COVER SHEET
OCTOBER 2006

TITLE OF ENVIRONMENTAL REVIEW:	Environmental Assessment of a NOAA's National Marine Fisheries Service Action To Issue Permit 1592 Under Section 10(a)(1)(A) of the Endangered Species Act for Artificial Propagation Research and Enhancement of ESA-listed Upper Columbia River Spring-run Chinook Salmon
EVOLUTIONARILY SIGNIFICANT UNITS (ESU) AFFECTED:	Upper Columbia River (UCR) Spring-run Chinook Salmon *Oncorhynchus tshawytscha* UCR Steelhead *O. mykiss*
RESPONSIBLE AGENCY AND OFFICIAL:	NOAA's National Marine Fisheries Service (NMFS) D. Robert Lohn, Regional Administrator 7600 Sand Point Way NE Seattle, WA 98115-0070 (206) 526-6150
CONTACT:	Kristine Petersen Salmon Recovery Division 1201 NE Lloyd Blvd., Suite 1100 Portland, OR 97232-2737 (503) 230-5409
LEGAL MANDATE:	Endangered Species Act (ESA) of 1973, as amended and implemented 50 CRF Part 223
LOCATION OF PROPOSED ACTIVITIES:	Upper Columbia River basin in the State of Washington
ACTION CONSIDERED:	Issuance of ESA Permit 1592 jointly to the Public Utility District No. 2 of Grant County, Washington Department of Fish and Wildlife, and the Confederated Tribes and Bands of the Yakama Nation

TABLE OF CONTENTS

TABLE OF CONTENTS i

LIST OF FIGURES ii

1.0 Purpose and need 1
- **1.1** Introduction 1
- **1.2** Background 1
- **1.3** Purpose of and Need for the Proposed Action 3
- **1.4** Scope of Action 3
- **1.5** Action Area 4
- **1.6** Relationships to Other Plans and Policies 5

2.0 Alternatives Including the Proposed Action 6
- **2.1** Alternative 1 - Do Not Issue the Permit (No Action) 6
- **2.2** Alternative 2 - Issue Permit with Conditions (Proposed Action) 6
  - **2.2.1** Proposed Activities 7
  - **2.2.2** Permit 1592 Terms and Conditions 7
  - **2.2.3** Incidental Take 7
- **2.3** Alternative 3 - Issue Permit without Conditions 8

3.0 Affected Environment 9
- **3.1** Water Quantity 9
- **3.2** Water Quality 10
- **3.3** Riparian Habitat 11
- **3.4** Anadromous Fish Listed Under the ESA 11
- **3.5** Other ESA-listed Fish Species 14
- **3.6** Non-listed Fish Species 15
- **3.7** Wildlife 15
- **3.8** Socioeconomic Environment 15
- **3.9** Environmental Justice 16

4.0 Environmental Consequences 17
- **4.1** Alternative 1 - Do Not Issue Permits (No Action) 17
  - **4.1.1** Water Quantity 17
  - **4.1.2** Water Quality 17
  - **4.1.3** Riparian Habitat 17
  - **4.1.4** Anadromous Fish Listed Under the ESA 18
  - **4.1.5** Other ESA-listed Fish Species 18
  - **4.1.6** Non-listed Fish Species 19
  - **4.1.7** Wildlife 19
  - **4.1.8** Socioeconomic Environment 19
  - **4.1.9** Environmental Justice 19
- **4.2** Alternative 2 - Issue Permit With Conditions (Proposed Action) 19
  - **4.2.1** Water Quantity 20
  - **4.2.2** Water Quality 20
  - **4.2.3** Riparian Habitat 21
  - **4.2.4** Anadromous Fish Listed Under the ESA 22
  - **4.2.5** Other ESA-listed Fish Species 23
  - **4.2.6** Non-listed Fish Species 23
  - **4.2.7** Wildlife 24
  - **4.2.8** Socioeconomic Environment 24

4.2.9 Environmental Justice 25
4.3 Alternative 3 - Issue Permits Without Conditions 25
4.4 Cumulative Effects 25
5.0 Agencies Consulted 27
6.0 References 28
6.1 Federal Register Notices 28
6.2 Literature Cited 29

LIST OF FIGURES

Figure 1. Map of Upper Columbia River basin with the action area for proposed ESA Permit 1592 identified in the circle and location of existing hatchery facilities in Washington State that would be used to carry out the Upper Columbia River Spring Chinook Salmon White River Supplementation Program. . 4

Figure 2 Average monthly flow measured at the Washington Department of Ecology monitoring station number 45K090 at river mile 6.4 of the White River. 10

1.0 Purpose and need

1.1 Introduction

The National Environmental Policy Act (NEPA) requires Federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. NOAA's National Marine Fisheries Service (NMFS) is evaluating under the NEPA the decision to issue, in accordance with the Endangered Species Act (ESA), section 10(a)(1)(A) direct take research/enhancement Permit number 1592, based on an application received from the Public Utility District No. 2 of Grant County (Grant PUD) on August 27, 2006 (GPUD 2006). This permit would authorize take of listed salmon and steelhead during operation of spring Chinook salmon artificial propagation program and associated monitoring activities by Grant PUD, the Washington Department of Fish and Wildlife (WDFW), and the Confederated Tribes and Bands of the Yakama Nation (YN) (collectively the permit applicants). Permit issuance actions are expected to directly affect only the Upper Columbia River (UCR) spring Chinook salmon Evolutionarily Significant Unit (ESU).

The UCR Spring Chinook Salmon ESU was listed as an endangered species on March 24, 1999 (64 FR 14308), and the endangered status was reaffirmed on June 28, 2005 (70 FR 37160). Progeny derived from the UCR Spring Chinook ESU, even when artificially propagated, remain listed under the ESA (April 5, 1993, 58 FR 17573; June 28, 2005, 70 FR 37204).

Potential environmental effects come as a result of the artificial propagation activities and the juvenile and adult fish monitoring activities requested by the permit applicants. These activities include collecting egg or fry of ESA-listed UCR spring Chinook salmon from the White River, rearing of the eggs or fry to mature adults in a hatchery facility, spawning of those adults, rearing the resultant progeny to a yearling smolt stage, and releasing those smolts into the White River. Additionally, monitoring activities include surveys to count the redds (or nests) of spawning adult salmon in the White River, biological sampling of dead adult fish encountered during the redd count surveys, and trapping and releasing of a portion of the juvenile salmon population in the White River.

The White River is located in Chelan County, Washington, and flows into Lake Wenatchee, which is the beginning of the Wenatchee River. The Wenatchee River enters the Columbia River at the city of Wenatchee. Program implementation considered in this EA and related ESA permit is based on continued use, and limited modification as necessary, of existing hatchery facilities built in the middle and UCR basin, and out of UCR basin facilities for salmon production.

1.2 Background

On December 9, 1998, NMFS received an application for an ESA section 10 permit from the WDFW requesting authorization for the direct take of UCR spring Chinook salmon associated with supplementation recovery programs it operates in the UCR basin. This permit application included the operation of the White River Spring Chinook Salmon Program; however, funding for the White River program had not been assured by WDFW or any other party at that time.

Under ESA section 10(a)(2)(B)(iii), NMFS must have assurance from the permit applicant that adequate funding for the plan will be provided prior to issuing and ESA section 10 permit. Because funding of the White River Spring Chinook Salmon Program was not certain, NMFS was unable to authorize the activities related to White River Spring Chinook Program in Permit 1196. Permit 1196 authorizing other proposed activities was issued to the WDFW on August 16, 2002 (67 FR 58021) and amended on January 20, 2004. Additional information regarding Permit 1196 is available at the NMFS web site (*www.nwr.noaa.gov*).

