



❖ Appendices

Appendix A: Puget Sound and Coastal Stocks and the Genetic Diversity Units to Which They Belong¹¹³

Stock	GDU
Chinook	
North Fork Nooksack Chinook	North Fork Nooksack Spring Chinook
South Fork Nooksack Chinook	South Fork Nooksack Spring Chinook
Samish/Mainstem Nooksack Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Upper Skagit Mainstem/Tributaries Summer Chinook	Stillaguamish and Skagit Chinook
Lower Skagit Mainstem/Tributaries Fall Chinook	Stillaguamish and Skagit Chinook
Lower Sauk Summer Chinook	Stillaguamish and Skagit Chinook
Upper Sauk Spring Chinook	Stillaguamish and Skagit Chinook
Suiattle Spring Chinook	Stillaguamish and Skagit Chinook
Upper Cascade Spring Chinook	Stillaguamish and Skagit Chinook
Stillaguamish Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Stillaguamish Summer Chinook	Stillaguamish and Skagit Chinook
Snohomish Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Snohomish Summer Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Bridal Veil Creek Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Wallace Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
North Lake Washington Tribs Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Issaquah Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Cedar Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Duwamish/Green Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Green System (tentative) Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Newaukum Creek Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Puyallup Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
White (Puyallup) Spring Chinook	South Puget Sound Spring Chinook
White (Puyallup) Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Nisqually Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Skokomish Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Hamma Hamma Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Duckabush Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Dosewallips Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Dungeness Spring/Summer Chinook	Eastern Strait Chinook

¹¹³ A genetic diversity unit (GDU) is a group of genetically similar stocks that is genetically distinct from other such groups. The stocks typically exhibit similar life histories and occupy ecologically, geographically, and geologically similar habitats. No GDUs exist for coho, cutthroat or dolly varden. Information provided by Washington State Department of Fish and Wildlife staff; GDU information is based on Busack, C. and J. B. Shaklee. 1995. Genetic Diversity Units and Major Ancestral Lineages of Salmonid Fishes in Washington. Washington State Department of Fish and Wildlife, Technical Report No. RAD 95-02.

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Elwha/Morse Creek Summer/Fall Chinook	Eastern Strait Chinook
Hoko Fall Chinook	Western Strait Chinook
Sooes Fall Chinook	North Coast Fall Chinook
Sol Duc Fall Chinook	North Coast Fall Chinook
Sol Duc Spring Chinook	North Coast Spring Chinook
Sol Duc Summer Chinook	North Coast Spring Chinook
Quillayute/Bogachiel Fall Chinook	North Coast Fall Chinook
Quillayute/Bogachiel Summer Chinook	North Coast Spring Chinook
Dickey Fall Chinook	North Coast Fall Chinook
Calawah Fall Chinook	North Coast Fall Chinook
Calawah Summer Chinook	North Coast Spring Chinook
Hoh Fall Chinook	North Coast Fall Chinook
Hoh Spring/Summer Chinook	North Coast Spring Chinook
Queets Fall Chinook	North Coast Fall Chinook
Queets Spring/Summer Chinook	North Coast Spring Chinook
Clearwater Fall Chinook	North Coast Fall Chinook
Clearwater Spring/Summer Chinook	North Coast Spring Chinook
Raft Fall Chinook	North Coast Fall Chinook
Quinault Fall Chinook	North Coast Fall Chinook
Quinault Spring/Summer Chinook	North Coast Spring Chinook
Cook Creek Fall Chinook	North Coast Fall Chinook
Moclips Fall Chinook	North Coast Fall Chinook
Copalis Fall Chinook	North Coast Fall Chinook
Humtulpis Fall Chinook	South Coast Fall Chinook
Hoquiam Fall Chinook	South Coast Fall Chinook
Chehalis Fall Chinook	South Coast Fall Chinook
Chehalis Spring Chinook	Chehalis Spring Chinook
Wishkah Fall Chinook	South Coast Fall Chinook
Wynoochee Fall Chinook	South Coast Fall Chinook
Satsop Fall Chinook	South Coast Fall Chinook
Satsop Summer Chinook	Chehalis Spring Chinook
Johns/Elk and South Bay Tributaries Fall Chinook	South Coast Fall Chinook
Fall River Early (North River) Fall Chinook	South Coast Fall Chinook
Willapa Bay Fall Chinook	South Coast Fall Chinook
Hood Canal Sum/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
South Sound Tributaries Summer/Fall Chinook	South Puget Sound, Hood Canal and Snohomish Summer + Fall Chinook
Sockeye	
Baker Sockeye	Baker Sockeye
Lake Washington/Sammamish Tributaries Sockeye	Lake Washington River Spawners Sockeye
Lake Washington Beach Spawning Sockeye	Lake Washington Beach Spawners Sockeye
Cedar Sockeye	Cedar Sockeye
Ozette Sockeye	Ozette Sockeye
Lake Pleasant Sockeye	Lake Pleasant Sockeye
Quinault Sockeye	Quinault Sockeye

