



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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March 29, 2004

TO: Bob Nichols, Governors Office
FROM: Jeff Koenigs
RE: Summer spill offsets

Bob, pursuant to our phone conversation of March 19 about the proposed summer spill operations, WDFW has prepared a list of proposed actions that could offset the expected increase mortality to salmon and steelhead. These proposed actions primarily address impacts to Washington origin stocks; additional actions may be necessary to address impacts to Oregon and Idaho stocks. As of this writing, we are still uncertain about the magnitude of the reduction of spill, therefore we are still uncertain about the level of offset that would need to be provided.

The attached proposed offset actions should provide some reasonable level of certainty that spill reductions would not result in additional reductions in the returns of Columbia River salmon and steelhead. Consistent with my February 24 letter, there are several compelling reasons why spill reduction should be subject to a No Net Impact (NNI) standard. In addition, both Bonneville Power and the Corps of Engineers stated last week that they expect offset actions to maintain all current adult returns to the river.

In order to apply the NNI standard with reasonable certainty, the offset actions must be combined, as no single action can meet the NNI standard for all affected populations. The combination of mainstem flow/passage, fish augmentation, predation reduction and habitat augmentation can provide an offset for impacts to fall chinook from the upper Columbia and Snake rivers. No mainstem flow improvements have been identified for upper Columbia summer chinook, so an offset package will have to rely heavily on tributary habitat work, fish augmentation and predation reduction.

Finally, little is provided for fall chinook from the Klickitat River, or the few late migrant steelhead and sockeye that will be impacted. The predation reduction action and future passage improvements should be considered to provide some measure of offset.

Please let me know if you have any questions about the attached package.

cc: Larry Cassidy, Tom Karier, Steve Wright, Lindsay Ball, Olney Patt, Jr.

**Proposed package to offset effects of potential reduction of summer spill at several
Columbia River federal dams
WDFW Working Draft**

In response to a proposal that we believe will be made in the near future by the Federal Action Agencies to eliminate spill during July and August at Ice Harbor Dam, and during August at several mainstem Columbia dams, WDFW staff have identified a package of actions that we believe have a realistic probability of providing survival benefits commensurate with the loss in survival due to reduction of spill. We cannot directly estimate either the benefits or the reductions at this stage, as the reductions have not been publicly announced and some of the actions we propose have many details to be worked out.

These actions differ significantly from the list of potential offset actions provided by the Federal Agencies in January 2004. The central feature in the proposed package is a reliance on increased flows and improved passage facilities to offset spill reductions, and other mitigation actions that are more clearly targeted at the affected populations. We have identified four key components within the package that should provide assurance of equivalent survival benefits to resource managers in the event summer spill is reduced or eliminated. The principal populations expected to be negatively impacted by the reductions in summer spills under consideration are: upper Columbia River summer chinook, mainstem Columbia River fall chinook and the ESA listed Snake River fall chinook. ESA listed upper Columbia summer steelhead and sockeye are affected to a lesser degree. The mitigation package is geared towards in-kind and in-place, so most of the options are directed to provide benefits to these populations. Furthermore, the proposed offset options are prioritized based upon measurability and likelihood of for success.

Some proposals have clearly defined monitoring and evaluation measures, whereas other will need to have measures more fully developed.

PRIORITY 1 - FISH AUGMENTATION

1) Project Title: Overwinter Acclimation

Species affected: 1.4 million Upper Columbia River summer Chinook

Cost: \$1.5 million dollars

Retrofit two existing acclimation ponds (Carlton on the Methow River and Dryden on the Wenatchee River) with well water intake systems and building enclosure so they can be operational during October through April, rather than the current operation of February through April.

Proposed Program and Benefit: Coded wire tag analysis of the 1994 and 1995 brood Wenatchee River summer chinook indicated a 160% and 266% increase in smolt-to-adult (SAR) survival for fish over wintered on river water in tributary streams of the upper Columbia River (Wenatchee and Similkameen) versus well water at a central hatchery facility (Eastbank Fish Hatchery). A similar study conducted on Methow River summer chinook resulted in an 83% increase in SAR. The extended rearing period on river water promotes smoltification, and at time of release these fish are a much higher quality smolt than fish reared on well water at central facility. An ancillary benefit would be better distribution of hatchery fish on the spawning grounds that more closely resembles the use by wild fish.

Monitoring and Evaluation: A comprehensive monitoring and evaluation program is already in place for the Rock Island Settlement Agreement and the more recent mid-Columbia River Habitat Conservation Plan (HCP), that includes hatchery efficacy of an integrated program and natural productivity of the summer Chinook in the Wenatchee, Methow and Okanogan basins.

