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**From:** Paula Burgess, Director of Pacific Northwest Programs, Wild Salmon Center  
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**Date:** July 28, 2006

**Re:** WRIA 20 Public Draft Management Plan

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The Wild Salmon Center would like to take this opportunity to comment on the WRIA 20 Phase II Technical Assessment (P2TA), the Public Draft Management Plan (PDMP), and the Multi-Purpose Storage Assessment (MPSA). In partnership with the Western Rivers Conservancy, we have worked to purchase more than 6,000 acres of riparian and upslope habitat in the Hoh River basin with the goal of conserving the relatively healthy salmon populations and their habitat. The Hoh River Trust is now managing these important lands.

Given this large collaborative investment, we are very interested in the future ecological condition of the Hoh River basin. We would like to congratulate you on completing the P2TA and the PDMP and believe this is a critical link in the chain towards conserving the Hoh River and its salmon into the future. We realize the assessment and management plan are the result of hard work, and the associated documents provide many positive suggestions and a unique perspective on the Hoh River basin.

We focus our comments on the Fish Habitat and Fish Habitat Actions in the PDMP and the P2TA and MPSA for the Hoh River basin, since salmonids and the basin are our principal area of expertise. Technical comments on scientific statements made in the P2TA and the MPSA are found in Table 1 (p. 5), while general comments on the MPSA and PDMP are provided in the body of this memo.

In general, we endorse most of the information and suggestions in the Fish Habitat and Fish Habitat Actions sections in the WRIA 20 PDMP. Specifically, we support the goals noted in the sections dealing with the critical ordinance implementation, invasive weeds, land conversion from forest, control of sediment, and the related management and implementation strategies. These sections provide a solid starting point for the conservation and restoration of important physical processes controlling habitat formation and instream flows in many of the WRIA 20 watersheds, and in the Hoh River basin. It is notable to have the foresight to discuss the issue of shifting land use practices from forestry to development, and we strongly believe that forestry practices are much more suitable to sustaining salmon and their habitat than housing development. We also support the creation of a watershed council tasked with overseeing the conservation and restoration of the Hoh River, and other WRIA 20 watersheds.

While we are broadly supportive of the draft PDMA, two of the Plan's proposals are not supported by contemporary salmonid and watershed science. We would like to highlight these issues in hopes of working toward more holistic and ecologically sustainable solutions. The first of these proposed solutions is the suggestion of a hatchery on the Hoh River. While hatcheries are often thought of as solutions, the scientific literature indicates that hatcheries most often have an adverse affect on native salmonid populations via freshwater juvenile competition (e.g., triggering density dependent mechanisms) and adult interbreeding. The effects on native fish are the same whether or not the stock used for the hatchery is from outside of the basin or from native broodstock. There is also a growing concern about hatchery competition with wild salmon in the marine environment, which can potentially limit the survival of native salmonids during periods of low food availability. Considering the overwhelming body of evidence against the use of hatcheries as a tool for sustaining and recovering salmonids, we directly oppose the implementation of a salmon hatchery in the Hoh River basin (as proposed in action SP-5 in the PDMP and in the MPSA document).

A hatchery is of particular concern because the Hoh River has a national reputation as one of the last nearly wild rivers in the Lower 48, which supports healthy and diverse salmon runs. Anglers travel from around the United States and Canada to fish the last best rivers of the Olympic Peninsula. Furthermore, as you mention in the watershed plan and as recognized by several status reviews, the Hoh River is one of the last remaining native salmon strongholds remaining in the Pacific Northwest. In fact, the principal reason the Wild Salmon Center and the Western Rivers Conservancy chose the Hoh River basin as a focal area for salmon conservation is because it is the last large coastal river system in Washington State without a full-scale hatchery facility and a dam. Addressing the issues that have affected native salmonids in the Hoh River is a complex task, and the implementation of a full-scale hatchery is only bound to complicate the problems and potentially speed up the decline of native populations. Consequently, we believe that addressing the physical and biological constraints affecting salmon in the Hoh River is best achieved through a systematic and scientifically rigorous conservation process that treats problems rather than symptoms, and focuses on maintaining healthy native salmon runs as opposed to replacing them with heavily subsidized, less resilient hatchery populations.

In addition to the hatchery proposal, we generally do not support the information or suggestions proposed in the MPSA document. We believe global climate change is an important issue facing Hoh River salmonids. We also agree that the Hoh River channel is likely to undergo substantial changes as the glaciers recede and the amount of snow pack decreases. However, we do not support the proposed construction of dams in Owl, Maple, and Nolan Creeks as realistic or sustainable solutions to maintaining native salmonid populations.

