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July 3, 2008

DECISION MEMORANDUM

TO: Fish and Wildlife Committee Members

FROM: Mark Fritsch, project implementation manager

SUBJECT: Step review of Klickitat River Anadromous Fisheries Master Plan (*YKFP-Klickitat Design and Construction*, Project #1988-115-35).

PROPOSED ACTION:

- I. The staff recommends that the Fish and Wildlife Committee approve the Klickitat River Anadromous Fisheries Master Plan to proceed to step two level activities.
- II. It is recommended that the Fish and Wildlife Committee call for additional information to be developed that fully addresses the issues raised by the independent peer review for consideration during the Step 2 review.

SIGNIFICANCE:

The master plan submitted by the Yakama Nation (YN) proposes to use artificial production efforts in the Klickitat Subbasin to benefit conservation and recovery of spring Chinook and steelhead populations while sustaining harvest opportunities and maintaining a focus on harvest augmentation for fall Chinook and coho. In doing so, the project would implement an integrated¹ hatchery strategy for spring Chinook and steelhead at a renovated Klickitat Hatchery. A segregated² coho harvest augmentation program will include reduced production, elimination of out-of-basin artificial production of coho and conversion to locally adapted broodstock. The fall Chinook production program would also be segregated. In-basin fall Chinook production levels would remain the same, but half the production would be transferred from Klickitat Hatchery to a proposed new facility at Wahkiacus. The program proposes further improvements to existing facilities that would increase the ability of spring Chinook and steelhead to access high-quality habitat, thus improving natural production; and that would allow collection of spring Chinook and steelhead broodstock to meet integrated program goals for those two species.

¹ Hatchery and wild fish are managed as one population by including natural-origin fish in broodstock.

² Segregated hatchery broodstock is managed as a distinct population.

BUDGETARY/ECONOMIC IMPACTS

The total of estimated construction costs for the new and renovated facilities outlined in the master plan is \$36,589,000. Planning since 2001 has cost \$3,144,000 and includes master plan completion and submittal, conceptual engineering designs and costs, and staffing to complete necessary work for the submission of the master plan.

The total construction cost estimate includes construction, construction management, and inspection. The budget estimate used master planning guidance of +/- 35 to 50 percent and will be refined as part of the next submittal (Step 2, preliminary design). Costs associated with all preliminary design work are \$3,553,383 and final design cost for the master plan is estimated to be about \$2,535,416. Cost associated with completing the environmental compliance is estimated at \$1,000,000.

Annual operation and maintenance costs associated with the Klickitat Anadromous Fisheries Master Plan after it is fully developed range from \$504,810 in 2011 to \$806,571 in 2017. These estimates reflect the outlined production profiles, but do not include the anticipated marking costs associated with the fall Chinook.³

Annual monitoring and evaluation costs, including the current and expanded costs, when all the facilities are complete in 2010 are estimated at \$1,369,539. The existing monitoring and evaluation program is currently funded at \$520,000 in Fiscal Year 2008, expanding to \$1,668,650 in Fiscal Year 2017.

Funds for the suite of projects addressed in the master plan are reserved in Memorandum of Agreement (MOA) budgets associated with the projects in the Klickitat subbasin.⁴ In addition, the hatchery action associated with the "Klickitat Project" in Section III, B, B.2. of the MOA states that the expense and capital hatchery actions have the following agreement.

- *That they will work diligently together to include development of the Wahkiacus facility in the provisions of the Mitchell Act EIS, which is currently being drafted, specifically identifying the need for the facility in support of important tribal fisheries.*
- *That the Tribe will actively seek congressional appropriations during FY 2010 and FY 2011 for Mitchell Act funding for this facility, in cooperation with other relevant entities such as the Washington Department of Fish and Wildlife. BPA will actively support proposed legislation that is consistent with this Agreement.*
- *In the event appropriations for all or a part of the Wahkiacus facility cannot be obtained, then the following shall occur:*

³ Estimated to be \$280,500 for 2015, \$291,720 in 2016 and \$303,389 in 2017, when infrastructure improvement are in place to allow 100 % mass marking of URB fall Chinook production.

⁴ Memorandum Of Agreement among the Umatilla, Warm Springs and Yakama Tribes, Bonneville Power Administration, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation. April 2008.

- (i) *The Parties will meet to review options for completing both the Klickitat and Wahkiacus facilities utilizing existing Mitchell Act funds, BPA-funds committed under this Agreement, and any other potential cost-sharing sources.*
- (ii) *As part of this review, the Parties will consider different allocations of the funding from BPA provided in this Agreement and additional cost-sharing formulas, such as ones currently in place with other federal entities, for any funds that are available from sources other than BPA*

The following cost figures (millions) are based on estimates from Yakama Nation and Harbor Consulting Engineering. These estimated costs have been aligned, based on environmental review, permitting and future decision points. In addition, design and costs will be refined further as part of the Step 2 submittal. Though these costs demonstrate the sequence anticipated under the MOA, the alignment to implementation is not consistent with the review process for capital construction elements in the master plan and review sequence as a whole.

