

***Final Updated Proposed Action for the FCRPS
Biological Opinion Remand***

***APPENDIX E: General Description of the
Action Agencies' Tributary Habitat Approach
for the Updated Proposed Action***

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General Description of the Tributary Habitat Proposed Action Approach

The Action Agencies approach for describing the offsite tributary habitat component of the proposed action was intended to conform with suggestions contained in NOAA Fisheries guidance paper entitled, *Mitigating Effects of FCRPS Operations*, dated July 1, 2004. The guidance paper contains a set of considerations recommended to the Action Agencies for selecting the tributary and estuary habitat actions necessary to avoid jeopardy in the FCRPS Biological Opinion Remand. The paper also includes ESU summary tables of preliminary analysis of effects for populations within major populations within each of 12 listed ESUs affected by operation of the FCRPS. The paper includes an appendix with the analytical methods NOAA completed to identify the potential for offsite actions to minimize effects of operation of the FCRPS. The analytical methods described in the appendix culminate in definition of anticipated qualitative population response, or Ecological Improvement Potential (EIP). EIP is a qualitative conclusion as to whether there is a High, Medium, Low, or Very Low potential for tributary habitat actions to improve population status for individual populations that compose an ESU. The appendix concludes with analysis results for individual populations in each ESU that includes a list of limiting factors that control population status and suggested mitigation measures and constraints.

The Action Agencies developed an approach similar to that recommended in the NOAA Fisheries guidance to identify a tributary habitat proposed action to fill the survival gap that complement and supplement actions for hydropower configuration and operations, predation, hatcheries, transportation, and estuary habitat. The approach employed by the Action Agencies contains many of the same elements as the NOAA Fisheries guidance with some changes as described here:

- A. Our approach started at the ESU rather than the population level as suggested in the NOAA Fisheries guidance because survival change was the first filter used by the Action Agencies to determine whether a tributary habitat proposed action would be needed. Survival change was assigned by NOAA Fisheries at the ESU, not the population level. The rationale the Action Agencies used to determine whether a habitat proposed action would help fill the survival gap identified for ESUs by NOAA Fisheries included the following steps.
 1. The Action Agencies developed a tributary habitat proposed action for ESUs that were assigned a total survival change greater than 2 percent by NOAA Fisheries. It was assumed by the Action Agencies that the mix of proposed actions for hydropower configuration and operation, predation, hatcheries, transportation, and estuary habitat were sufficient to eliminate a survival gap of 2 percent or less.
 2. The Action Agencies first used the preliminary analysis of effects summary tables provided in the NOAA Fisheries guidance paper to identify populations with a Medium or High Tributary Potential for those ESUs with a gap greater than 2 percent. For the majority of these populations, continuation of tributary habitat

- actions instituted through the 2000 BiOp will address these populations. Other factors used in our population selection are described in the tributary habitat proposed action for each addressed ESU.
3. No tributary habitat proposed action was developed for a population if there was low certainty that actions could be completed within the term of this BiOp. These conditions are described in the tributary habitat proposed action for ESUs where they apply.
 4. No tributary habitat proposed action was developed for populations where NOAA Fisheries assigned tributary Potential of Very Low, even if the assigned survival change was greater than 2 percent. These conditions are described in the tributary habitat proposed action for ESUs where they apply.
- B. The Action Agencies proposed action includes limiting factors identified by NOAA Fisheries for each population that comprised the major populations in the ESUs that met criteria in “A” above
1. Action Agency field staff currently located in tributary subbasins conferred with local biologists, landowners, and others with direct knowledge about local conditions and who contributed to development of subbasin and recovery plans to “ground truth” the status of limiting factors within ESUs
 2. The Action Agencies did not consider limiting factors that were beyond their authority to affect, e.g., land use designation, fire activities, timber harvest, grazing
 3. The Action Agencies determined that entrainment, instream flow, channel morphology, and riparian condition were the most significant limiting factors that were (1) a subset of those limiting factors identified in the NOAA Fisheries guidance paper, (2) consistent with local priorities identified by local biologists, landowners, and those who contributed to subbasin and recovery plans, and (3) are within their authority to address
 4. See section C.9 below for an accounting for differences between limiting factors identified by NOAA Fisheries and those addressed by the Action Agencies.
- C. Projects were depicted in terms of metric goals for each ESU that meets criteria “A”, above and that meets limiting factors in “B”, above as follows
1. Utilize PCSRF metrics identified by NOAA Fisheries for entrainment (number of screens), instream flow (rate protected, in cubic feet per second), channel morphology (number of miles of access or complexity restored), and riparian condition (number of miles protected or enhanced)