As dams are increasingly scrutinized as major impediments in salmon recovery, we cannot find a reasonable justification that would rationalize the construction of dams as a means to conserve salmon. In fact, we have conducted six years (2000-2006) of intensive juvenile salmonid monitoring (summer and winter) in the Hoh River basin and our results

indicate that Owl and Nolan Creek are critical rearing tributaries. Furthermore, despite the debris flow events of 1990, our research has demonstrated that Owl Creek supports the greatest abundance of rearing juvenile steelhead of any tributary outside of the Olympic National Park. Nolan Creek also supports an abundance of juvenile steelhead, coho, and coastal cutthroat, and is the only tributary where the presence of bull trout (ESA listed species) has been confirmed. Therefore, while dams might facilitate the upstream migration of fall chinook, they would essentially eliminate two of the most important steelhead, coho, and coastal cutthroat rearing streams, and potentially destroy the only lower river tributary used by bull trout.

Although we agree that low flows are likely to be a problem for early entering adult salmon such as fall chinook, the rationale provided by the authors of the MPSA is anecdotal and not truly reflective of conditions in the Hoh River. For example, one paragraph suggests that upstream migration of adult fall chinook may be hindered by stream blockages or cascade areas, when it is known that there are no such wood blockages in the mainstem Hoh (nor any evidence to support this hypothesis). Similarly, the mainstem Hoh River is a pool-riffle and forced pool-riffle dominated channel, and there are not any cascade channel types in the mainstem Hoh River. In addition, the authors highlight the potential for redd dewatering and stranding of juvenile salmonids in off-channel habitat. There is simply not any evidence for this type of limitation in the past, present, or future. In fact, redd dewatering and stranding of juveniles in off-channel habitat is likely to be exacerbated by dams, as has been observed with chum and chinook salmon redds in the Skagit River system. Off-channel hydrodynamics are frequently dominated by groundwater flow, and upstream impoundments will potentially eliminate downstream springbrooks favored by many juvenile salmonids. Seasonal flow alterations by dams may also trigger spawning activity at inopportune times.

Our salmonid ecologist, John McMillan, and his colleague, James Starr, were both present during the summer of 2002 when flows in the mainstem Hoh River dropped below 300 cfs. They spent numerous hours snorkeling the areas, sometimes in the presence of Harry Penn (former Hoh Tribe Natural Resource Director), to collect water temperature data and examine the outward physical appearance of the adult fish (e.g., check for fungus, mortalities). Water temperatures were measured daily between 12:00 – 4:00 pm instantaneously at the surface and the stream bottom in several locations. Despite the prolonged drought, water temperatures in the lower Hoh River never exceeded 73° F, while the lower Sol Duc, Calawah, and Bogachiel Rivers exceeded 81° F on three consecutive days. Additionally, most of the adult fish were holding in relatively deep pools that were thermally stratified. Surface water temperatures hovered around 73° F in such areas, compared to 65 – 68° F near the bottom of the pools where the adult fish were holding. So while flows might have been low and the staging period prolonged, there is no evidence that the adult fish were excessively stressed, especially since Tribal and sport fishing was ceased. In fact, our monitoring found the greatest level of juvenile abundance in the majority of the tributary survey sites during the following summer (2003), which corresponded with the large runs observed during the fall of 2002. This indicates that despite prolonged staging, the salmon had a highly successful spawning

season. Consequently, we do not agree that low flows impacted adult fish and their spawning success.

We would support alternative solutions, such as increasing the frequency and abundance of large conifer dominant large wood formations in the mainstem Hoh River. In fact, this is probably the most likely solution to the situation. Increasing the availability and volume of large conifer LWD in the mainstem Hoh River would facilitate the formation of deep pools with thermal stratification where adult fish can stage without excessive thermal stress. Indeed, adult chinook stage in many inland river basins of the Columbia River (e.g., John Day, Wenaha) that do not have dams by utilizing such thermal refugia. Surface water temperatures in those rivers frequently exceed 75° F, sometimes reaching over 80° F, while the adult fish stage in 67 – 73° F water, which is warmer than the thermally stratified areas that Hoh River chinook staged in during the 2002 summer/fall. LWD formations, as you have mentioned, would also assist in storing groundwater, which would provide recharge for off-channel and mainstem habitat during times of relative drought. Thus, we believe that a more natural solution to this issue is the restoration of large wood and mainstem river channel complexity to more approximate historic conditions.

In closing, the Hoh River remains one of the natural treasures of the western United States, a river still steeped in the traditions of Tribal and sports angling lore. While technical quick fixes such as dams and hatcheries may provide brief pulses of some species of adult fish for harvest, they are inadequate for sustaining a diverse suite of wild salmonids over long time scales. There is no doubt that global climate change is a pressing issue for salmonids, especially early entering populations such as fall chinook. However, fish have adapted to similar changes in the past and we believe that genetically diverse, abundant native fish will have the greatest capacity to adapt to such changes in the future. It is possible that some populations will have to alter their run and spawn timing or go extinct locally. This is part of the natural process associated with the ebb and flow of changing climate conditions, and what may limit one species (fall chinook) may inherently benefit others (steelhead and coastal cutthroat). Therefore, we completely support the conservation and restoration of the Hoh River and its salmon through a holistic and sustainable watershed-scale process that recognizes the importance of allowing natural conditions to select the habitat and salmonids best suited to surviving future climate changes.