On October 16, 1997, April 27, 1998, and November 30, 1998, Grant PUD filed requests with the Federal Energy Regulatory Commission (FERC) to amend its license for the Priest Rapids Project No. 2114 in order to implement an Interim Protection Plan for UCR steelhead and UCR spring Chinook salmon affected by operation of the Priest Rapids Project (includes Priest Rapids and Wanapum Dams). Section 7 of the ESA requires the FERC to ensure, in consultation with NMFS, that the action of amending Grant PUD's operating license as proposed is not likely to jeopardize the continued existence of any listed species, or destroy or adversely modify any designated critical habitat for those species. Grant PUD, acting as the FERC's non-Federal representative for ESA section 7 consultation, provided a biological assessment to NMFS that analyzed the potential effects of the proposed Interim Protection Plan on April 27, 1998, supplemented on November 23, 1998.

During the course of evaluating that proposed action, NMFS determined that the action, as proposed, was likely to jeopardize the continued existence of UCR spring Chinook salmon and UCR steelhead. NMFS, in consultation with Grant PUD, the WDFW, the YN, the Confederated Tribes of the Colville Reservation (CCT), and the U.S. Fish and Wildlife Service (USFWS), developed a Reasonable and Prudent Alternative (RPA) to the proposed action that, if implemented with the proposed action, would not jeopardize the continued existence of UCR spring Chinook salmon and UCR steelhead. The opinion with its RPA was issued in May 2004. Included in the RPA are requirements related to implementation and development of the White River Spring Chinook Salmon Program (NMFS 2004).

Subsequent to NMFS issuance of the Biological Opinion on the Interim Protection Plan for Operation of the Priest Rapids Hydroelectric Project FERC Project No. 2114, the FERC issued an order amending Grant PUD's license that included implementation of the Interim Protection Plan and other related actions on December 16, 2004. Additional information specific to the FERC order is available on Grant PUD's web site at *www.gcpud.org*.

Based on the issuance of the Biological Opinion by NMFS and the issuance of an amended operational license by the FERC, Grant PUD has submitted to NMFS an application for an ESA section 10(a)(1)(A) permit to immediately implement the White River Spring Chinook Salmon Program pursuant to the RPA in the Biological Opinion on the operation of the Priest Rapids Project. The permit application requests authorization under the ESA for a period of three years in order to carry out activities necessary for the interim implementation and support of the White River spawning aggregate of the Wenatchee spring Chinook population (NMFS 2004). The need to implement the program as soon as possible is described by NMFS (2004). A long-term plan in the form of a Hatchery and Genetics Management Plan (HGMP) for the program is under development by Grant PUD, the WDFW, the YN, and other Federal and Tribal resource

managers. The HGMP will describe all aspects of the full program, including operations and time-frame. When the HGMP is completed, it will be evaluated under the ESA and NEPA as required by law. The proposed permit is necessary to allow certain aspects of the program to begin prior to evaluation and implementation of the broader operation, a necessary step given the poor status of the population at the present time and the need to obtain as broad a selection of broodstock as possible, as described elsewhere in this document.

1.3 Purpose of and Need for the Proposed Action

NMFS proposes to issue ESA section 10(a)(1)(A) permit jointly to Grant PUD, the WDFW, and the YN for annual take of UCR spring Chinook salmon and UCR steelhead to carry out activities associated with an artificial propagation program of endangered UCR spring Chinook salmon.

The purpose of and need for the issuance of this section 10 permit is to ensure the immediate support and enhancement of the White River spawning aggregate that is part of the Wenatchee River basin population of spring Chinook salmon. Actions that may affect listed species are reviewed by NMFS through section 7 or section 10 of the ESA. Under section 10(a)(1)(A) of the ESA, Federal and non-Federal entities may apply for permits from NMFS to take ESA-listed species under the jurisdiction of NMFS if such taking is for scientific purposes or to enhance the propagation or survival of the affected species.

Issuance of the permit to enhance the survival of the species is needed to fulfill one part of the RPA identified in the Biological Opinion on the Interim Protection Plan for Operation of the Priest Rapids Hydroelectric Project FERC Project No. 2114 (NMFS 2004). NMFS typically includes terms and conditions in permits to ensure that the proposed programs are operated to protect and enhance the endangered UCR spring Chinook salmon ESU and remain compliant with the ESA.

1.4 Scope of Action

The action considered here includes only the issuance of the section 10 permit to implement the artificial propagation enhancement program as requested. Other activities in the Columbia River basin, including other hatchery propagation programs, operation of hydroelectric projects, harvest activities and habitat activities outside the Columbia River basin might have impacts on the abundance and survival of the ESA-listed species but are not part of this action. NMFS does not expect that the proposed action would measurably impact listed salmonid populations outside of the action area because the artificially propagated salmon associated with the proposed program would be in the migration corridor for less than a month, and would entail a small fraction of the total number of artificially propagated anadromous fish released in the Columbia River basin. In addition, several hatchery reform measures have been implemented to limit interactions between natural and hatchery salmonids while in the migration corridor (NMFS 1999). Fish would not be collected or released at these locations. Water used at these facilities is from wells and is non-consumptively used consistent with water rights regulated by the Washington State Department of Ecology and released consistent with National Pollutant Discharge Elimination System permits issued by the U.S. Environmental Protection Agency. The use of these existing hatchery facilities would not be expected to result in substantial impacts on the environment.

1.5 Action Area

The action area for the proposed activities is within the upper Columbia River basin and includes areas in Chelan County, Washington (Figure 1). Specifically, the action area includes the White River and Lake Wenatchee. Additionally, hatchery facilities operated by the USFWS on the Little White Salmon River, a tributary to the lower Columbia River, Eastbank Hatchery operated by WDFW on the UCR, and a privately owned hatchery facility in Rochester, Washington would all be used to carry out the proposed activities (Figure 1).