2) Project Title: Ringold Hatchery Enhancement

Species affected: 5.15 million Upriver Bright (URB) fall Chinook smolts, 1 million spring chinook smolts and 200,000 summer steelhead smolts

Cost: *Summer steelhead (200,000)*
Modification of current trap facility to include concreting the trap floor, installation of multiple adult holding areas, and construction of a simple spawning building; COST: \$300,000
Construction of a new incubation building with chillers for both steelhead egg incubation, and warmwater enhancement incubation; COST: \$2,000,000
Construction of 8 additional concrete raceways adjacent to existing two raceways with venturi system for cleaning and completion of bird predation netting; COST: \$ 750,000
Construction of an abatement pond or other solid removal system, with associated plumbing modifications; COST: \$1,000,000
TOTAL: \$4,050,000

URB (3.45 million Mitchell Act, plus 1.7 million John Day mitigation)

Replacement of 35 year old vinyl raceways with 20 standard concrete raceways, including venturi vacuum system and bird predation covers; COST: \$2,000,000

Modification of river pump system to allow for flow and level fluctuations, and increased draw capacity**;

COST: \$300,000

Replacement of nine-acre pond outlet structure;

COST: \$100,000

TOTAL: \$2,400,000

Spring Chinook (up to 1 million for the Confederated Tribes of the Umatilla Indian Reservation)

Improvements listed above allow implementation of this program with no other significant modifications;

NO ADDITIONAL COST

Other significant facility modifications

Complete rebuild of main intake box to allow for common collection and distribution of spring water, including associated plumbing upgrades;

COST: \$750,000

Construction of a feed storage building with freezer and cooler;

COST: \$150,000

Other safety and plumbing modifications;

COST: \$300,000

TOTAL: \$1,200,000

GRAND TOTAL: \$7,650,000

Benefit:

The 1.7 million John Day mitigation that is currently reared and released from Priest Rapids Dam will likely have to be moved to another site as Grant Public Utility District's (PUD) new hydropower license and subsequent hatchery upgrade at Priest Rapids occurs. Transfer of the John Day mitigation to Ringold has been discussed in the Hatchery and Genetic Management Plan process. However, Ringold's current facility design would not permit the transfer to occur.

Mitchell Act funding becomes increasingly tenuous. Ringold Hatchery historically supported a 1 million spring Chinook smolt release, that upon adult return provided for a balloon fishery in the Tri-Cities (Region 3 area). Budget reductions eliminated the spring Chinook production in 1998/99. However, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) also valued the spring chinook because adult returns were used for reintroduction into the Walla Walla River. The CTUIR has secured monies from the Pacific Salmon Recovery Fund (NOAA Fisheries) and contracted with WDFW to rear and release 500,000 spring chinook at Ringold, with the full intention of finding a means to afford another 500,000 smolts, thus returning the production to 1 million. However, Ringold's current design would also not allow for this, as other facilities were necessary to meet the 1 million spring Chinook production.

Summer steelhead production provides a key fishery and as an ancillary benefit acts as a genetic reserve for the upper Columbia River summer steelhead ESU. Transfers of gametes from the upper Columbia River region to Ringold will become increasingly difficult with the transfer of Klickitat Hatchery to the Yakama Nation (currently incubates and early rears the steelhead) and the reduction of the steelhead program in the upper Columbia River region when the Mid-Columbia River HCP is signed. An improvement in the current facility would ensure adequate and healthy returns for current Mitchell Act production, plus increase the facilities capacity to meet other resource managers' interests (John Day and CTUIR), plus provide sufficient resource to ensure recreational fisheries in the mainstem Columbia River.

Monitoring and Evaluation: Monitoring of the recreational fisheries in the vicinity of the Ringold Hatchery currently occur. CTUIR staff will assist in the collection and monitoring of the adult spring Chinook return. The URBs will be evaluated through CWT recoveries.

3) Project Title: Chandler Bypass Reach (lower Yakima River)

Species affected: Yakima River fall chinook.

Cost: Needs to be determined by Federal Agencies

Proposed Program and Benefit: BPA would direct the Bureau of Reclamation to terminate (or subordinate to a higher instream flow) hydroelectric power production at the Chandler Power Plant (CPP). Water for the CPP is diverted at Prosser Diversion Dam (RM 47.1) and is discharged back to the Yakima R. at RM 35.8 creating a 11.3 mile bypass reach. Up to 1,500 cfs is diverted for irrigation (Kennewick I.D.) and power production from April – mid October. During the non-irrigation season, all the canal capacity is used for hydropower production. Some URB fall chinook adults migrate through the bypass reach on their way to upstream spawning areas; others return and spawn in the bypass reach. Both natural-origin adults and hatchery fish produced and released as part of the Yakima Klickitat Fishery Project and the Chandler Fish Hatchery at Prosser. Over the past five years, that bypass reach has averaged more than 100 redds in the with up to 200 redds in 2000.