Costs to Date

FY	02	03	04	05	06	07	08
Planning⁵	.217	.229	.416	.416	.817 ⁶	.587 ⁶	.462

Future Costs

FY	09	10	11	12	13	14	15	16	17
Planning, Design and Permitting	3.553	1.895	.640						
Environmental Compliance	1.0								
Construction									
Castile Enumeration Facility	.299								
Lyle Fishway	2.789	2.875							
Klickitat Hatchery		5.072	6.107	4.727					
Wahkiacus Hatchery				3.680	4.907	6.133			
O&M⁷		.025	.505	.594	.640	.689	.746	.776	.807
M&E⁸	1.336	1.369	1.403	1.438	1.474	1.511	1.549	1.588	1.628
PIT detection ⁹	.281	.292	.303						
Habitat¹⁰	.566	.574	.588	.603	.618	.635	.650	.667	.684

⁵ Prior to 2002 the activities were part of Project 1988-120-25, YKFP Management, Data, Habitat.

⁶ Includes cost associated with environmental review for Castile Falls and Lyle Falls adult monitoring facilities approved by the Council on March 15, 2006.

⁷ Project 1997-013-35, Klickitat Fishery YKFP O&M. Funds reserved in MOA, Category 2c, expanded

⁸ Project 1995-063-35, YKFP Klickitat Subbasin Monitoring and Evaluation. Funds reserved in MOA, Category 1 existing and Category 2c expanded.

⁹ These costs are for noncapital remote sensing (i.e., PIT-tag) and counting equipment for M&E data collection.

¹⁰ Project 1997-056-00, Klickitat Watershed Enhancement. Funds reserved in MOA, Category 2c, existing and expanded.

BACKGROUND

The Klickitat River subbasin supports two species of Pacific salmon, Chinook (*Oncorhynchus tshawytscha*) and coho (*Oncorhynchus kisutch*), as well as steelhead (*Oncorhynchus mykiss*). These three species of anadromous fish are composed of six stocks: three Chinook (spring, early run fall [tule], late run fall [upriver bright]); two steelhead (summer, winter); and one coho stock. Spring Chinook and summer steelhead are known to have existed historically in the watershed; winter steelhead are presumed to have existed historically. Klickitat steelhead are part of the Mid-Columbia Evolutionarily Significant Unit (ESU), which has been listed as threatened under the Endangered Species Act.

Fall Chinook and coho are not native to the Klickitat. They were introduced in the late 1940s and early 1950s, with the Washington Department of Fisheries Hatchery, and construction of the fishway at Lyle Falls (1952).

All salmon stocks, except possibly winter steelhead, have been augmented or even sustained by the Klickitat Hatchery. Completed in 1952, the hatchery is located on the Klickitat River at RM 42.4. The hatchery was constructed and operated by the Washington Department of Fish and Wildlife for hydropower mitigation under the Mitchell Act of 1936. The *U.S. v. Oregon* Columbia River Fish Management Plan (1998) governs fish production at this facility.

Hatchery production is greater than natural production of Chinook and coho. Four million eyed eggs of fall “upriver bright” (URB) Chinook stock are delivered annually to the Klickitat Hatchery from Priest Rapids and Lyons Ferry hatcheries for final rearing and on-station release into the Klickitat River. The purpose of the URB release is to provide ocean, Columbia River, and terminal fishery for tribal and other fishers. A total of 3.85 million coho smolts are also released into the Klickitat River annually, approximately 1 million smolts are reared at the Klickitat Hatchery for an on-station release. The remaining 2.5 million are released directly into the river at several locations downstream of the Klickitat Hatchery. Recent attempts have been made to develop and test coho acclimation sites in the lower basin. To date acclimation sites have been tested for 600,000 of the direct-released coho, which also provide for a late fall terminal fishery.

Pacific lamprey (*Lampetra tridentatus*) is another anadromous species of interest and cultural importance in the Klickitat subbasin, although historic and present distribution and status are relatively unknown.

Resident fish in the Klickitat include rainbow, westslope cutthroat, and brook and bull trout. Naturally reproducing populations of rainbow trout are found within the mainstem from the Columbia River confluence to RM 85, and in virtually all tributaries. Cutthroat were observed in limited numbers within McCreedy and Summit creeks during the 1980s; however, none was observed during a late 1990s reinvestigation. The historic and present distribution and status are relatively unknown. Brook trout were introduced into the Klickitat subbasin in the late 1970s and early 1980s, primarily in high mountain lakes. Currently, natural reproducing populations are found throughout the upper Klickitat mainstem and in major tributaries upstream of Big Muddy Creek (RM 53.8).

Bull trout are listed as threatened under the Endangered Species Act (ESA). The presence of both brook trout and bull trout in Fish Lake Stream and the West Fork Klickitat below its confluence with Fish Lake Stream could potentially result in hybridization and competitive interactions and are of concern to fisheries managers in this area.

I. History and development of the Klickitat Anadromous Fisheries Master Plan

For Fiscal Year 2001, projects in the Columbia Gorge Province were subject to the in-depth province-based review. This province includes the Klickitat subbasin. The primary fisheries management activities in the Klickitat subbasin have been passage and artificial production initiatives dating back to the early 1950s. Most of this work was funded by sources other than Bonneville - with Mitchell Act funding being a substantial source. More recently, Bonneville funding has been provided to the activities in the Klickitat as a component of the co-managed Yakama Nation (YN) and Washington Department of Fish & Wildlife's Yakima-Klickitat Fisheries Project (YKFP).

As part of the Council decision for the Columbia Gorge Province, the Council staff worked with the Yakama Nation (YKFP Lead Agency) fisheries staff to outline a Major Project Review sequence encompassing the proposed passage and production facilities.