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Wenatchee Sockeye	Wenatchee Sockeye
Okanogan Sockeye	Okanogan Sockeye
Chum	
North Fork Nooksack Fall Chum	Northern Puget Sound Fall Chum
Mainstem/South Fork Nooksack Fall Chum	Northern Puget Sound Fall Chum
Samish/Independents Fall Chum	Northern Puget Sound Fall Chum
Mainstem Skagit Fall Chum	Northern Puget Sound Fall Chum
Lower Skagit Tributaries Fall Chum	Northern Puget Sound Fall Chum
Sauk Fall Chum	Northern Puget Sound Fall Chum
North Fork Stillaguamish Fall Chum	Northern Puget Sound Fall Chum
South Fork Stillaguamish Fall Chum	Northern Puget Sound Fall Chum
Skykomish Fall Chum	Northern Puget Sound Fall Chum
Snoqualmie Fall Chum	Northern Puget Sound Fall Chum
Wallace Fall Chum	Northern Puget Sound Fall Chum
Duwamish/Green Fall Chum	Central/South Puget Sound Fall Chum
Crisp Creek Fall Chum	Central/South Puget Sound Fall Chum
Hylebos Creek Fall Chum	Central/South Puget Sound Fall Chum
Fennel Creek Fall Chum	Central/South Puget Sound Fall Chum
Puyallup/Carbon Fall Chum	Central/South Puget Sound Fall Chum
Nisqually Winter Chum	South Puget Sound Winter Chum
Chambers Creek Summer Chum	South Puget Sound Summer Chum
Chambers Creek Winter Chum	South Puget Sound Winter Chum
Skookum Inlet Fall Chum	Central/South Puget Sound Fall Chum
Upper Skookum Creek Fall Chum	Central/South Puget Sound Fall Chum
Johns/Mill Creeks Fall Chum	Central/South Puget Sound Fall Chum
Gig Harbor/Ollala Creek Fall Chum	Central/South Puget Sound Fall Chum
Blackjack Creek Summer Chum	Central/South Puget Sound Fall Chum
Dyes Inlet/Liberty Bay Fall Chum	Central/South Puget Sound Fall Chum
Big Beef Creek Summer Chum	Hood Canal Summer Chum
Anderson Creek Summer Chum	Hood Canal Summer Chum
Dewatto Fall Chum	Central/South Puget Sound Fall Chum
Dewatto Summer Chum	Hood Canal Summer Chum
Tahuya Summer Chum	Hood Canal Summer Chum
Union Summer Chum	Hood Canal Summer Chum
Sinclair Inlet Fall Chum	Central/South Puget Sound Fall Chum
Skokomish Summer Chum	Hood Canal Summer Chum
Upper Skokomish Late Fall Chum	Hood Canal Fall Chum
Lower Skokomish Fall Chum	Hood Canal Fall Chum
Finch Creek Summer Chum	Hood Canal Summer Chum
Lilliwaup Creek Summer Chum	Hood Canal Summer Chum
Hamma Hamma Summer Chum	Hood Canal Summer Chum
Hamma Hamma Late Fall Chum	Hood Canal Fall Chum
Duckabush Late Fall Chum	Hood Canal Fall Chum
Duckabush Summer Chum	Hood Canal Summer Chum