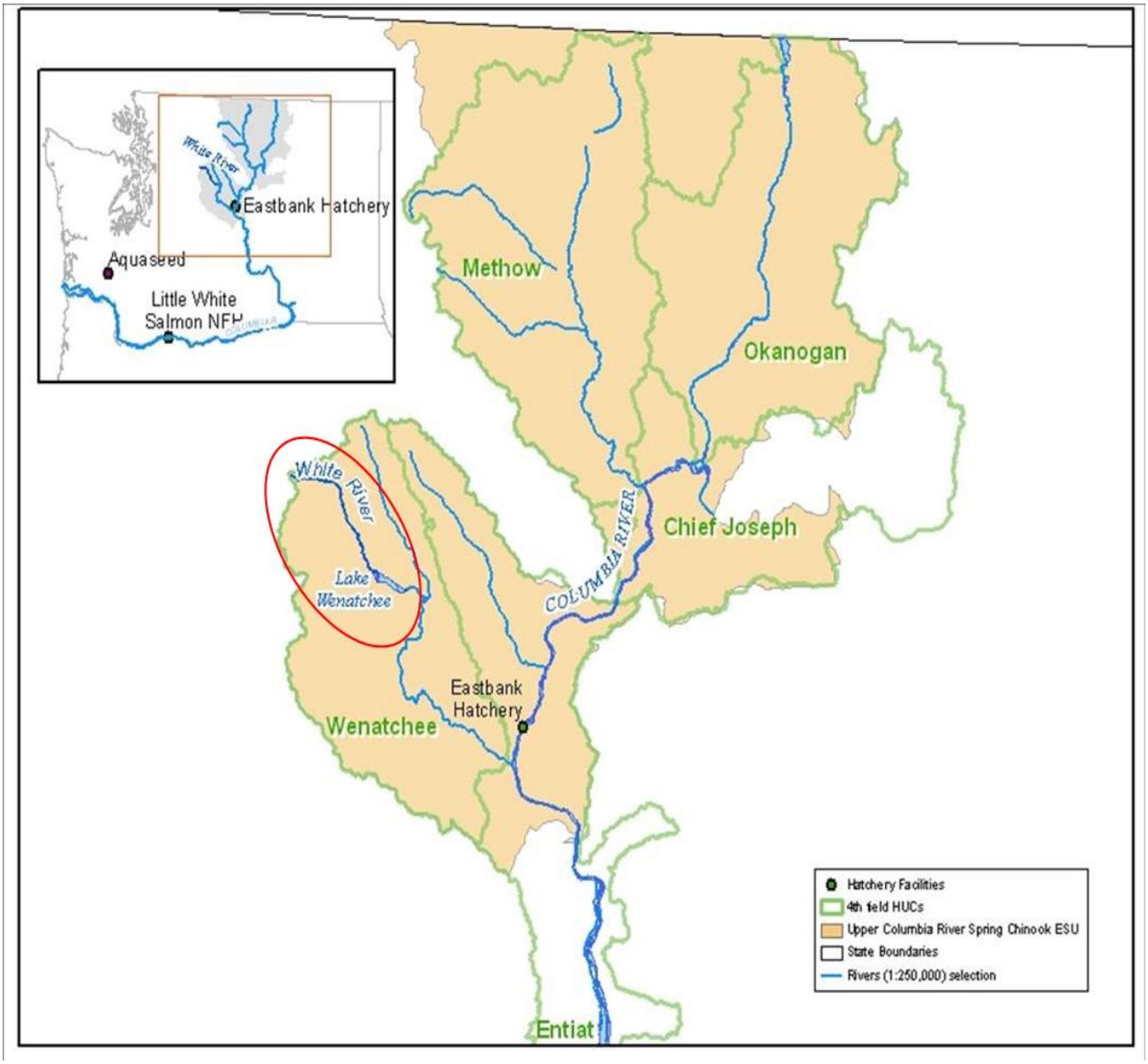

Figure 1. Map of Upper Columbia River basin with the action area for proposed ESA Permit 1592 identified in the circle and location of existing hatchery facilities in Washington State that would be used to carry out the Upper Columbia River Spring Chinook Salmon White River Supplementation Program.ia

Interactions between fish released from the proposed artificial propagation program and other anadromous species in the Columbia River downstream of the proposed action area were considered by NMFS. Determining the nature of these transient interactions that occur during migration is difficult due to the biological attributes of salmon and steelhead, the dimensions and variability in the Columbia River system, and the cycles in the ocean environment. Based on the large scale of the Columbia River, the level of proposed artificial propagation relative to the artificial propagation programs in the Columbia River basin, and the limited period of interaction during active migration, NMFS has determined that impacts on anadromous fish below the action area are not likely to occur at a magnitude requiring analysis at the level of this assessment. For example, at the mouth of the Columbia River, artificially propagated spring Chinook salmon associated with the proposed program would comprise only about 0.6 percent of total artificially propagated spring Chinook salmon released annually (23.8 million yearling spring Chinook salmon were released into the Columbia River basin in 2006 *www.cbr.washington.edu/cgi-bin/dart*). In addition, several hatchery reform measures have been implemented to limit interactions between natural and hatchery salmonids while in the migration corridor (NMFS 1999).

1.6 Relationships to Other Plans and Policies

This Environmental Assessment (EA) was prepared pursuant to regulations implementing the NEPA (42 USC 4321), in compliance with Federal regulations for preparing an EA (40 CFR 1502), NMFS policies regarding hatchery programs, and consistent with recovery plans being developed by local stakeholder groups in conjunction with NMFS.

The background information provided above (section 1.2) described the relationship of this program to the FERC issuance of an amended license to Grant PUD for the operation of Priest Rapids Project; as part of that licensing action, the FERC issued a draft Environmental Assessment on January 15, 1999, evaluating the environmental impacts of Grant PUD's proposed Interim Protection Plan, and concluded that the Interim Protection Plan would provide benefits to the anadromous fishery resources of the Columbia River. The draft EA also stated that Grant PUD's proposed Interim Protection Plan, including the RPA proposed by NMFS, was the preferred alternative. A final EA was issued by FERC in December 2004 (FERC 2004).

A plan for the recovery of ESA-listed fish species (salmon recovery plan) in the UCR basin has been developed as an outgrowth and the culmination of several conservation efforts in the UCR basin by the Upper Columbia Salmon Recovery Board (UCSRB 2006; *okanogancounty.org/planning/salmon_recovery.htm)*. The salmon recovery plan includes efforts related to the ESA, state-sponsored recovery efforts, subbasin planning, watershed planning, and tribal recovery. The salmon recovery plan recognizes that hydro strategies and actions have been reviewed and considered in several ongoing processes including the Grant PUD process described above. An objective identified in the salmon recovery plan is to implement the actions identified in the ESA Section 7 consultation with Grant PUD that will improve spring Chinook and steelhead survival.

2.0 Alternatives Including the Proposed Action

The proposed action and two alternatives considered in this EA are: (1) to not issue the permit (no action), (2) to issue the permit without conditions, and (3) to issue the permit with conditions (proposed action). The following describes the alternatives.

2.1 Alternative 1 - Do Not Issue the Permit (No Action)

Under a No Action alternative, NMFS would not issue the ESA section 10(a)(1)(A) permit authorizing take of ESA-listed species associated with the requested activities. This alternative would effectively prohibit the activities involved in enhancing the White River spawning aggregate and the potential numeric increase and support of the genetic and spatial distribution of endangered UCR spring Chinook salmon returning to the Wenatchee basin. The Wenatchee spring Chinook population was determined to have five major spawning aggregates that show some level of genetic distinction as well as occupying the most diverse range of habitat types of all three extant populations of spring Chinook salmon that make up the UCR spring Chinook salmon ESU.

The program could be terminated or altered to rear non-listed species or fish from another spawning aggregate within the Wenatchee spring Chinook population, although neither of these options would satisfy the stated purpose and need as described above because the artificial propagation of White River spring Chinook salmon is a specific requirement of the 2004 RPA and is likely necessary for recovery of the ESA-listed species. For the purpose of this analysis, NMFS assumes that the White River programs would be discontinued in the absence of this section 10 permit.

2.2 Alternative 2 - Issue Permit with Conditions (Proposed Action)

The action proposed is to issue Permit 1592 under section 10(a)(1)(A) of the ESA based on the application, the RPA in the Biological Opinion on the Interim Protection Plan for Operation of the Priest Rapids Hydroelectric Project FERC Project No. 2114 (NMFS 2004), and conditions that NMFS may require as being necessary and appropriate.

NMFS conditions would include:

- Establishing a numeric limit to the number of eggs or fry that could be collected from the White River annually
- Establishing a limit on the proportion of the natural origin spring Chinook salmon population that could be trapped, handled, and tagged during monitoring activities in the White River annually
- Setting limits on the number or proportions of spring Chinook salmon that could be incidentally killed as a result of carrying out the program
- Setting operating guidelines for all hatchery facilities based on widely accepted best management practices
- Requiring regular reports on the activities authorized by the permit

NMFS conditions would ensure that the annual take of ESA-listed anadromous fish would be for the propagation and enhancement of the ESA-listed spring Chinook salmon population and the associated monitoring activities. The conditions imposed by NMFS would also help to ensure

that the annual take would not appreciably reduce the likelihood of the survival and recovery of the species in the wild. Pursuant to section 10, the permit would contain terms and conditions necessary to the propagation or survival of listed spring Chinook salmon, including reporting requirements for determining whether such terms and conditions are being complied with. A draft of the permit NMFS proposes is attached (Attachment 1).