Table 1. The table lists the Wild Salmon Center technical comments on the WRIA 20 Phase II Technical Assessment and the WRIA 20 Multi-Purpose Storage Assessment plans by document, section, and sentence.

Document	#	Section	Sentence	WSC comment
<b>Phase II Technical Assessment</b>	1	7.4, 7.41, pg. 69	Owl Creek historically supported the run (spring/summer chinook) but habitat conditions have degraded to a level where few species are using the tributary at all (Smith 2000).	This statement is not correct. While fewer adults use the stream now, especially winter steelhead and spring/summer chinook, the stream supports a diverse and abundant juvenile population. According to our six years of annual summer and winter juvenile salmon surveys (2000-2006) the stream supports the greatest abundance of juvenile steelhead (in pool habitat) of any tributary outside of the Olympic National Park.
<b>Multi-Purpose Storage Assessment</b>	1	5.2, pg. 47	Predation is the biggest cause of mortality at the juvenile life stage.	This sentence is not supported by a citation. Most literature suggests the biggest cause of juvenile mortality (from fry to smolt) in coastal rainforest watersheds is associated with early fall freshets, and not predation. In addition, you state that coho abundance is limited in the summertime by pool area and the wintertime by off-channel habitat and provide citations. These statements are inconsistent with the “predation” sentence.

Document	#	Section	Sentence	WSC Comment
<b>Multi-Purpose Storage Assessment</b>	2	5.2, 5.24, pg. 48	Loss of off-channel habitat lowers production of salmonid species, particularly coho.	This is an important limiting factor in the Hoh River basin that gets passed over somewhat. Perhaps there is no greater limiting factor than the loss of offchannel habitat via reductions in LWD loading and changing flow regimes. Numerous studies on the Olympic Peninsula and throughout Puget Sound highlight the importance of off-channel habitat, and some studies indicate the loss of beaver ponds and off-channel habitat is the single biggest limiting factor in coho abundance. This should be a primary limiting factor, especially when considering that predation is erroneously listed as the biggest cause of mortality for juveniles.
<b>Multi-Purpose Storage Assessment</b>	3	5.3, 5.33, pg. 50	Figure 5-2	The regression analysis is very weak, and while the trend may hold true, the values are not strong enough nor the period of record long enough to predict future discharge patterns.
<b>Multi-Purpose Storage Assessment</b>	4	5.3, 5.35, pg. 52	These projected future conditions are based on simple, back of the envelope calculations, and should not be considered 100% accurate.	While we can never be 100% certain with science, future conditions need to be predicted with more rigor than simple back of the envelope calculations. This is especially so when considering the drastic measures being suggested (e.g., dams and hatcheries).

Document	#	Section	Sentence	WSC Comment
<p><b>Multi-Purpose Storage Assessment</b></p>	<p>5</p>	<p>5.4, 5.42, pg. 53</p>	<p>Fish encounter obstacles (tree falls, small cascades) naturally during migration and typically wait for precipitation events to overcome the obstacles. .... precipitation may not occur with sufficient quantity or frequency to allow a fish population to migrate past obstacles without an elevated mortality.</p>	<p>First, there are not any cascades in the mainstem Hoh River, so that is not a possibility. The river is dominated by plane bed, forced pool-riffle, and pool-riffle channel morphologies. Flows may also impede upstream migration in these channel types. Second, there is no evidence of tree falls blocking upstream migration. In fact, our science team has snorkeled over 800 stream km of WRIA 20 rivers and never observed a fallen tree blocking upstream migration during low flows. Third, while precipitation levels were severely limited during the 2002 summer, the only mortalities associated with the prolonged staging period occurred with bull trout. Our science team snorkeled the pools on several occasions, and even the presence of fungus was rare. This is possible because surface water temperatures never exceeded 73° F and most fish relied on thermal refugia where temperatures were 5 – 8° F degrees cooler. While we recognize the importance of low flows associated with climate change, there is simply no data to suggest that water temperatures or flow</p>

				<p>levels will result in elevated mortalities of chinook. In fact, chinook stage in much warmer water temperatures in inland tributaries of the Columbia River (e.g., Yakima, John Day, Wenaha) than the Hoh River is likely to ever experience. While prolonged periods of low flows may reduce the temporal breadth of entry timing of chinook, this issue needs to be thought through thoroughly with data from other watersheds.</p>
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