A master plan, as the first step in the Major Project Review process for this project, was prepared by the Yakama Nation and Bonneville and submitted to the Council on November 12, 2004.¹¹

The master plan proposed supplementation and natural production efforts in the Klickitat subbasin on spring Chinook and steelhead, while maintaining a focus on harvest augmentation for fall Chinook and coho. In doing so, the project intended to increase production of spring Chinook and steelhead at the Klickitat Hatchery and eliminate in-basin artificial production of coho. In-basin fall Chinook production levels would remain the same, but half the production would be transferred from Klickitat Hatchery to a proposed new facility at Wahkiacus. Additionally, the program proposes further improvements to existing passage facilities that would increase the ability of spring Chinook and steelhead to access high-quality habitat, thus improving natural production; and that would allow collection of spring Chinook and steelhead broodstock to meet supplementation goals for those two species.

On March 15, 2005 the Council released an issue paper (Council Document 2005-03) seeking comment on the master plan. In particular, public comment was requested on key issues listed in the issue paper. On May 24, 2005 Bonneville provided comments on the master plan. Bonneville's concerns regarded the need for additional detail on the funding and responsibility for the Mitchell Act facilities, cost-sharing, and response to the Independent Science Review Panel's (ISRP) comments—particularly those related to cost-effectiveness and the integration of hatchery, harvest, and habitat objectives.¹²

¹¹ The Council received the updated Master Plan on November 12, 2004 regarding the project titled *YKFP-Klickitat Design and Construction*, Project #1988-115-35. An earlier version of this Master Plan was submitted on May 11, 2004 and provided to the ISRP in June 2004. In July, as part of the subbasin plan reviews, the ISRP heard a presentation on the relation of the Master Plan to the Klickitat Subbasin Plan. However, the Master Plan was withdrawn from the review process on July 8, 2004.

¹² No other comments were received during the comment period that closed on May 13, 2005.

On February 19, 2005 the Council received the initial review (ISRP Document 2005-7) of the Klickitat Subbasin Anadromous Fishery Master Plan (*YKFP-Klickitat Design and Construction*, Project #1988-115-35) by the ISRP.¹³ The ISRP stated that the master plan needed further consideration and development to meet the standards of scientific soundness and consistency with the fish and wildlife program's scientific principles. As part of this review the ISRP outlined seven primary concerns. It is fair to say that most of those concerns were focused on the hatchery production strategies and objectives, and not so much on the proposed improvements to the existing passage facilities.

On April 15, 2005 the Yakama Nation responded to the ISRP review. The Yakama Nation was deeply concerned regarding the nature of the ISRP comments as they related to fishery resource management decisions that have been made through the *U.S. v. Oregon* planning process and requested that the biological issues raised by the ISRP be dealt with as part of the Step 2 submittal.

On May 9, 2005 Council and Bonneville staffs met with Yakama Nation staff to discuss the concerns and issues that surround the master plan. During this meeting it was determined that the Yakama Nation needs to respond to the questions and concerns that the ISRP raised as part of its review of the master plan (ISRP Document 2005-7).

On August 25, 2005 the Yakama Nation responded to concerns that the ISRP had identified as part of its review of the master plan. The submitted information was provided to the ISRP in early September, and on November 1, 2005 the ISRP provided its response (ISRP Document 2005-16). In part, the ISRP stated:

“The ISRP recommends that the Klickitat Subbasin Anadromous Fishery Master Plan remain in the Step 1 stage of the Three Step process until adequate scientific detail and biological justification for the proposed activities are given. The August 25, 2005 response from the Yakama Nation to the ISRP’s Step-1 review (ISRP 2005-7; February 19, 2005) provided some additional information, as noted in the attached report, but needs to further address many of the previously identified technical shortcomings of the Master Plan. The foundation assessments for the changes to artificial production in the Klickitat subbasin are not yet completed; thus, there is no basis for the ISRP to recommend support to the Council for the changes to artificial production proposed by the Yakama Nation. The ISRP recommends a revised and complete (i.e., stand-alone) Master Plan be developed prior to moving to a Step-2 review. This revised Master Plan should capture the responses, and subsequent responses-to-responses on science and technical details.”

Based on this review and follow-up discussions with the Yakama Nation, Bonneville and the Council staffs determined that the master plan would need to be revised. Concurrent to these discussions the Fiscal Year 2007 - 2009 solicitation process was underway and concerns were raised regarding the alignment to the anticipated Fiscal Year 2007 - 2009 decision in October of 2006.

¹³ On November 18, 2004 the Council staff submitted the master plan to the ISRP.

In an effort to maintain the momentum of the planning and design phase of the project, but also recognizing the shortcomings of the current master plan, an option was discussed that outlined an opportunity to proceed with environmental review and associated permitting associated with the adult collection facilities at Castile Falls and the major reconstruction of the fishway at Lyle Falls.

On March 15, 2006 the Council recommend \$473,000 in Fiscal Year 2006 funds to initiate a separate environmental review for the adult monitoring facility at Castile Falls and Lyle Falls¹⁴ and to provide initial funding to address the shortcomings of the current master plan, subject to the following conditions: (1) that all future activities associated with this project, including completion of the environmental review, will be defined as part of the Issue Document associated with the anticipated Fiscal Year 2007 - 2009 decision in October of 2006; (2) that even with Lyle and Castile falls passage portions of the original master plan proceeding separately, the Council and Bonneville will need confirmation that the revised master plan and submittal has addressed adequately the ISRP concerns and the other concerns¹⁵ raised during the comment period.