2.2.1 Proposed Activities

The permit would be issued for a period of three years, to address actions needed to immediately implement and support the proposed White River supplementation program, in advance of a more detailed and extensive plan for the long-term operation of the program. The activities proposed in the permit application include:

- Collection of eggs or fry from the White River to rear in captivity to adult to use as broodstock,
- Transfer of eggs or fish between Federal, state, and private hatchery facilities as necessary to successfully rear fish to the yearling smolt stage,
- Rearing and propagation from the fertilized egg through the yearling smolt life stage at Federal, state, and private hatchery facilities,
- Acclimation for up to eight weeks at a temporary site in the White River basin,
- Release of yearling smolts into the White River in Chelan County, Washington,
- Monitoring of the programs in the hatchery environment using standard techniques such as growth and health sampling, and
- Monitoring of the programs in the natural environment using standard techniques such as juvenile fish traps and adult spawner surveys.

2.2.2 Permit 1592 Terms and Conditions

NMFS proposes to issue section 10(a)(1)(A) Permit 1592 jointly to Grant PUD, the WDFW, and the YN with terms and conditions. Specifically, the conditions are designed to minimize ESA-listed fish mortalities and adverse impacts during: the collection of eggs or fry from naturally deposited redds, rearing of juveniles in a hatchery environment, release of smolts into the White River to enhance the naturally spawning population, the monitoring of juvenile fish produced in the White River, and the monitoring of adult salmon returns to the White River. The terms and conditions that would be placed in the permit can be segregated based on life stage and location of potential effect into terms and conditions related to: the collections of eggs or fry to rear in captivity for broodstock, rearing and release of the progeny of the broodstock, both the broodstock and progeny rearing groups, and monitoring activities that would occur in the natural environment. Additionally, terms and conditions requiring reports and notification of specific activities or situations would be included followed by general conditions that would ensure adequately trained individuals are carrying out the activities and the optimal conditions for ESA-listed fish are maintained during all authorized activities.

2.2.3 Incidental Take

In addition to direct take, incidental takes of ESA-listed species other than targeted spring Chinook salmon would be authorized under the proposed action; these takes would be associated with egg or fry collection activities, hatchery operations, juvenile fish releases, and monitoring

activities from the program would be. Because of the inherent biological attributes of aquatic species such as salmon and steelhead, the dimensions and variability of the Columbia River system and tributaries, and the operational complexities of hatchery actions, determining precise incidental take levels of ESA-listed species attributable to most of the proposed hatchery activities is not possible at present. In the absence of quantitative estimates of incidental take, NMFS would monitor fish release numbers/locations and hatchery operations to assure that the effect of incidental takes on other ESA-listed species does not exceed authorized levels. If NMFS determines that incidental take due to the hatchery activities have exceed levels authorized, or are having an adverse effects not considered, the activities that result in the incidental takes must be suspended until a reasonable solution is achieved, the permit is amended, and/or the program is reevaluated under Section 7 of the ESA.

Potential incidental take of threatened UCR steelhead may occur during the juvenile monitoring activities in the White River. This incidental take would be in the form of capture, handle, and release at a trap such as a rotary screw trap. Since little is known about UCR steelhead in the White River, any incidental encounter with juvenile UCR steelhead could provide valuable information to fish resource managers. To that end, the Permit Holders should collect basic biological data on UCR steelhead collected during the monitoring activities and the following terms and conditions would apply:

1. The incidental take of UCR steelhead in the form of capture, handle, and release shall not exceed 20 percent of the White River tributary population.

2. Lethal take shall not exceed one percent of the trapped UCR steelhead.

2.3 Alternative 3 - Issue Permit without Conditions

Alternative 3 would be the issuance of a permit under section 10(a)(1)(A) of the ESA unconditionally based strictly on the application and the RPA requiring the program. The permit would authorize the take of listed species, but no special conditions would be imposed. The application and RPA describe activities for co-manager program oversight, large scale monitoring, and some program operational detail. The application reflects the adoption of protocols for artificial propagation of ESA-listed species that are risk-averse and include the most current science on management of hatchery facilities and genetic impacts of artificial propagation. With the exception that special conditions would not be imposed by NMFS, the description of this alternative mirrors the description of the proposed action (section 2.2, alternative 2, above). Whether this would meet the ESA section 10 criteria is an exercise in circular reasoning; while regulations that state that a section 10(a)(1)(A) permit "shall contain terms and conditions as the assistant administrator may deem appropriate" might allow a permit without terms and conditions, subsection 2.3 describes why certain conditions are necessary (and the regulations imply that at least certain conditions, whether or not already reflected in the application, are mandatory for a permit application (50 CFR 222.308(d))).

3.0 Affected Environment

The alternatives identified above can potentially affect the physical, biological, and socioeconomic resources within the action area. The following is a summary of the major components of the environment that would be affected by any of the alternatives and the current baseline condition organized by the type of environment.

3.1 Water Quantity

Water quantity can be altered by water withdrawals from a river or stream for use in the artificial propagation facility. Most hatchery facilities that rely on surface water divert a river or stream to the hatchery facility and then return the water to the river or stream at the same location or within a short distance of the point of diversion and are non-consumptive.

The Wenatchee River average annual discharge at the uppermost gage station near the town of Plain was 2,254 cubic feet per second (cfs). The White River contributes about 25 percent of the flow into the Wenatchee River (Final Wenatchee Watershed Management Plan 2006; *www.co.chelan.wa.us/nr/nr_watershed_plan.htm*), which results in an average annual discharge from the White River of approximately 564 cfs. Spring rain and snow melt are the primary water sources for the White River, with the highest flows occurring in April, May, and June (Figure 2). The proposed acclimation activities would not remove water from the basin and would occur when water is generally plentiful. The facilities outside the Wenatchee River basin use well water, and would not reduce the water quantity in other ecosystems.