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Dosewallips Summer Chum	Hood Canal Summer Chum
Dosewallips Late Fall Chum	Hood Canal Fall Chum
Quilcene Late Fall Chum	Hood Canal Fall Chum
Quilcene Summer Chum	Hood Canal Summer Chum
Big Quilcene Summer Chum	Hood Canal Summer Chum
Little Quilcene Summer Chum	Hood Canal Summer Chum
Chimacum Creek Summer Chum	Discovery Bay and Sequim Bay Summer Chum
Dungeness Summer Chum	Strait of Juan de Fuca Summer Chum
Dungeness/East Strait Tributaries Fall Chum	Strait of Juan de Fuca Fall Chum
Elwha Fall Chum	Strait of Juan de Fuca Fall Chum
Lyre Fall Chum	Strait of Juan de Fuca Fall Chum
Pysht Fall Chum	Strait of Juan de Fuca Fall Chum
Hoko/Clallam/Seiku Fall Chum	Strait of Juan de Fuca Fall Chum
Sooes Fall Chum	North Coast Washington Fall Chum
Ozette Fall Chum	North Coast Washington Fall Chum
Quillayute Fall Chum	North Coast Washington Fall Chum
Hoh Fall Chum	North Coast Washington Fall Chum
Queets Fall Chum	North Coast Washington Fall Chum
Quinault Fall Chum	North Coast Washington Fall Chum
Humptulips Fall Chum	South Coast Washington Fall Chum
Chehalis Fall Chum	South Coast Washington Fall Chum
North River Fall Chum	South Coast Washington Fall Chum
Willapa Fall Chum	South Coast Washington Fall Chum
Palix Fall Chum	South Coast Washington Fall Chum
Nemah Fall Chum	South Coast Washington Fall Chum
Naselle Fall Chum	South Coast Washington Fall Chum
Bear Fall Chum	South Coast Washington Fall Chum
Case Inlet Fall Chum	Central/South Puget Sound Fall Chum
Case Inlet Summer Chum	South Puget Sound Summer Chum
Deep Creek/East Twin/West Twin Fall Chum	Strait of Juan de Fuca Fall Chum
Snow Creek/Salmon Creek Summer Chum	Discovery Bay and Sequim Bay Summer Chum
Eld Inlet Fall Chum	Central/South Puget Sound Fall Chum
Goldsborough Creek/Shelton Creek Fall Chum	Central/South Puget Sound Fall Chum
Hammersley Inlet Summer Chum	South Puget Sound Summer Chum
Henderson Inlet Fall Chum	Central/South Puget Sound Fall Chum
Hood Canal Summer Chum	Hood Canal Summer Chum
West Hood Canal Fall Chum	Hood Canal Fall Chum
Northeast Hood Canal Fall Chum	Hood Canal Fall Chum
Southeast Hood Canal Fall Chum	Hood Canal Fall Chum
Jimmycomelately Summer Chum	Discovery Bay and Sequim Bay Summer Chum
Totten Inlet Fall Chum	Central/South Puget Sound Fall Chum
Pink	
South Fork Nooksack Pink	Nooksack Pink
North Fork/Middle Fork Nooksack Pink	Nooksack Pink