In making its final Fiscal Year 2007 - 2009 project funding recommendations to Bonneville at its October 2006 meeting, the Council recommended that Project #1988-115-35, *YKFP-Klickitat Design and Construction* be funded. This recommendation was conditioned on the understanding that construction of the proposed facilities is dependent on a favorable step review.

On April 17, 2008, the Council received from the Yakama Nation a Master Plan regarding the project titled *YKFP-Klickitat Design and Construction*, Project #1988-115-35.

A. Summary of the Primary Master Plan Elements

The Master Plan recognizes that to be successful, actions must be integrated across what the region refers to as the “4 Hs” (Hatcheries, Habitat, Harvest, and Hydro). The Master Plan focuses primarily on Habitat, Hatcheries, and Harvest, but the effect of the mainstem Columbia River dams (Hydro) on the survival of fish populations originating in the Klickitat River was taken into consideration when setting hatchery release numbers, adult escapement, and harvest goals.

The proposed Klickitat programs have as their primary goal an increase in the number and distribution of steelhead and spring Chinook, while maintaining harvest levels but reducing the

¹⁴ Lyle Falls Passage Project Draft Environmental Impact Statement issued March 2008 DOE/EIS-0397, with anticipated Final and ROD by January 2009. BPA concluded a BA and Checklist would be sufficient for the Castile Falls Enumeration Facility.

¹⁵ Letter received from Bonneville dated May 17, 2005. These concerns not only concurred with the ISRP issues, but also raised relationship and in-lieu funding issues surrounding the proposed artificial production portions of the current master plan to the existing Mitchell Act facilities (e.g., concerns regarding the implications of Mitchell Act funds and the relationship to program funds in the out-years needs to be resolved). Bonneville has determined that it can fund the environmental review without violating its in lieu funding policy, but feels that issue will need to be fully addressed as part of a future step decision as this project is sequenced.

distribution of fall Chinook, and coho within the Klickitat Subbasin. In addition, habitat improvements resulting from the proposed programs are expected to benefit listed bull trout, lamprey, and other non-listed species. The Master Plan has established biological goals and objectives that will contribute to the accomplishment of the overall goal of increasing fish numbers and distribution within the Subbasin. These biological goals are also designed to achieve both the biological performance of the target species and improve environmental conditions to allow sustainable populations as outlined in the major actions proposed under Habitat, Hatcheries, and Harvest in the Master Plan.

Habitat: Protecting existing high quality stream habitat and restoring degraded habitat is essential if ESA-listed populations of steelhead and bull trout are to be recovered in the Subbasin. The Master Plan identifies the major habitat factors limiting fish production and relies on the strategies and actions proposed to improve habitat quality and quantity. The habitat strategies are targeted primarily at Major Spawning Areas for ESA-listed steelhead, but are expected to provide benefits to other resident and anadromous fish species inhabiting these same portions of the Subbasin. Additionally, fish passage at both Lyle Falls and Castile Falls will be improved to create better migration conditions for all native fish species. Habitat actions will also provide substantial benefits to native spring Chinook as well as bull trout and Pacific lamprey.

Hatcheries: The YN recognizes that current hatchery practices need to be changed to reflect recent Hatchery Scientific Review Group (HSRG) scientific advances and reforms to avoid negative effects hatchery fish may have on naturally spawning salmon populations including listed species. Because hatchery fish may interbreed with, compete with, and prey on, native fish populations, the following actions are proposed to reduce these impacts:

1. Coho hatchery releases in the Subbasin will be reduced from approximately 3.7 million to 1.0 million juveniles.
2. A new hatchery and acclimation facility (i.e., Wahkiacus Hatchery and Acclimation Facility (WHAF)) will be constructed at RM 17 so that hatchery coho and fall Chinook may be released lower in the Subbasin, thereby reducing impacts to native fish species.
3. Hatchery steelhead will not be released above Castile Falls for 9 years so that it may be determined if wild fish can re-colonize this habitat on their own.
4. If wild steelhead do not naturally re-colonize stream habitat above Castile Falls, a hatchery program that uses both anadromous and resident rainbow trout (and associated crosses) as broodstock will be implemented. A new juvenile acclimation facility would be constructed at McCreedy Creek for hatchery juvenile steelhead released upstream of Castile Falls.
5. Hatchery adult spring Chinook will be collected at Lyle Falls or the Klickitat River Hatchery, then transported and released into suitable habitat above Castile Falls in an effort to re-establish spring Chinook production in the upper Klickitat River.
6. Volitional release strategies will be implemented for all cultured species.

7. The coho and fall Chinook programs will begin shifting to the use of local origin broodstock.
8. Integrated hatchery programs for steelhead and spring Chinook are designed to meet specified Proportion of Natural Influence (PNI) objectives to assure that the natural environment drives the adaptation of the integrated population.
9. Out-of-Subbasin transfers of hatchery coho and fall Chinook into the Klickitat River Subbasin will be phased out over time to the extent possible with a goal of completing all hatchery culture phases within the Subbasin.
10. HSRG guidelines for the composition of hatchery- and natural-origin steelhead and spring Chinook spawners used as broodstock and spawning in the wild will be followed. This will be partially addressed by the proposed upgrades at the Klickitat Hatchery.
11. Hatchery programs (e.g., the proposed upgrades at Klickitat Hatchery) will be operated in compliance with Tribal and federal environmental regulations, including requirements to maintain water quality, water quantity, and fish passage. These actions will assure that hatchery operations will not reduce the productivity and capacity of a watershed to support natural stocks.