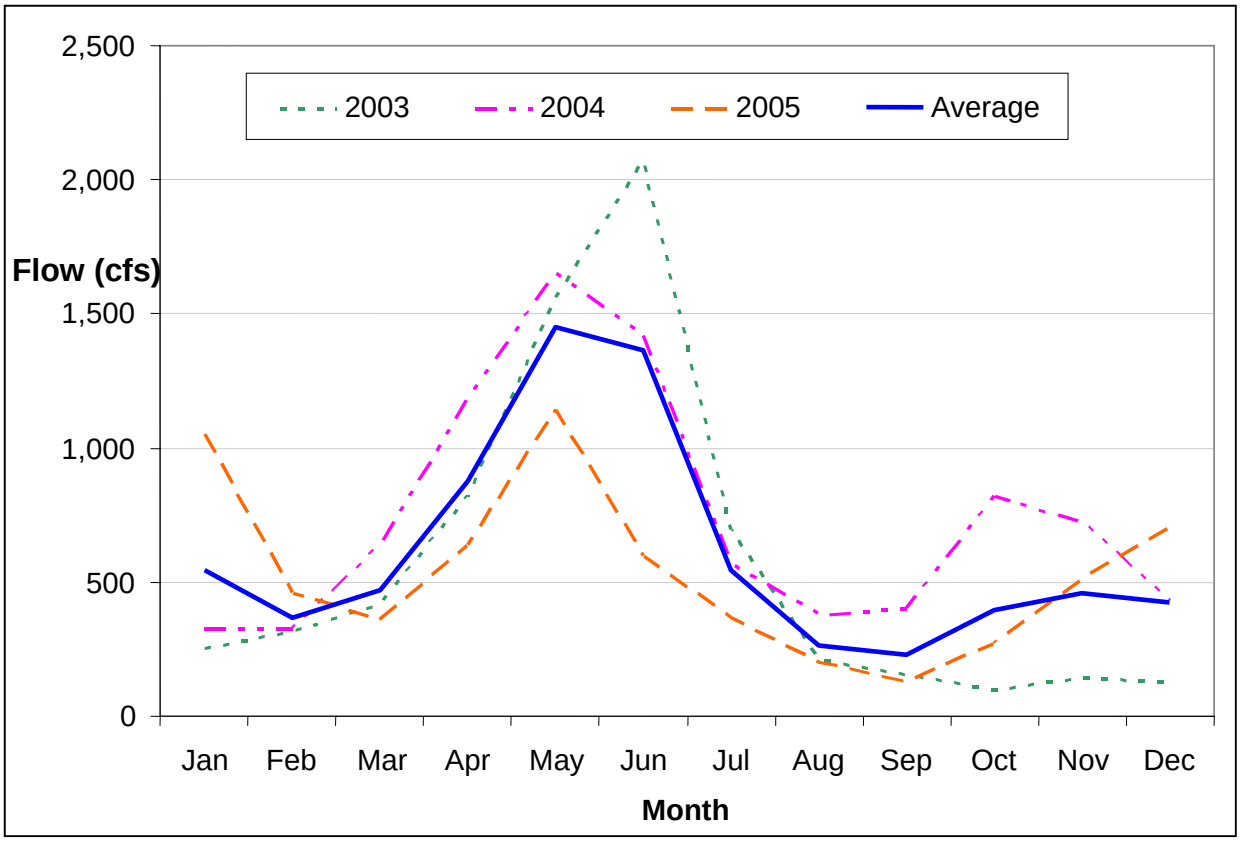

Figure 2. Average monthly flow measured at the Washington Department of Ecology monitoring station number 45K090 at river mile 6.4 of the White River.

3.2 Water Quality

Lake Wenatchee is a large, steep-sided lake covering about 2,480 acres with a volume of about 364,560 acre-feet or water. A large wetland is at the western end of the lake at the deltas of the Little Wenatchee and White Rivers. A terminal glacial moraine at the east end of the lake is the natural dam that formed the lake. The lake normally freezes over during the winter months and strong winds keep the lake mixed during much of the other seasons (NMFS *et al*. 1998).

Water quality standards are administered by the Washington Department of Ecology (Ecology) following the standards defined by Chapter 173-201A of the Washington Administrative Code. Based on those standards the White River is unpolluted and has few sources of wastewater or other pollution.

Lake Wenatchee has been classified limnologically as an oligotrophic lake (Ecology 1997), and characterized in the Wenatchee Subbasin Plan as generally lacking in phosphorous, nitrogen, and chlorophyll a (NPPC 2004). Average summer time Secchi readings were estimated at 20 feet and a single Chlorophyll *a* recording of 1.7 µg/l (Ecology 1997) suggests low primary and secondary productivity.

More recent water quality sampling by Ecology during 2002 and 2003 indicates limited periphyton biomass due to generally low nitrogen and phosphorous levels in the Wenatchee River from River Mile (Rm) 17 to Rm 54 (Lake Wenatchee outlet)(Ecology 2006). These data

may be an indicator of nutrient levels in Lake Wenatchee and suggest that Lake Wenatchee continues to be in an oligotrophic state.

3.3 Riparian Habitat

The White River drainage encompasses 99,956 acres, much of which is public land in the Wenatchee National Forest. Originating in alpine glaciers and perennial snow fields within the Glacier Peak Wilderness, the White River is one of two primary tributaries to Lake Wenatchee and a source of the Wenatchee River. The White River has some of the best aquatic habitat in the Columbia basin with well functioning floodplains and high quality riparian habitat.

The riparian areas of the White River are relatively intact. Areas in the lower White River have been converted from riparian forests to pastures. The floodplain of the lower 2 miles of the White River has been restricted and wetlands have been drained. Housing development around Lake Wenatchee has decreased riparian vegetation in some areas. In undisturbed areas, the White River and Lake Wenatchee support moisture dependent species including willows and sedges. Plants such as cascade huckleberry, rusty menziesia, devil's club, rosy twisted stalk, and coolwort foamflower are found in the wooded under-story of the basin. Open forests of mountain hemlock, whitebark pine, and subalpine larch can be found at the extreme upper elevation limit for trees (Wenatchee Subbasin Plan 2004; *www.co.chelan.wa.us/nr/nr_subbasin_planning.htm*).

3.4 Anadromous Fish Listed Under the ESA

Since 1991, NMFS has identified 12 populations of Columbia River basin anadromous salmon and steelhead as requiring protection under the ESA. The biological attributes of salmon and steelhead, the dimensions and variability of the Columbia River system, and the natural cycles in the ocean environment make determination of the effects from the proposed artificial propagation activities downstream of the action area very difficult. Most of the species interact with fish that would be produced by the proposed artificial propagation activities in the migration corridor and the ocean environments. However, as discussed in Section 1.3 (Action Area), artificially propagated spring Chinook salmon associated with the proposed programs would comprise only about 0.6 percent of artificially propagated spring Chinook salmon released annually and would be expected to be in the estuary for only a few weeks. Therefore, analysis of impacts of these activities on the biological environment will be limited to the two ESUs expected to be impacted by the proposed action. Both of the ESA-listed ESUs include some portion of artificially propagated fish as well as the naturally spawning populations.

Upper Columbia River Spring Chinook Salmon

The UCR Spring Chinook Salmon ESU was listed as endangered on March 24, 1999 (64 FR 14308). This ESU includes stream-type spring Chinook salmon populations originating from all areas of the Columbia River basin upstream of Rock Island Dam (Myers *et al.* 1998). Production areas include the Wenatchee, Methow, and Entiat River basins. The Washington Department of Fisheries (WDF) *et al.* (1993) identified nine stocks within this ESU. All stocks, with the exception of the Methow stock, were considered by the WDF *et al.* (1993) to be of native origin, of "wild" production type, and as "depressed" in status. The Methow River spring Chinook salmon stock is considered to be "composite" in production type, but of native origin, and

depressed in status. When listing the UCR spring Chinook salmon as endangered, NMFS included six populations which have been artificially propagated in recent years as part of the ESU: Chiwawa River, Methow River, Twisp River, Chewuch River, White River, and Nason Creek. These six artificially propagated populations were considered to be essential for recovery and were therefore listed as part of the ESU. Artificially propagated populations at Winthrop National Fish Hatchery, Entiat National Fish Hatchery, and Leavenworth National Fish Hatchery were not included as part of the ESU because they were derived from Carson National Fish Hatchery spring Chinook salmon.

Upper Columbia River spring Chinook salmon have a stream-type life history. Spring Chinook salmon destined for the UCR and tributaries begin entering the Columbia River in late February and early March, with approximately 50 percent passing Priest Rapids Dam by mid-May. Fish enter the Methow River from mid-May through July and primarily use the upper mainstem reaches of the Methow, Chewuch, Lost, and Twisp Rivers. Spawning occurs from late July through mid-September; fry emerge from the gravel in April and May. Juveniles spend the next year in fresh water prior to migrating downstream in the spring. Spring Chinook salmon returning to the Wenatchee River have similar run timing with spawning starting about the second week of August and peaking in the first week of September. Spawning time is dependant on water temperature and generally begins when water temperatures are between 42.4°F and 57.5°F (Mullan (1987) in WDW *et al*. 1990a). Fry emerge from the gravel in January to February and rear in freshwater for up to a year prior to outmigrating during the following spring.