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Skagit Pink	North Puget Sound Pink
North Fork Stillaguamish Pink	North Puget Sound Pink
South Fork Stillaguamish Pink	North Puget Sound Pink
Snohomish Even-Year Pink	Snohomish Even-year Pink
Snohomish Odd-Year Pink	North Puget Sound Pink
Puyallup Pink	Puyallup Pink
Nisqually Pink	Nisqually Pink
Hamma Hamma Pink	Hood Canal Pink
Duckabush Pink	Hood Canal Pink
Dosewallips Pink	Hood Canal Pink
Upper Dungeness Pink	Upper Dungeness Summer Pink
Lower Dungeness Pink	Lower Dungeness Fall Pink
Elwha Pink	Lower Dungeness Fall Pink
Steelhead	
Dakota Creek Winter Steelhead	North Puget Sound Steelhead
Mainstem/North Fork Nooksack Winter Steelhead	North Puget Sound Steelhead
South Fork Nooksack Summer Steelhead	North Puget Sound Steelhead
South Fork Nooksack Winter Steelhead	North Puget Sound Steelhead
Middle Fork Nooksack Winter Steelhead	North Puget Sound Steelhead
Samish Winter Steelhead	North Puget Sound Steelhead
Mainstem Skagit/ Tributaries Winter Steelhead	North Puget Sound Steelhead
Finney Creek Summer Steelhead	North Puget Sound Steelhead
Sauk Summer Steelhead	North Puget Sound Steelhead
Sauk Winter Steelhead	North Puget Sound Steelhead
Cascade Summer Steelhead	North Puget Sound Steelhead
Cascade Winter Steelhead	North Puget Sound Steelhead
Stillaguamish Winter Steelhead	North Puget Sound Steelhead
South Fork Stillaguamish Summer Steelhead	North Puget Sound Steelhead
Deer Creek Summer Steelhead	North Puget Sound Steelhead
Canyon Creek (Stillaguamish) Summer Steelhead	North Puget Sound Steelhead
North Fork Skykomish Summer Steelhead	North Puget Sound Steelhead
Snohomish/Skykomish Winter Steelhead	North Puget Sound Steelhead
South Fork Skykomish Summer Steelhead	North Puget Sound Steelhead
Pilchuck Winter Steelhead	North Puget Sound Steelhead
Snoqualmie Winter Steelhead	North Puget Sound Steelhead
Tolt Summer Steelhead	North Puget Sound Steelhead
Lake Washington Winter Steelhead	South Puget Sound Steelhead
Green (Duwamish) Summer Steelhead	South Puget Sound Steelhead
Green (Duwamish) Winter Steelhead	South Puget Sound Steelhead
Mainstem Puyallup Winter Steelhead	South Puget Sound Steelhead
White (Puyallup) Winter Steelhead	South Puget Sound Steelhead
Carbon Winter Steelhead	South Puget Sound Steelhead
Nisqually Winter Steelhead	South Puget Sound Steelhead
Deschutes Winter Steelhead	South Puget Sound Steelhead

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Dewatto Winter Steelhead	South Puget Sound Steelhead
Tahuya Winter Steelhead	South Puget Sound Steelhead
Union Winter Steelhead	South Puget Sound Steelhead
Skokomish Summer Steelhead	South Puget Sound Steelhead
Skokomish Winter Steelhead	South Puget Sound Steelhead
Hamma Hamma Winter Steelhead	South Puget Sound Steelhead
Duckabush Summer Steelhead	South Puget Sound Steelhead
Duckabush Winter Steelhead	South Puget Sound Steelhead
Dosewallips Summer Steelhead	South Puget Sound Steelhead
Dosewallips Winter Steelhead	South Puget Sound Steelhead
Quilcene/Dabob Bays Winter Steelhead	South Puget Sound Steelhead
Dungeness Summer Steelhead	South Puget Sound Steelhead
Dungeness Winter Steelhead	South Puget Sound Steelhead
Morse Creek/Independents Winter Steelhead	South Puget Sound Steelhead
Elwha Summer Steelhead	North Coast Steelhead
Elwha Winter Steelhead	North Coast Steelhead
Salt Creek/Independents Winter Steelhead	North Coast Steelhead
Lyre Winter Steelhead	North Coast Steelhead
Pysht/Independents Winter Steelhead	North Coast Steelhead
Clallam Winter Steelhead	North Coast Steelhead
Hoko Winter Steelhead	North Coast Steelhead
Seiku Winter Steelhead	North Coast Steelhead
Sail Winter Steelhead	North Coast Steelhead
Sooes/Waatch Winter Steelhead	North Coast Steelhead
Ozette Winter Steelhead	North Coast Steelhead
Sol Duc Summer Steelhead	North Coast Steelhead
Sol Duc Winter Steelhead	North Coast Steelhead
Quillayute/Bogachiel Winter Steelhead	North Coast Steelhead
Dickey Winter Steelhead	North Coast Steelhead
Bogachiel Summer Steelhead	North Coast Steelhead
Calawah Summer Steelhead	North Coast Steelhead
Calawah Winter Steelhead	North Coast Steelhead
Mosquito Creek Winter Steelhead	North Coast Steelhead
Goodman Creek Winter Steelhead	North Coast Steelhead
Hoh Summer Steelhead	North Coast Steelhead
Hoh Winter Steelhead	North Coast Steelhead
Kalaloch Creek Winter Steelhead	North Coast Steelhead
Queets Summer Steelhead	North Coast Steelhead
Queets Winter Steelhead	North Coast Steelhead
Clearwater Summer Steelhead	North Coast Steelhead
Clearwater Winter Steelhead	North Coast Steelhead
Raft Winter Steelhead	North Coast Steelhead
Quinault Summer Steelhead	North Coast Steelhead
Quinault Winter Steelhead	North Coast Steelhead