Currently, BOR maintains power diversions after the mid-October end of the irrigation season in a “Flip-flop” style attempt to keep fall chinook spawners from spawning at high elevation riffles on the periphery. They subordinate power production to maintain an 800 cfs target flow in the bypass reach, which is

considered a minimum acceptable spawning flow for URB's and passage flow for migrating steelhead headed upriver (BOR subordinates CPP to 1,000 cfs from April thru June during the spring smolt migration). After spawning is completed (based on WDFW weekly spawning survey reports), BOR terminates the Chandler Canal for annual maintenance on the fish screen facility.

Fall chinook returning to the bypass reach would benefit from increased spawning and incubation flows if power production was fully subordinated in partial compensation for the mainstem spill curtailment. Steelhead, coho and fall chinook adults would also benefit from improved passage conditions through the bypass reach. An 1984 IFIM study recommended an optimum flow below Prosser Dam of 1,400 cfs...600 cfs higher than the current typical spawning flow.

Monitoring and Evaluation: An estimation of the number of redds formed annually is available. Subsequent redd surveys will enumerate total redds formed and estimate fry production to quantify project prior to and subsequent to implementation.

4) Project Title: Dole-Beebe Acclimation Pond

Species affected: up to 600,000 upper Columbia River summer chinook smolts

Cost: \$1 million dollars

Provide a half-acre pond, or several smaller ponds, plus pump and additional water rights on the recently purchased Dole-Beebe property near Chelan, WA.

Benefit: Turtle Rock Hatchery immediately upstream of Rocky Reach Dam produces up to 1.6 million subyearling summer chinook. However, SAR for this production is low (< 0.2%). Furthermore, the production is hampered by the location of the release site (mainstem Columbia River island, immediately upstream of dam). Transfer of a portion (or all the production) to a more refined location will improve homing and fidelity. Conversion of the production to yearlings will increase survival 4-fold. Expected benefits include more adult returns for the number of smolts released, and the establishment of a terminal fishery near the mouth of the Chelan River.

Monitoring and Evaluation: Production of the Turtle Rock summer Chinook is part of the Rocky Reach Settlement Agreement, and although no formal M&E program exists for this production, the Rock Island Settlement Agreement and HCP M&E includes efficacy of this production. CWT

recoveries in ocean and lower river fisheries, as well as recreational fishery in the terminal area and brood collections will help determine the success of the program.

PRIORITY 2 - PREDATION REDUCTION

5) Project Title: Northern Pikeminnow Removal

Species affected: all anadromous salmonid smolts would benefit

Cost:

- 1) Estimated cost for restoration of registration stations to 2003 (Full) Northern Pikeminnow Sport Reward Fishery (NPSRF) implementation level - \$264,000.
- 2) "Heavy-Up" Northern Pikeminnow Sport Reward Fishery - \$40,000 for additional program supervision and technicians
- 3) Dam angling - \$50,000 for biologist to supervisor and conduct M&E analysis and field staff independent of NPSRF crews.
- 4) Lower Columbia River Site-Specific Predator Removal - \$150,000. Requires Biologist to supervise and conduct M&E analysis and field staff independent of NPSRF crews. Also, contract out commercial fishers and purchase gear.

Benefit:

- 1) The 2004 Northern Pikeminnow Sport-Reward Fishery (NPSRF) is currently budgeted to implement 16 registration stations compared to the 19 registration stations implemented in 2003. Slight increase in adult returns on the order of 0.5%-1.0%. Estimate based on anticipated moderate increase in the northern pikeminnow exploitation rate and predation rates on juvenile salmonids. ODFW estimated that predation of juvenile salmonids in 2003 by pikeminnow would be 17-30% of the pre-program level. Under the current plan for 2004 we estimate predation would decline to 16.5%-29%.
- 2) This concept was most recently implemented in 2001. Increase reward level paid for northern pikeminnow harvested in existing WDFW sport reward program. The objective is to increase harvest of northern pikeminnow by stimulating angler participation in sport reward program by paying higher rewards per fish. Expected improvement of adult survival to <1.0%. We have documented over the previous 13 years that increasing the reward level results in an increase in harvest of northern pikeminnow.
- 3) The dam angling approach has worked, especially under low water conditions, although certainty of success is less when compared with 1) and 2).
- 4) Site-specific removals of northern pikeminnow using small mesh gill nets at designated locations removed an average of 5,352 fish annually from 1994-1999, and accounted for an average northern

pikeminnow exploitation rate of 1-1.2%. Probability of success is less than the preceding three.