Recent years' (1990-95) mean escapement for UCR spring Chinook salmon was estimated to be 4,880 (Myers *et al.* 1998). Estimates of recent annual trends in abundance were found by NMFS to be downward, with eight of the nine spring Chinook salmon populations exhibiting rates of decline exceeding 20 percent per year. Record low returns were experienced in the middle 1990s. For the UCR Spring Chinook Salmon ESU as a whole, NMFS estimates that the average population growth rate (lambda) over the base period ranged from 0.87 to 0.78, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of natural origin (Appendix B in McClure *et al.* 2000) (an annual average growth rate above 1.0 represents a population that is not declining). The estimated average population growth rates and the risk of absolute extinction within 24 and 100 years for the three spawning populations identified by Ford *et al.* (2001), using the same range of assumptions about the relative effectiveness of hatchery fish.

The White River spring Chinook salmon spawning aggregate is severely depressed and persistently experiences escapement levels below critical population thresholds. Meyers *et al.* (1998) reported geometric mean escapement of 25 spawning adults between 1990 and 1994 with a negative short-term population abundance trend of –35.95 and negative long-term trend of –10.6 percent. More recently, the West Coast Salmon Biological Review Team reported a continued negative short-term abundance trend with a 1997-2001 abundance trend in the White River of -6.6 percent and geometric mean of nine redds (WCSBRT 2003).

The White River aggregate is the most genetically unique among those spawning in tributaries within the ESU (Utter *et al.* 1995, Ford *et al*. 2001, McClure *et al*. 2003). An updated genetic

evaluation (microsatellite analysis) of the White River aggregate and other spawning aggregates in the Wenatchee basin began in 2004 and is supported through a reproductive success study funded through Bonneville Power Administration (BPA Project No. 2003-0399-00). Analysis of 2004 and 2005 reproductive success data indicates that the White River spawning aggregate continues to represent a distinct sub-population in the Wenatchee River basin (Murdoch *et al*. 2006).

Factors for decline in the UCR region include hydropower facilities and habitat destruction as the major causes of population declines, although past over-harvest in fisheries, and some hatchery practices are other factors (UCSRB 2006). To these factors for decline are added poor ocean conditions prior to 2000, which have suppressed fish survival, and vastly increased avian predation in the Columbia River estuary. These latter factors affect all of the basin's salmon and steelhead populations.

Upper Columbia River Steelhead

The UCR steelhead ESU was listed as endangered on August 18, 1997 (62 FR 43937) and subsequently re-listed as threatened (January 5, 2006, 71 FR 834). This ESU inhabits the Columbia River and tributaries upstream of the Yakima River. It includes rivers mostly draining the east slope of the Cascade Mountains. This area includes several rivers which originate in Canada, but it is not thought that steelhead ever occurred in Canada in large numbers; this ESU is defined to include only U.S. populations. This entire ESU has been heavily influenced by artificial propagation programs, with a thorough mixing of stocks as a result of the Grand Coulee Fish Maintenance Project beginning in the 1940s (Fish and Hanavan 1948; Mullan *et al*. 1992). Until recently, hatchery releases were composed of a composite of basin stocks. The Wells Hatchery stock is included in the listing because it might retain the genetic resources of the original steelhead populations about Grand Coulee Dam (62 FR 43937) and may be used for recovery purposes. Currently, efforts are underway to develop artificial propagation programs from more locally-adapted stocks, incorporating some natural-origin steelhead into the broodstock. Steelhead juveniles released into the Wenatchee River have been progeny of broodstock collected from the Wenatchee River exclusively since the 1998 brood (WDFW 2002).

The life history of this ESU is similar to other inland steelhead ESUs. However, smolt ages in this ESU are some of the oldest on the west coast (up to 7 years old), likely as a result of the ubiquitous cold water temperatures (Mullan *et al*. 1992). Adults of this ESU spawn later than most downstream populations. Adults primarily return after 1 year of ocean residency. Steelhead from this ESU enter the lower Columbia between May and September with fish arriving at Wells Pool in early July. Fish enter the Wenatchee and Methow Rivers in mid-July and peak between mid-September and October. During winter, fish generally return to the warmer Columbia River and re-enter the Methow to begin spawning in mid-March after ice-out. Spawning continues through May and many fish seek out higher reaches in the tributaries. Fry emergence occurs that summer and juveniles rear for two to four years prior to spring downstream migration.

Although runs during the period 1933 through 1959 may have already been affected by fisheries in the lower river, dam counts suggest a pre-fishery run-size of more than 5,000 adults above

Rock Island Dam. The return of UCR natural-origin steelhead to Priest Rapids Dam declined from a 5-year average of 2,700 beginning in 1986 to a 5-year average of 900 beginning in 1994. Recent escapements at Priest Rapids Dam of both hatchery and natural-origin steelhead have shown an increasing trend reaching 11,330 in 2000, a peak of 30,077 in 2001, and an estimated 15,898 in 2002. Natural origin steelhead was estimated at 2,341; 5,715; and 3,013 in 2000, 2001, and 2002, respectively (Kirk Truscott, September 12, 2006, WDFW pers. com.).

In the UCR region, hydropower facilities and habitat destruction are the major causes of population declines, although past over-harvest in fisheries and some hatchery practices are other factors. To these factors for decline are added poor ocean conditions prior to 2000 that have suppressed fish survival, and vastly increased avian predation in the Columbia River estuary. These latter factors affect all of the basin's salmon and steelhead populations.

On the other hand, part of the justification for changing the ESA listing status of this ESU from endangered to threatened was acknowledgement of the contributions of the hatchery programs in this area, which are thought to "mitigate the extinction risk… in the short term." (January 5, 2006, 71 FR 834).

3.5 Other ESA-listed Fish Species Another ESA-listed fish species that could be present in the areas where the hatchery activities are proposed to occur is bull trout. Bull trout in the Columbia River basin were listed as threatened on June 10, 1998 (63 FR 31647). The Columbia River population segment encompasses a vast geographic area including portions of Idaho, Montana, Oregon, Washington, and British Columbia. Bull trout are present, and locally common, in most of the habitat occupied by anadromous fish in the UCR basin. At time of listing, 10 of the 16 subpopulations in the UCR basin were considered at risk of extirpation because of naturally occurring events due to isolation, single life-history form and spawning area, and low abundance (63 FR 31647). In the Wenatchee River, the WDFW (1997) identified 11 bull trout stocks located in the headwater tributaries; out of these 11 stocks, 4 stocks were identified as being healthy and the remaining seven as unknown.

Bull trout populations are known to exhibit four distinct life history forms: resident, fluvial, adfluvial, and anadromous. Resident bull trout spend their entire life cycle in the same (or nearby) streams in which they were hatched. Fluvial and adfluvial populations spawn in tributary streams where the young rear from 1 to 4 years before migrating to either a lake (adfluvial) system or a river (fluvial) system, where they grow to maturity. Anadromous fish spawn in tributary streams, with major growth and maturation occurring in salt water – this form is not present in the Methow and Wenatchee Rivers.

Bull trout spawn from August to November as the water temperatures begin to decline. Depending on water temperature, the fry emerge in 100 to 145 days. Juveniles remain in the substrate for some time after hatching. Fry emerge from the gravel in about April. Bull trout populations are fragmented with may individual populations being isolated in one drainage. The distribution of this species appears to be greatly influenced by habitat components such as water temperature (bull trout prefer colder streams), cover, channel form and stability, substrates and migratory corridors (WDW *et al.* 1990b). Bull trout have complex life stage habitat needs. This species utilizes large woody debris, undercut banks, boulders and pools. Altered stream flow can

disrupt spawning, and channel stability is a large factor in egg survival. It is believed that the migratory bull trout occasionally spawn outside of their own natal area, and thus over time their genetics remain stable. Migrating adult bull trout are sometimes encountered at weirs during broodstock collection activities.