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Quinault/Lake Quinault Winter Steelhead	North Coast Steelhead
Moclips Winter Steelhead	North Coast Steelhead
Copalis Winter Steelhead	North Coast Steelhead
Humptulips Summer Steelhead	Southwest Washington Coast Steelhead
Humptulips Winter Steelhead	Southwest Washington Coast Steelhead
Hoquiam Winter Steelhead	Southwest Washington Coast Steelhead
Chehalis Summer Steelhead	Southwest Washington Coast Steelhead
Chehalis Winter Steelhead	Southwest Washington Coast Steelhead
Wishkah Winter Steelhead	Southwest Washington Coast Steelhead
Wynoochee Winter Steelhead	Southwest Washington Coast Steelhead
Satsop Winter Steelhead	Southwest Washington Coast Steelhead
South Harbor Winter Steelhead	Southwest Washington Coast Steelhead
Skookumchuck/Newaukum Winter Steelhead	Southwest Washington Coast Steelhead
North/Smith Creek Winter Steelhead	Southwest Washington Coast Steelhead
Willapa Winter Steelhead	Southwest Washington Coast Steelhead
Palix Winter Steelhead	Southwest Washington Coast Steelhead
Nemah Winter Steelhead	Southwest Washington Coast Steelhead
Naselle Winter Steelhead	Southwest Washington Coast Steelhead
Bear Winter Steelhead	Southwest Washington Coast Steelhead
Grays Winter Steelhead	Southwest Washington Coast Steelhead
Skamokawa Creek Winter Steelhead	Southwest Washington Coast Steelhead
Elochoman Winter Steelhead	Southwest Washington Coast Steelhead
Mill Creek Winter Steelhead	Southwest Washington Coast Steelhead
Abernathy Creek Winter Steelhead	Southwest Washington Coast Steelhead
Germany Creek Winter Steelhead	Southwest Washington Coast Steelhead
Case/Carr Inlets Winter Steelhead	South Puget Sound Steelhead
Discovery Bay Winter Steelhead	South Puget Sound Steelhead
Eld Inlet Winter Steelhead	South Puget Sound Steelhead
Hammersley Inlet Winter Steelhead	South Puget Sound Steelhead
Sequim Bay Winter Steelhead	South Puget Sound Steelhead
Totten Inlet Winter Steelhead	South Puget Sound Steelhead
East Kitsap Winter Steelhead	South Puget Sound Steelhead



Appendix B: Nooksack Tribe Full Response



Nooksack Indian Tribe Natural Resources Department

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Feb. 18, 2003

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Re: Manager Response to North Puget Sound Hatchery Reform Recommendations

The purpose of this letter is to provide managers response to the Jan. 10, 2003 draft HSRG Nooksack/Samish recommendations. The HSRG has spent considerable time reviewing these programs, and we appreciate your efforts to help recovery and conserve naturally spawning populations and supporting sustainable fisheries. We believe most of the recommendations make sense, and will aid us in providing for harvest, while recovering salmon.

We must say, however, that we are disappointed with the recommendation to include a trap with a ladder, if built, on the Middle Fork "to increase management options" while restoring passage for ESA listed North/Middle Fork spring chinook, and listed bull trout, as well as for steelhead and coho. Our concerns are for impacts to ESA listed fish when holding, handling, and sampling them, for costs to test and man any trap, and for logistics (for example even accessing the site during winter weather), and for excluding wild salmon and trout from their habitat. This recommendation is included within the Kendall North/Middle Fork chinook and steelhead program reviews as well as the Lake Whatcom kokanee program reviews. The Lake Whatcom kokanee program comments even mention a possible action of denying upstream passage of salmonids by use of this trap, if they prove positive for reportable pathogens. In our consensus WDFW/Lummi Nation/Nooksack Tribe response to this which was previously sent to the HSRG, we stated that we disagreed with this scenario. We will repeat a portion of the response, and the reasons why this option, when we evaluated it, was rejected by co-managers.