The principle object of the proposal is to focus spring Chinook and summer steelhead programs using an integrated hatchery approach, and focus the coho and fall Chinook programs on harvest augmentation using a segregated hatchery program using local broodstock. The strategy is to increase production of spring Chinook and summer steelhead at the Klickitat Hatchery by transferring all in-basin hatchery coho production and half the fall Chinook production to the lower Klickitat River (i.e., Wahkiacus facility). The Yakama Nation is proposing initially (year one of implementation) to eliminate coho smolt production at Klickitat Hatchery and increase production of spring Chinook at the hatchery from 600,000 to 800,000 smolts. The integrated summer steelhead program would consist of 130,000 steelhead using local broodstock, also released from the Klickitat Hatchery (McCreedy Creek Acclimation Site is a possible site if natural re-colonization above Castile Falls is not successful¹⁶). Following the initial effort the Yakama Nation is proposing to transfer half the fall Chinook production (2 million) from Klickitat Hatchery to the Wahkiacus facility, lower in the basin. The following table shows transition from the current production at the Klickitat Hatchery to the proposed production numbers for each target species.

Klickitat Hatchery Production	Current Production	Implementation Year				
		1	2	3	4	5
Coho	1,000,000 ¹⁷	0	0	0	0	0

¹⁶ McCreedy Creek has been identified as a potential water source for a juvenile fish acclimation site. Further studies will be conducted over the next ten years to determine its suitability and whether it is needed.

¹⁷ A total of 1,000,000 coho are transferred as eyed eggs to Klickitat Hatchery for station rearing and release. An additional 2,500,000 coho smolts are directly released in the basin to address harvest objectives. It is proposed that coho production will shift to a total of 1,000,000 acclimated pre-smolts released from the new Wahkiacus facility. If it is determined that this does not meet harvest objectives, a portion of the “direct river release” coho may resume.

Spring Chinook	800,000 ¹⁸	800,000	800,000	800,000	800,000	800,000
Steelhead	85,000 ¹⁹	130,000	130,000	130,000	130,000	130,000
Fall Chinook	4,000,000	4,000,000	2,000,000	2,000,000	2,000,000	2,000,000

Wahkiacus Hatchery Production	Current Production	Implementation Year				
		1	2	3	4	5
Coho	0	1,000,000 ²⁰	1,000,000	1,000,000	1,000,000	1,000,000
Fall Chinook	0	0	2,000,000	2,000,000	2,000,000	2,000,000

Harvest: A major goal of the Master Plan is to provide harvest to Tribal members as required by treaty obligations and for sport fishing, while at the same time protecting naturally spawning populations and contributing to the recovery of ESA-listed steelhead and bull trout. Because hatchery fish provide most of the harvestable fish in the Subbasin, the Master Plan is structured to balance potential hatchery impacts to listed species with the harvest benefits they provide. This balance will be achieved by experimenting with reduced hatchery production while at the same time implementing measures that increase hatchery fish survival. The goal is to provide greater harvest benefits from fewer hatchery smolts.

Additional harvest actions that will be implemented to better meet harvest goals or protect listed fish species include:

1. Marking hatchery fish released in the Subbasin so they can be distinguished from natural origin fish in the hatchery broodstock, on the spawning grounds, and in fisheries.
2. Adopting harvest practices that improve spawning escapement of natural-origin steelhead and spring Chinook while fully harvesting hatchery-origin fish.

B. Goals and Objectives

1. Steelhead

The newly developed integrated hatchery program is designed to benefit conservation and recovery of Klickitat River steelhead while sustaining harvest opportunities for treaty and non-treaty fisheries. The integrated program has two objectives:

- Provide conservation benefits by producing the fish needed to restore steelhead production into newly opened stream habitat above Castile Falls. (Using hatchery fish to achieve this objective will be delayed until it is proven that steelhead are unable to re-colonize the habitat without human intervention.)

¹⁸ The current production plan calls for the release of 600,000 smolts and approximately 200,000 fry out-planted in upper basin.

¹⁹ Since 1961 releases have ranged from a low of 16,000 to a high of approximately 125,000 direct-release from Skamania Hatchery and Vancouver Hatchery, with an average of about 85,000.

²⁰ Using Klickitat Coho adults captured at Lyle Falls, spawned and reared at Washougal Hatchery, then transferred as pre-smolts for long term rearing and release as smolts from WHAF.

- Provide the broodstock needed for producing 130,000 steelhead juveniles; adults returning to the Subbasin from this program will be used to meet harvest objectives.

a. Steelhead Hatchery Plan

The integrated hatchery strategy encompasses the use of endemic broodstock for a newly developed program. The program has both harvest and conservation components.

(i) Harvest Component

The harvest component will consist of roughly 130,000 juveniles released volitionally from the Klickitat hatchery. The program will be operated as an Integrated Harvest program using steelhead native to the Klickitat Subbasin as the broodstock source. The goal of the program is to provide harvest benefits while, at the same time, minimizing adverse impacts to the natural spawning population.