3.6 Non-listed Fish Species Approximately 60 other species of fish live in the Columbia River and tributaries. About half are native species primarily of the families Salmonidae, Catastomidae, Cyprinidae, and Cottidae. The cold water and low nutrient load of the White River likely limits productivity of all fish species. In addition to ESA-listed fish species previously mentioned, cutthroat trout, brook trout, dace and sculpin inhabit the White River.

3.7 Wildlife

In the upper reaches of the Wenatchee basin and in its tributaries, faster flowing, small streams bordered by riparian forest are present. These upper reaches provide habitat for a variety of riparian forest and stream associated wildlife, such as American dippers (*Cinclus mexicanus*), Steller's jays (*Cyanocitta stelleri*), ruby-crowned kinglets (*Regulus calendula*), and tailed frogs (*Ascaphus truei*). Bald eagles (*Haliaeetus leucocephalus*) use these watersheds during winter and early spring months. Additionally, in the remote areas, species such as bobcats (*Lynx rufus*) and mountain lions (*Felis concolor*) are expected to be more common than in developed areas. These species may feed minimally during limited times of the year on juvenile salmon after release or on decomposing carcasses of spawned adult salmon and steelhead.

3.8 Socioeconomic Environment

Chelan County covers 2,921 square miles (4.4 percent of Washington State); its population is approximately 69,700 people (2005 estimate from the U.S. Census Bureau *http://quickfacts.census.gov/qfd/index.html*), which is about 1 percent of the state population. It is predominately white, but has a substantial Hispanic population demographic (approximately 20 percent, compared to the Washington state-wide Hispanic proportion of less than 9 percent). Several Native American groups are also present in the action area, making up approximately 1.1 percent of the population; these groups include the Confederated Tribes of the Warm Springs Reservation, the Confederated Tribes of Umatilla Reservation, the Confederated Tribes and Bands of the Yakama Nation, and the Nez Perce Tribe. Agriculture, forestry, fishing, hunting, and mining make up approximately 13.8 percent of the employment sector in the county by industry, second after educational, health and social services (21 percent), followed by retail trade (11.1 percent) (2005 U.S. Census Bureau data; *http://factfinder.census.gov*, accessed November 1, 2006).

Historically, natural resources have been the mainstay of the economies of the Native Americans in the Columbia basin. Hunting, fishing, and gathering are activities that have been important to Tribes for thousands of years. These activities not only continue to be important economically, but also for subsistence and ceremonial purposes. Today, the natural resource portion of the affected Tribal economies, which constitutes 8 percent of the total employment, is made up of fishing, agriculture, food processing, forestry/timber production and wood processing, livestock grazing, and power production.

In 2000, the various tribes landed 52,419 Chinook salmon, 15,540 steelhead, 6,299 Coho salmon, and 3,447 sturgeon during the commercial fishing season in the lower Columbia River (ODFW/WDFW 2001). The commercial fishery represents an important part of the economies of the five Tribes. Estimates of the Tribal salmon fishery in Washington were valued at almost $7 million in 1997 (Tiller and Chase 1999). However, over time, there has been a substantial decline in salmon stocks, and this decline has affected the economies of the project area Tribes. The subsistence fish harvest for the four Treaty Tribes includes the fish species listed above and also includes sockeye and spring- and summer-run Chinook salmon. In 2000, the Treaty Tribes caught 14,635 fall-run, 11,250 spring-run, and 280 summer-run Chinook salmon, 6,628 steelhead, 2,765 sockeye salmon, 1,884 Coho salmon, and 324 sturgeon, for subsistence or ceremonial purposes (NMFS 2002).

In recent years, with salmonid numbers severely reduced due primarily to habitat degradation and hydropower development in the mainstem river, commercial and recreational fisheries have been considerably curtailed from earlier levels. Currently, harvest is not considered to be as great a source of salmonid population decrease as habitat degradation and hydropower projects.

3.9 Environmental Justice

Executive Order 12898 (59 FR 7629) states that Federal agencies shall identify and address, as appropriate "…disproportionately high and adverse human health or environmental effects of [their] programs, policies and activities on minority populations and low-income populations…." While there are many economic, social, and cultural elements that influence the viability and location of such populations and their communities, certainly the development, implementation, and enforcement of environmental laws, regulations, and policies can have impacts. Therefore, Federal agencies, including NMFS, must ensure fair treatment, equal protection, and meaningful involvement for minority populations and low-income populations as the agencies develop and apply the laws under their jurisdiction.

In the action area, as described in subsection 3.8, there are minority and low-income populations that this Executive Order could apply to, including Native American Indian tribes and Hispanics. Hispanic populations traditionally were found in agricultural areas drawn by jobs on farms and in food processing plants. More and more first and second generation Hispanics now live and work in urban areas, where there are increasing employment and business opportunities.

4.0 Environmental Consequences

The proposed action can potentially affect the physical, biological, social, and economic resources within the action area. The following is an analysis of the potential environmental consequences on the major components of the environment based on the current baseline condition described in Section 3 (Affected Environment), above, organized by the alternatives considered in Section 2 (Alternatives Including the Proposed Action).

4.1 Alternative 1 - Do Not Issue Permits (No Action)

Under this alternative, Permit 1592 would not be issued and the artificial propagation program would not be operated as described.

The No Action alternative would not substantially change the magnitude or type of effects on the physical environment. The proposed ESA-listed spring Chinook salmon artificial propagation program is not expected to result in substantial changes to the physical environment. The cessation of the program could result in loss of beneficial nutrient flow into the upper tributaries and spawning grounds. Specific considerations of effects on the human environment are described below.

4.1.1 Water Quantity Surface water diversions would be non-consumptive and return water to the river at the diversion point. A temporary acclimation facility in the White River basin would require about 10 cfs. The water would be returned to the White River near the point of diversion. Under the No Action alternative, this water would not be diverted. The amount of water represented by the White River program operation (10 cfs) is a minor proportion of the estimated flow in the White River (approximately 564 cfs) and would not therefore be expected to noticeably affect the water quantity in the basin.

4.1.2 Water Quality As described above, the total artificial production capacity of the hatchery facilities outside the Wenatchee River basin would likely not change. An increase in production of unlisted salmon might occur to fill the vacancy at the hatchery facilities outside the Wenatchee River basin created by the cessation of this spring Chinook salmon program. Therefore, the impacts under this alternative would not be expected to result in any change from current baseline conditions at the hatchery facilities outside the Wenatchee River basin. If the program is not implemented in the White River and Lake Wenatchee the water quality would not change from the current baseline condition describe in subsection 3.2.

4.1.3 Riparian Habitat

Small localized impacts at egg collection or juvenile monitoring sites might be reduced from the current level because these activities would not occur. The potential loss of adult spring Chinook salmon returns over time may result in negative impacts to the environment by decreasing the amount of marine derived nutrients that would have been released into the watershed from artificially propagated carcasses. Spawning salmon release nutrients into streams through normal metabolic processes, release of gametes, consumption of salmon flesh by predators, and scavengers, and decay of carcasses (Merz and Moyle 2006). These nutrients play an important

ecological role in the terrestrial ecosystems by affecting the productivity of riparian vegetation surrounding streams (Hilderbrand *et al.* 2004).

Areas in the lower White River that are already degraded by conversion from forest to pasture would remain degraded. Drained wetlands would not be improved. Potential benefits to the riparian habitat from increased nutrients provided by decaying spring Chinook salmon carcasses would not be realized.

4.1.4 Anadromous Fish Listed Under the ESA

Under the No Action alternative, annual takes of endangered UCR spring Chinook salmon eggs or fry associated with this propagation programs would not be authorized. The goal of supplementing the White River spawning aggregate while encouraging local adaptation of spring Chinook in the Wenatchee River basin would not be reached.