2. Utilize field staff stationed in tributary subbasins to confer with local biologists, landowners, and those who contributed to subbasin and recovery plans to identify entrainment, instream flow, channel morphology, and riparian condition projects with high certainty of being completed during the term of this BiOp
3. There is significant support from private landowners to implement entrainment, instream flow, channel morphology, and riparian condition projects. However, work has not yet been initiated on some of these projects. Consequently, there are some fundamental reasons that the Action Agencies did not identify metrics by population. One reason is to not infringe upon the confidences of cooperating landowners in communicating tentative plans to initiate projects on their lands. The Action Agencies do not want to jeopardize relationships and project opportunities with prospective cooperative landowners by identifying specific projects at this time. Another reason is to prevent the speculation and inherent increases in costs that result when federal agencies identify specific mitigation directions for a discrete geographic area. A third reason is that the Action Agencies are committed to addressing the key limiting factors to benefit the relevant populations within an ESU, but seek to maintain the flexibility to implement projects in a cost-effective manner. Projects will still be prioritized to provide for ecologically significant actions addressing the limiting factors in the subbasins for the applicable populations of the ESUs. Consequently, the Action Agencies reported projects in terms of metric goal totals for each ESU addressed in the tributary habitat proposed action
4. Biological relevance— The Action Agencies will develop and implement entrainment, flow, channel morphology, and riparian condition projects in close coordination with local biologists, landowners, NOAA Fisheries staff, and those who contribute to subbasin and recovery plans to meet the most current priorities established for anadromous fish population
5. Distribution—The Action Agencies will confer with local biologists, landowners, NOAA Fisheries staff and others who contribute to subbasin and recovery plans to implement projects to benefit priority fish populations within major population groups
6. Types of appropriate actions—Projects in the tributary proposed action are new projects that are not already part of an environmental baseline.
7. Timing—tributary habitat projects will be implemented throughout the duration of the BiOp. Benefits will accrue immediately upon individual project completion. The Action Agencies commit to meet the 3 and 6 year metric goals that address limiting factors in each ESU.
8. Certainty

- a. The Action Agencies commit that financial and other necessary resources are available to meet the 3 and 6 year metric goals described above contingent upon continuing Congressional funding.
 - b. Attainment of benefits-- The Action Agencies and NOAA Fisheries recognize the difficulty in assigning a quantitative assessment for the benefits expected to accrue. In the absence of definitive quantification of expected benefits, we will use project prioritization, effects monitoring, and an adaptive and flexible approach to incorporating new information to guide future project implementation.
 - 1. Project prioritization— In the absence of subbasin and recovery plans, the Action Agencies plans to implement projects that benefit fish populations prioritized by local biologists, landowners, NOAA Fisheries staff, and others who contribute to subbasin and recovery plans. Once subbasin and recovery plans are adopted, the Action Agencies will work with those parties to implement projects that are consistent with the priorities identified in the subbasin and recovery plans. This may result in adjusting metric goals or project locations to meet identified fish population priorities.
 - 2. Effectiveness monitoring— RM&E actions in the Proposed Action will include an effects monitoring program for some of the projects implemented as part of the tributary proposed action. This RM&E component will not be comprehensive, because scientifically-acceptable methodology is in the infancy stage. However, experience gained in this regard will provide a basis for future development of scientifically sound effectiveness monitoring
 - 3. Adaptive management—The metric goals are based on the best information at the time this BiOp was adopted. The Action Agencies commit to adapting the mix and locations to meet metric goals when subbasin and recovery plans, other peer-reviewed information, and RME results indicate that a different mix would be more beneficial to fish populations in the ESUs addressed in the tributary proposed action. Although the Action Agencies can commit to changing the mix and locations of metric goals, this does not mean that the Action Agencies will commit to increasing the level of efforts to meet metric goals established with the best available information at the time this BiOp was adopted.
9. Value of benefits. The current state of science only permits a qualitative assessment of expected benefits from tributary habitat projects. This section describes how the Action Agencies qualitatively evaluated how the proposed tributary action contributes to filling the gap. The analysis equates qualitative

and numerical ratings of Tributary Potential with corresponding qualitative and numerical ratings for benefits. Projects were identified for populations that were assigned a medium to high level of Tributary Potential by NOAA Fisheries. This corresponded to a range of 2-24 percent for medium potential and 25-100 for high potential (NOAA Guidance, p. 3-1). Action Agencies field staff collected information on opportunities to address limiting factors within a 3 year and 6 year time horizon. If this information were considered to represent absolutely 100 percent of the available opportunities, this would represent a “high” level of habitat potential (and corresponding benefit). However, as explained above, the Action Agencies will address a subset of the limiting factors identified by NOAA Fisheries . Assuming a negative offset of 50 percent for the difference between all limiting factors and the four significant limiting factors identified by Action Agency field staff still leaves a 50 percent opportunity for habitat improvement potential (and corresponding benefits) for the tributary proposed action which corresponds to a “high” potential level. Considering a time lag to implement projects introduces another negative offset to benefits. Considering that implemented projects provide an immediate benefit, but those projects do not provide a benefit until implemented, it is assumed that a further 50 percent reduction is appropriate. This reduces the habitat potential (and benefits) to 25 percent. This ranks in the “high” level of habitat opportunity (and benefit). A positive offset for adapting metric goals and locations during the duration of the BiOp could be considered appropriate, but this positive offset is considered highly uncertain and is not entertained any further. In conclusion, meeting all metric goals described for the ESUs addressed in the habitat Proposed Action is considered to meet a high level of benefit (25%). The contribution of benefits from the tributary habitat proposed action supplements those from the hydropower configuration and operation, predation, hatcheries, transportation, and estuary habitat parts of the proposed action