Joint co-manager response: Disagree. Incidental observations in recent years have documented adult salmon or trout jumping at, or over, the diversion dam from early May through early November. This reflects the prolonged adult migration and holding periodicities of the chinook, bull trout, coho, and steelhead which will utilize the 17+ miles of former habitat. The ½ mile gorge downstream from the diversion dam (where at its narrowest, the entire river is squeezed through a 9 foot wide bedrock channel) will restrict use by weaker swimmers (chum, most pinks). We believe stronger swimming salmon and trout species will need passage all year, when flow conditions are relatively low. A recommendation to restrict passage to certain times of the year conflicts with our

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salmon recovery efforts. While ladder design may accommodate a trap, costs, logistics, and concerns on potential impacts to ESA listed chinook and bull trout, through handling and sampling individual fish, resulted in co-manager rejection of a trap, test and hold scenario.

We understand that the HSRG does not have time to fully flesh out pros and cons of options, but we do note that there is no discussion of how the concerns we conveyed to the HSRG would be adequately addressed. We also want to point out that in 2002 the wild North/Middle Fork early chinook escapement was 221, while kokanee creek spawners numbered approximately 20,000. Additionally, at our last joint co-manager meeting with the City of Bellingham and the Army Corps of Engineers on funding for restoring/greatly improving anadromous use to Middle Fork, we discussed a potential option to remove the diversion dam, instead re-designing the intake structure as a cheaper and more desirable solution. Fish ladders rarely work as well as intended, and we believe this option, if feasible, would be more beneficial for Chinook and bull trout recovery than building a ladder.

While we do not have a hatchery our fishermen benefit from hatchery programs, and along with WDFW and the Lummi Nation we have put considerable energy into evaluating and adaptively managing the Kendall early chinook program. Through this we have learned how much effort and cost it takes to really accomplish adaptive management, through data collection (for example collecting otoliths, DNA, and coded wire tags on spawning grounds), analyzing the results, interpreting the data, and adjusting the program. We believe the evaluation for this program provides insight for the effort it will take to meet hatchery reform obligations for many more programs in the future. Indeed, many of your recommendations will require a similar commitment of resources. We encourage the HSRG to more clearly emphasize the need to provide adequate funding for this. Many of your program recommendations are sound, but will require substantial resources to effectively implement.

Thank you for providing the opportunity for comments.

Sincerely,

Robert Kelly
Director



Appendix C: South Sound Spring Chinook Technical Committee Comments on White River Spring Chinook

Comments provided to HSRG, 12/17/02.

At the November 20, 2002 South Sound Spring Chinook Technical Committee meeting, there was unanimous agreement with the first two recommendations regarding the White River spring chinook recovery program.

The first recommendation has already been addressed by the South Sound Spring Chinook Technical Committee (representing WDFW, Muckleshoot Fisheries, Puyallup Fisheries, US Forest Service and NMFS). As a matter of logistical efficiencies, the Technical Committee has come to the conclusion that NOR incorporation should begin in the fall of 2004. At that point in time, all Puyallup basin hatchery chinook production (including acclimation pond production) will be either marked or tagged and will be readily identified at WRH and the Buckley trap. That will leave only spring and fall NORs to consider for incorporation. The technical committee is considering taking appropriate numbers of NORs to WRH, take a non-lethal tissue sample, identify the spring chinook by in-season DNA microsatellite analysis for broodstock and haul any fall chinook NORs above Mud Mountain Dam. This protocol (not formalized at this point in time) has met with general approval from NOAA Fisheries consultants.

The second recommendation to stock a representative sample of the run into the acclimation ponds is a commendable objective, however, it may be logistically difficult to accomplish. There are problems associated with rearing fish from temporally divergent egg takes, so that they are the same size at transfer, minimizing size-related rearing differences in the pond populations. Also, it may be difficult to get late fish to size at an appropriate transfer time.