The program will require from 70 to 80 wild adults to produce the target release of 130,000 age-1 steelhead.²¹ Adult returns from the juvenile releases will only be used as broodstock if wild run size back to the Subbasin is less than 320 fish. This action ensures no more than 25% of the total wild run is taken for use as broodstock.

(ii) Conservation Component

Analysis of steelhead production potential indicate that habitat above Castile Falls may support 750 steelhead. The Master Plan calls for delaying action for 9 years to see if wild steelhead are able to re-colonize this habitat without human assistance. If at the end of the 9-year period, steelhead escapement above Castile Falls has not increased to a minimum of 150 adults, hatchery supplementation will be used as a tool to accelerate the re-colonization process.²²

Broodstock for the conservation program will be collected at Castile Falls Fishway. The number of adults collected will be dependent on run size and will never exceed 25% of total returns. The size and duration of the program will be dependent on the number of anadromous and resident adults available for broodstock, the ability of the resident life history to contribute to anadromous production, and the re-colonization rate after the program has been implemented. The program will be kept small in order to minimize broodstock mining rates and reducing the genetic diversity of the upper Subbasin *O. mykiss* population. Critical monitoring and evaluation activities will be put into place prior to and during the program's implementation stages in order to adequately assess the natural re-colonization and/or contribution of the conservation hatchery program to re-colonization of the upper Klickitat watershed.

b. Steelhead Habitat Plan

The plan for steelhead habitat involves implementation of a suite of actions that address the limiting factors identified as part of steelhead recovery planning by NOAA.

²¹ Variability in fecundity over time may alter the number of fish collected for broodstock each year.

²² The decision to proceed with a integrated program may also be based on the health of the lower Klickitat River populations and the status of the ESU. The decision to proceed with the program will be made through consultations with NMFS, and update and re-initiation of step review.

The six strategies that will be used to address limiting factors in key areas of the Subbasin are shown in Table 1. Each strategy will be accomplished through a suite of actions.

Table 1: Relationship between steelhead habitat strategies and key geographic areas in the Klickitat River Subbasin

Strategy	Areas For Implementation
<u>Strategy 1:</u> Protect Stream Corridor Structure and Function	Mainstem Klickitat and throughout MaSA watersheds
<u>Strategy 2:</u> Restore Passage and Connectivity between Habitat Areas	Piscoe Creek, McCreedy Creek, White Creek and tributaries, Little Klickitat tributaries, upper Klickitat mainstem, West Fork Klickitat, Trout Creek
<u>Strategy 3:</u> Restore Floodplain Function and Channel Migration Processes	All areas
<u>Strategy 4:</u> Restore Riparian Condition	Trout Creek, Upper Little Klickitat, Lower Little Klickitat, Klickitat Canyon, Swale Creek, Lower Klickitat, Middle Klickitat, White Creek, Upper Klickitat
<u>Strategy 5:</u> Restore Normative Flow Regimes	Lower Klickitat, Middle Klickitat, Lower Little Klickitat, Upper Little Klickitat, White Creek, Trout Creek, Swale Creek
<u>Strategy 6:</u> Restore Degraded Water Quality, including Water Temperatures	All areas

c. Steelhead Harvest Plan

Steelhead harvest will be managed to maximize the exploitation of all adipose fin-clipped hatchery fish while minimizing impacts to wild summer and winter steelhead. Wild steelhead will not be targeted for harvest. A harvest rate standard of not-to-exceed 15% of the total number of natural/wild steelhead adults entering the Columbia River will be used to manage the fishery. Current regulations for treaty and sport fisheries will provide the basis for future regulations. Tribal fishers will be asked to voluntarily release all wild fish captured in the fisheries to protect steelhead adults bound for stream reaches above Castile Falls. Fishers who release fish will be given two hatchery fish for every wild fish released. Fishing for steelhead above Castile Falls will not be allowed until the annual escapement goal of 500 fish is exceeded for at least 3 consecutive years.

2. Spring Chinook

The Klickitat spring Chinook population is currently not listed under the ESA. On average, the Klickitat spring Chinook run to the Subbasin is approximately 75% hatchery and 25% natural fish. Both conservation and harvest goals are proposed for Klickitat spring Chinook. The main conservation objectives are to: 1) increase population viability by ensuring that the adaptation of the population is driven by the natural environment, and 2) ensure that the population size remains large enough to allow the population to maintain itself. For natural/hatchery composite programs, the influence of the hatchery and natural environments on the adaptation of the composite population is dependent on the proportion of natural-origin broodstock in the hatchery (pNOB) and the proportion of hatchery-origin fish in the natural spawning escapement (pHOS).

The primary harvest objective for spring Chinook is to meet or exceed Treaty harvest obligations consistently and on a long-term basis. The secondary objective is to maintain or increase recreational fisheries on a long-term sustainable basis. It is mandatory that all harvest objectives must be attainable while still meeting the conservation objectives.

The alternative strategies considered for spring Chinook were: 1) maintain the existing hatchery program and 2) eliminate the hatchery program and improve habitat. These strategies did not meet the harvest goals and presented many hatchery-related problems. They were rejected in favor of the preferred option: develop an integrated hatchery program and improve habitat.

a. Spring Chinook Hatchery Plan

The hatchery plan involves conversion of the existing segregated harvest program to an integrated harvest program. The program is designed to increase the viability of the natural population while simultaneously producing the adults needed to meet the 4,000 fish harvest objective for all fisheries combined. To achieve these objectives, it is estimated that the hatchery program should release 800,000 yearling spring Chinook annually.

