be determined. In several of these watersheds, there may be opportunities to

IX. Project Support

	work with the agricultural water users in the upper watershed to increase irrigation efficiency. ..
Degree of Local Support:	Case by case basis.
Known Opposition:	None at this time. This project would only work with willing participants..

X. Supporting Documents

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

DWR. 1997. Deer and Mill Creeks Easement and Acquisition Program LINK: .nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=12631

CVPIA Water Acquisition Program (WAP): one of three objectives is to improve spawning and rearing habitat and increase migration flows for Chinook and steelhead. ?year (c1997) [LINK http://www.usbr.gov/mp/cvpia/docs_reports/awp/2003/03_3406b3_d2_g.pdf])

Pacific Institute. 2008. More with Less: Agricultural Water Conservation and Efficiency in California., Oakland, CA [LINK: pacinst.org/reports/more_with_less_delta]

USFWS. 2008. Internal document of Limiting Factors developed for 10 year CVPIA Implementation Strategy.

USFWS. 2001. Final Restoration Plan for the Anadromous Fish Restoration Program

USFS. 2000. Mill, Deer, Antelope Creeks Watershed Analysis. Lassen National Forest.

DWR Fish Passage Report, 1995

Butte Creek Watershed Conservancy. Existing Conditions Report. (buttecreekwatershed.org/ecr/new/chapt6.htm)

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.

CH2MHill. 1997. Mill Creek Watershed Management Strategy Report, Lassen Watershed Project. Prepared for the Mill Creek Conservancy

Elizabeth A. Campbell and Peter B. Moyle, "Effects of temperature, flow, and disturbance on adult spring-run chinook salmon" (August 31, 1992). University of California Water Resources Center. Technical Completion Reports. Paper 764. http://repositories.cdlib.org/wrc/tcr/764

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.