PRIORITY 3 - MAINSTEM FLOW AND PASSAGE AUGMENTATION MEASURES

6) Project Title: Snake River flow/temperature supplementation

Species affected: Snake River fall Chinook (adult and juveniles)

Cost: Needs to be determined by Federal Agencies

Proposed Program and Benefit: Draft Dworshak to 1500' elevation by Sep. 15. Provide 100kaf additional water in July from Brownlee, which should correlate into a 1% increase in survival for juveniles

7) Project Title: Hanford Reach flow stabilization

Species affected: Hanford Reach fall chinook

Cost: Needs to be determined by Federal Agencies

Proposed Program and Benefit: The specifics of this need to be worked out with BPA, ACOE and the three PUDs, the concept is to provide more seasonal sideboards on flow fluctuations through the Hanford Reach. Recently completed Hanford Reach fall Chinook agreement provides daily sideboards but allows fairly wide fluctuations in flow across the early rearing season. Estimated benefits are dependent on details of measure. The WDFW proposal is:

During the "Rearing Period" for Hanford Reach fall chinook juveniles as defined in the Hanford Reach Fall Chinook Protection Plan (approximately March 21 -June 30) BPA shall request power operations at Chief Joseph Dam to produce the following flow conditions:

1) The weekend (12M Friday through 12M Sunday) discharge shall not be less than 80% of the average flow for the previous five days (1201 AM Monday through 1159 PM Friday).

2) The weekly average Chief Joseph discharge (1201 AM Sunday through 1159 Saturday) may not decrease from the level established during the first full week of the "Rearing Period".

3) If and when weekly average flows increase during the "Rearing Period" this average flow must be maintained on a weekly average basis for the duration of the "Rearing Period".

The improved week day to weekend as well as seasonal flow stability provided by the recommended flow regulation, when combined with the Hanford Reach Fall Chinook protection Plan should substantially improve the juvenile rearing survival for fall Chinook within the Hanford Reach.

8) Project Title: Expedited installation of RSWs/surface bypass at McNary Dam and Little Goose Dam (2006), John Day Dam and Lower Monumental (2007), and Dalles Dam (2008).

Species affected: All anadromous species (smolts and adults)

Cost: Needs to be determined by Federal Agencies

Proposed Program and Benefit: A summer test at Lower Granite Dam this year is necessary to provide information for proposed lower Columbia installations. Over a period of years, benefits could conceivably equal or exceed spill reduction for all species. Does not provide survival benefits until the facilities are installed and operational, other measures are needed for the interim.

PRIORITY 4 - RESTORATION

9) Project Title: Big Valley Ranch Wildlife Area well conversion and side channel enhancement

Species affected: Methow River summer steelhead (ESA listed), spring Chinook (ESA listed) and to a lesser degree summer Chinook, as well as other resident fish populations.

Cost: \$306,000

Proposed Program and Benefit: Proposal includes the sacrifice of the Rockview screen and irrigation ditch, with restoration of this to historic side channel and riparian habitat. Lack of side channel habitat for summer and overwinter rearing has been noted in Limiting Factors Analysis report for Methow Basin to constrain anadromous fish production. Furthermore, current bypass channel is not functioning correctly to return entrained fish to the Methow River. Probability of success is high, as the intake to the Rockview Ditch sits as the uppermost portion of a gaining reach just and immediately downstream of a large area of the Methow River that goes subsurface annually. Conversion of Big Valley Wildlife Area and two additional water users to wells.

Monitoring and Evaluation: Cost includes pre-improvement monitoring of fish assemblage and density, as well as three years of subsequent monitoring upon completion of restoration.

10) Project Title: Steigerwald Lake/Gibbons Creek Restoration (Note: this is formerly a Section 1135 project sponsored by WDFW and managed by USFWS – funding has been eliminated with federal budget cuts).

Species affected: Chinook salmon (rearing), steelhead (spawning, rearing), coho salmon (spawning, rearing) and cutthroat trout (spawning, rearing). Waterfowl, songbirds and riparian associated wildlife species would also benefit.

Cost: \$3,463,300

Benefit: This project entails reconnecting the former Steigerwald Lake bed and associated wetlands to the Columbia River, and restoration of unobstructed fish passage into Gibbons Creek. Monitoring and evaluation will be provided by USFWS. This would include continuation of spawner surveys, and assessment of rearing habitat utilization. This offset mitigation has a high certainty of success.