Another program objective is to provide spring Chinook for reintroduction into the White Salmon River after Condit Dam is removed and fish passage is restored. These fish will be obtained from surplus broodstock after the Klickitat Subbasin program is established and successful.

The hatchery program will be converted from segregated to integrated by replacing the existing broodstock with NOR (natural-origin) fish returning to the Klickitat River Subbasin. The 800,000 fish will be incubated, reared, and released volitionally at the Klickitat River Hatchery. Released fish will be marked with either an external tag or adipose fin-clipped depending on from which broodstock they were obtained. Broodstock may be collected at Lyle Falls, the Klickitat River Hatchery, and Castile Falls.

b. Spring Chinook Habitat Plan

The habitat objective is to increase the quantity and quality of habitat in the Klickitat River mainstem and tributaries that historically supported spring Chinook. The habitat actions proposed (Table 4) are expected to result in 132% improvement in spring Chinook abundance and 24% increase in productivity.

Table 4: Relationship between spring Chinook habitat strategies and key geographic areas in the Klickitat River Subbasin

Strategy	Areas For Implementation
Strategy 1: Protect Stream Corridor Structure and Function	Mainstem Klickitat
Strategy 2: Restore Passage and Connectivity between Habitat Areas	Lyle Falls and Castile Falls
Strategy 3: Restore Floodplain Function and Channel Migration Processes	Entire Klickitat Mainstem and Swale Creek
Strategy 4: Restore Riparian Condition	Swale Creek, Lower Klickitat, Lower Little

	Klickitat, Middle Klickitat, Upper Klickitat
Strategy 5: Restore Normative Flow Regimes	Lower Klickitat, Middle Klickitat, Lower Little Klickitat, Swale Creek
Strategy 6: Restore Degraded Water Quality, including Water Temperatures	Entire Klickitat Mainstem

c. Spring Chinook Harvest Plan

Harvest management provisions will be designed to maximize harvest of adipose-clipped hatchery-origin fish while reducing harvest on the natural component of the population. To achieve the objectives, bag limit and season adjustments will be enacted and the collection location for the majority of broodstock will be shifted to the Lyle Falls Fishway. Surplus fish escaping the fisheries to the Klickitat River Hatchery will be distributed to Tribal members for subsistence and ceremonial purposes; they will not be returned to the river.

3. Coho

Coho are not native to the Klickitat River Subbasin, but were introduced in 1952 to achieve harvest obligations. Current coho returns are from smolts produced by lower Columbia River hatcheries and released in the Klickitat River Subbasin. Since 1987, the YN estimates that the number of coho returning to the Subbasin has averaged 5,500 fish annually. The combined annual harvest of Klickitat River coho in all fisheries is estimated to average 15,700 fish between 1987 and 2005. The harvest rate has been 95% due primarily to terminal fisheries within the Subbasin that account for 84% of the harvest.

There is no natural production goal for Klickitat River coho because this species is not native to the Subbasin. There are no plans to establish a viable naturally spawning population. The goal is, however, to establish a locally adapted, segregated hatchery population while minimizing potential negative impacts to native fish species.

a. Harvest Strategy for Coho

The primary objective of the coho program is to provide fish necessary to support Tribal fisheries mandated by federal court orders and treaties. The objective is to produce a total of 14,000 coho for harvest in all fisheries, with the majority of the harvest to occur in Tribal fisheries in Zone 6 and the Klickitat River.

Three options were considered for accomplishing the objectives: 1) maintain the existing program, 2) eliminate hatchery production, and 3) reduce hatchery smolt production and convert to local broodstock. Options 1 and 2 did not accomplish the objectives and were rejected. Option 3 appeared to offer the best way to avoid the potential problems associated with a non-native species while achieving the program objectives.

b. Habitat Actions for Coho

The YN recognizes that the quality and quantity of waters into which fish are released are important to the survival of hatchery fish. Therefore, the habitat goal for coho is to prevent further degradation of the river sections used by coho smolts released from the hatchery.

c. Hatchery Strategy for Coho

The hatchery strategy calls for the implementation of a segregated harvest program that uses coho returning to the Klickitat River as broodstock. The actions proposed to achieve the conservation and harvest goals for coho are:

- Reduce hatchery production from 3.7 to 1.0 million juveniles
- Eliminate all out-of-Subbasin coho transfers over time
- Convert to the use of locally adapted broodstock
- Eliminate the direct planting of Washougal River origin coho to the mainstem Klickitat River
- Develop the Wahkiacus facility to allow for the implementation of acclimation and volitional release strategies

4. Fall Chinook

Fall Chinook are not indigenous to the Klickitat River Subbasin above Lyle Falls, most likely due to low water conditions that occur historically in the Subbasin in late summer and fall. Currently, fall Chinook returning to the Klickitat River are hatchery-origin URB stock imported from Priest Rapids Hatchery reared and released from the Klickitat River Hatchery.

The average annual harvest of fall Chinook from Klickitat River releases in combined ocean, Columbia River, and Klickitat River fisheries is estimated to exceed 19,000 fish. Sport and Tribal fall Chinook fisheries in the Klickitat River take, on average, about 3,500 fish each year. Estimates of fall Chinook escaping the fisheries and spawning naturally in the Klickitat River have ranged from 2,500 to 25,000 from 1989 to 2005.