There was universal opposition on the Technical Committee to the third recommendation, the proposed elimination of the Hupp Springs component of the integrated recovery program. I would expect that there will be multiple negative "Manager Responses" to this recommendation, including my own.

In the Committee's 1996 Recovery Plan (p. 63), the threshold for discontinuing Hupp Springs production support is after 1,000 untagged spring chinook are passed upstream in three of four consecutive years. The ultimate concern is that there be some evidence that the in-basin program is capable of maintaining



progress toward recovery without Hupp support. Note that 1,000 springs are specified in the recovery goals (p.49). The Technical Committee does not think that we have adequate data in hand to develop an analysis of whether the threshold criterion has been met (e.g. what proportion of recent escapements are spring chinook) or whether the in-basin program can currently support stock recovery independent of Hupp. The committee is not ready to abandon the tenets of the recovery plan and, at the last meeting, Tim Tynan of NOAA Fisheries stated that the Science Center is not ready to acknowledge that the Hupp Springs program is not necessary for recovery.

Also, since the November meeting, Bill Graeber of the NOAA Fisheries Chinook Technical Review Team contacted the Technical Committee questioning the advisability of this action. It was his opinion that the recommendation was premature in two regards. The first is that we do not “know where we are on the White River spawning and rearing habitat recovery curve,” so what is the basis of expectation that the stock recovery can be maintained, at this point in time, with only the in-basin program? Secondly, he wanted to point out the potential negative impacts that premature elimination of Hupp Springs production may have on basin watershed planning and management processes. He believes that we will be sending the message that we have arrived at some stage of recovery and that motivation for more responsible watershed management will be reduced when, in fact, we do not know how far we have progressed toward stock recovery.

Additionally, there is a longer-term harvest objective associated with the White River chinook program (1996 recovery plan, p. 49). There is a significant link between Hupp Springs production and that objective. The Technical Committee, until further study indicates otherwise, is operating under the precept that maximizing the acclimation pond production is critical to achieving the escapement threshold and subsequent harvest opportunities. As noted in the “Operational Considerations” and in the comment in the first paragraph regarding that section, Hupp Springs plays a major part in the implementation of the acclimation program. The Technical Committee is currently in the process of evaluating the contribution of the acclimation production to the upriver escapement and its distribution throughout the Puyallup/White River basin and thinks that the elimination of the Hupp program, before this assessment is complete, is premature.

The committee recognizes HSRG’s desire to have the recovery program driven predominantly by White River basin-origin fish, allowing the population to



expediently adapt to the indigenous environment. However, the committee thinks, given the paucity of evidence suggesting genetic drift between the two hatchery broodstocks and the lack of any quantitative demonstration that the White River origin broodstock exhibits differential, beneficial behavioral traits, that the short term risk associated with maintaining the Hupp Springs program until the acclimation pond impacts are discerned, is minimal.

The statement under "Benefits and Risks" that "Gene flow between the Hupp Springs program and the White River Hatchery is in one direction only - from Hupp Springs to the White River" is historically correct, but not currently. In spite of Shaklee and Young's opinion that "...the marginally significant uncorrected test results and the non-significant corrected test results are hardly convincing evidence for substantial genetic differentiation between the two populations" and that, given the history of these programs, "...it seems illogical to conclude that the observed difference between the two collections (whether statistically significant or not) can or should be explained by genetic drift or selective differences between the two populations," broodstock contribution from White River Hatchery to Hupp Springs was instituted this year. A five percent contribution of White River Hatchery males was made to the Hupp Springs production to address *potential, unsubstantiated* genetic drift between the two broodstocks. I think the Technical Committee would be amenable to maintenance of this program, as well as NOR incorporation into the Hupp Springs broodstock, in order to moderate HSRG concerns regarding the suitability of that broodstock for White River recovery efforts.

Finally, implementation of this recommendation may have a much broader impact on the recovery program. Hupp Springs is specifically a WDFW production program and is one of that agency's primary contributions to the recovery effort. If WDFW complied with this recommendation in spite of their objections, it could be viewed by the other participants that WDFW unilaterally abandoned the agreed-to recovery plan and that the entire burden of recovery would fall on those other agencies. I think that a very carefully fostered cooperative recovery effort could be seriously hampered by the implementation of this recommendation.