No conservation goal has been established for Klickitat fall Chinook because this race of Chinook is not native to the Subbasin. There are no plans to establish a viable, naturally reproducing population of fall Chinook in the Subbasin in the foreseeable future. The goal is to establish a locally adapted, segregated hatchery population designed to provide fish for harvest. The harvest will support Tribal fisheries mandated by federal court orders and treaties. The objective is production of 18,000 fall Chinook for harvest in all fisheries, with the majority occurring in Tribal fisheries in Zone 6 and the Klickitat River

The YN considered five options for managing Klickitat River fall Chinook.

1. Maintain existing program
2. Transition to fully integrated hatchery program
3. Eliminate hatchery production
4. Restore the natural fall Chinook spawning habitat eliminated by the construction of The Dalles and John Day dams
5. Convert existing program to local broodstock

a. Hatchery Strategy for Fall Chinook

The hatchery strategy involves implementation of a segregated harvest program that uses fall Chinook returning to the Klickitat River as its broodstock. This will be accomplished through: 1) elimination of eyed-egg transfers from Priest Rapids Hatchery, 2) development of locally adapted broodstock, 3) construction of the Wahkiacus facility, 4) marking all juvenile fall Chinook, and 5) releasing 4 million fall Chinook subyearlings at 50 to 80 fish per pound annually.

b. Habitat Strategy for Fall Chinook

The YN will not implement habitat actions designed to establish a self-sustaining population of fall Chinook. The habitat strategies designed to improve steelhead and spring Chinook production in the mainstem Klickitat will most likely improve migration conditions for juvenile hatchery fall Chinook releases. Better migration conditions should increase survival of hatchery fish and result in higher returns of adult fall Chinook.

c. Harvest Strategy for Fall Chinook

Fisheries will be managed so that hatchery broodstock needs are consistently met and that no more than 500 fall Chinook adults spawn naturally in stream reaches upstream of Lyle Falls in order to reduce interactions with native spring Chinook. Harvest seasons are expected to be similar to those currently existing.

II. Major Project Review (The Three-Step Process)

On June 17, 2008, the ISRP provided the Council with their review of the Klickitat Anadromous Fisheries Master Plan (ISRP document 2008-6). The ISRP found that the master plan “Meets Scientific Review Criteria (Qualified)”.

The ISRP found the master plan to be thorough in addressing the needs of the review process. They provided a “Qualified” recommendation to ensure that the additional detailed requested in their review be address as part of the Step 2 review. The ISRP requested that a decision tree that would function as a management tool to guide management actions based on monitored results and actions.

The ISRP highlighted three attributes that they found to be “progressive”. This included the inclusion of habitat strategies for each targeted species, the qualification that “supplementation” may not achieve its objectives, the allowance of natural colonization and the use of local stocks.

In addition, the ISRP requested specific information in regards to previous ISRP review recommendations in addition to other specific issues to be addressed as part of the step 2 submittal (ISRP document 2008-6, pages 3 - 11). This information includes development of the following - detail, additional information.

- Detail regarding steelhead recruit analysis and harvest
- Detail regarding on the determination of spring Chinook release sizes, recruits-per-spawner, and harvest
- Information regarding balance broodstock collection, hatchery smolt yield, and anticipated SAR with the harvest and stock conservation.
- Summary and synthesis of ecological benefits
- Confirmation of study design and statistical validation of tagging rates and tag recovery
- Information addressing the conditions of termination of supplementation above Castille Falls should also be outlined in the requested “decision tree”

ANALYSIS

The master plan, as noted by the ISRP, is well balanced and approaches the planning effort at a watershed-scale level. The master plan addresses not only hatchery elements desired in the Klickitat Subbasin, but also the critical habitat needs associated with all focal species. In essence the approach is similar to the comprehensive approach that was called for in the Umatilla Subbasin as part of the Council recommendation for the Fiscal Year 2007 - 2009 funding decision.

This comprehensive approach provides an insight to other activities needed in the basin to accomplish the stated goals and objectives, but also provides a larger perspective and understanding to the complexity of these needs as it relates to the recovery of the natural productivity within the Klickitat Subbasin. This is evident in both the detail of the habitat actions for each of the focal species at a subbasin and reach-specific level, and in the hatchery practices proposed.

As noted above the ISRP was favorable to the Yakama Nation's master-plan proposed actions in the Klickitat. The specific information requested as part of the Step 2 submittal seems reasonable and is not only intended to provide detail needed for the science review, but also ensures that the master plan is more robust.

Based on the ISRP review the Council staff recommends that the Fish and Wildlife Committee approve this project to proceed to Step 2. This recommendation is conditioned on the understanding that the additional information requested by the ISRP, as outlined above, be addressed as part of the Step 2 submittal and review process.

It is important to note that the Bonneville Power Administration and other federal agencies have developed a multi-year implementation plan (i.e., MOA) for activities in the Klickitat Subbasin. This plan has an implementation planning budget that proposes to sequence construction of the Lyle Falls Fishway and capture facilities and Castile Falls monitoring and capture facilities, followed by hatchery renovation and construction. At this time there is uncertainty regarding the budget and whether the project will be implemented in the sequence described in this staff report.