NMFS has concluded that the UCR spring Chinook salmon species is at risk of extinction (70 FR 37160). The risk of extinction and the hazard of the loss of genetic diversity are increased by the low numbers of spawners in the White River spawning aggregate. The benefits of artificially propagated spring Chinook salmon spawning in the ESU when the natural population is at very low levels include preservation of genetic diversity, and persistence of the species. The long term implications of the cessation of the program would likely include the continued decline of the species. The annual abundance of spring Chinook salmon would not be increased from the low levels observed in the past 15 years to an estimated average of about 400 fish annually. The unique genetic identity and any potential adaptive advantage of that genetic distinctness may be lost if the program is not implemented.

Under the No Action alternative, there would be little effect on UCR steelhead either positive or negative in the three years this permit would be in affect. Other propagation activities would continue, as would most of the other activities currently affecting the species. Some monitoring activities associated with this permit would be lost. In the long-term, however UCR steelhead might be adversely affected as the ESA-listed UCR steelhead would not benefit from the restored productivity and increased forage supply that could be provided by a restored spring Chinook salmon population.

Without the annual input of artificially propagated spring Chinook salmon adults and their carcasses in the river environment, terrestrial organisms that feed on live-caught or spawned-out carcasses may by adversely impacted such as bears, river otters, and other terrestrial scavengers. The extent of adverse impacts would be localized in the tributaries, and considering the entire scope of the action area, would likely be minor-again, it is over a long time frame that the benefits of a restored ecosystem would likely be observed, with positive benefits to natural systems.

4.1.5 Other ESA-listed Fish Species

Salmon returning to spawn in freshwater streams provide nutrients, particularly nitrogen, to resident fishes (Kline *et al.* 1990; Kline *et al.* 1993). Bull trout listed as threatened under the ESA would not benefit from even the small potential increased nutrients or prey base that could increase because of increased marine-derived nutrients that the proposed program could provide

to the White River basin. The No Action alternative would not provide these benefits. Bull trout populations would remain fragmented, though probably would maintain their current levels of viability, as they appear to be stable in this basin.

Any potential negative impacts from disturbing bull trout during rearing or spawning would not occur under the No Action alternative.

4.1.6 Non-listed Fish Species

Similar to ESA-listed bull trout above, under the No Action alternative, non-listed fish species would not accrue the potential small benefits from increased marine nutrients that the proposed program would provide because there would be no increase in marine nutrients brought by hatchery reared spring Chinook salmon. No substantial change in the level of take of these species during fisheries would be expected.

4.1.7 Wildlife

Piscivorous birds, mammals, and other animals all feed on returning adult salmon, salmon carcasses, and juvenile salmon (Hilderbrand *et al.* 2004). The potential continued loss of marine derived nutrients could have a negative affect on the wildlife ecosystem as a whole over time.

4.1.8 Socioeconomic Environment

The No Action alternative would likely result in the continued long-term decrease in the UCR spring Chinook salmon ESU. The risk of extinction or loss of important genetic material would continue or would increase. Should the UCR spring Chinook salmon ESU become extinct, the existence value of the species would also be lost. If UCR spring Chinook salmon continue to decline, it would be expected that more restrictions could occur in other areas that affect the species. These additional restrictions could impact water withdrawals for domestic and agricultural uses, grazing, mining, timber harvest, and development within the watershed.

4.1.9 Environmental Justice

Under the No Action alternative, potential fishing opportunities on a restored White River Chinook salmon population might be lost. Potential fishing opportunities for low-income persons could be lost, but these populations would not be disproportionately affected by the No Action alternative because other communities would lose the same fishing opportunities. Closure of fisheries due to the absence or continued depleted status of the local target Chinook salmon population, or to protect the Chinook salmon population from impacts incurred incidentally in fisheries targeting other species, would likely be necessary.

4.2 Alternative 2 - Issue Permit With Conditions (Proposed Action)

Under this alternative the proposed artificial propagation programs of ESA-listed UCR spring Chinook salmon would be operated as previously described in Section 2.2 (Alternative 2 - Issue Permit with Conditions) and subject to terms and conditions as required under section 10 of the ESA. The possible impacts on the physical, biological, and socioeconomic environments are described in this section.

The effects on the physical environment resulting from implementation of the proposed artificial propagation program could include impacts on water quantity, water quality, and riparian habitat. However, any impact would likely be minimal, occur in a small area within the entire action area, and would not be substantial. Specific considerations of potential impacts on the physical environment by the proposed action are described below.

4.2.1 Water Quantity

Based on the target production level of 150,000 yearling smolts and a flow index of 0.6 per pound of fish reared, any temporary acclimation facility would likely require about 10 cubic feet per second (cfs) to acclimate fish to White River water (Kirk Truscott, September 12, 2006, WDFW, pers. com.). The proposed acclimation would occur between March and May when water flows are increasing due to snow melt. The average White River flows in 2003-2006 were 402, 832, and 1,675 cfs in March, April and May, respectively. Using a temporary facility in the White River basin for up to eight weeks between March and May in the late winter-early spring would result in diverting less than 2 percent of the average monthly flow from the White River, which would subsequently be returned to the White River near the same location as the diversion.

An alternate acclimation strategy would use net pens in Lake Wenatchee positioned near the mouth of the White River, which would result in no water diversion. Therefore, it would result in no impact on water quantity.

Water would not be diverted or reduced by other proposed activities; egg/fry collection, smolt releases, and monitoring tasks. Therefore the quantity of water in the White River would not be impacted by those activities.

Compared to the No Action alternative, the Proposed Action alternative would result in the diversion and return of less than 2 percent of the average monthly flow from the White River.

4.2.2 Water Quality

While water quality may be affected by effluent from the artificial propagation activities, any temporary hatchery facility would be required to operate under National Pollutant Discharge Elimination System permits issued by the U.S. Environmental Protection Agency. Hatchery effluent standards and point source discharge criteria are set forth in the permit to protect aquatic life and the habitat in the area below the discharge points. To monitor water quality and the impacts of hatchery effluent, the facility operators would monitor total suspended solids, settleable solids, upstream and downstream temperatures, and upstream and downstream dissolved oxygen. Considering that the effluent produced from hatchery facilities must comply with Environmental Protection Agency standards, coupled with the low percentage (less than 1:20) of effluent to discharge (dilution factor) that would exist, there is a low possibility that effluent produced at a temporary facility would negatively impact the physical environment.

In a low-nutrient water body such as Lake Wenatchee (oligotrophic status), it is unlikely that a relatively small amount of low phosphorous feed fed over a short time period would have a measurable impact to the overall water quality of Lake Wenatchee. Recent preliminary water quality data related to the sockeye net pen program in Lake Wenatchee indicates that

phosphorous levels near the pens during operation are lower than the confluence areas of the little Wenatchee and White Rivers and of those "mid-lake."

The collection of eggs from redds is done by pumping river water mixed with air into the gravel substrate. This process could result in a small amount of sediment being dislodge. The amount would likely be similar to sediments dislodged when salmon construct redds during spawning. Any material dislodge would likely settle out of the water column within a short distance of the redd, just as it did when the when the redd was constructed by spawning fish. Such impacts would be very small and localized. Any potential impacts on water quality from other proposed activities; fry collection, smolt releases, and monitoring tasks, would also be very small and localized such as gravel disturbed from a biologist walking in the river to locate redds and carcasses. Impacts from these activities would not result in any detectable changes to the water quality because of the small scale of the impact. The impact on water quality beyond that of the No Action alternative is negligible because the activities would be very small, localized, and similar to impacts that occur naturally.

4.2.3 Riparian Habitat

The relatively intact areas of the White River could incur small localized impacts at egg collection sites in the form of disturbed vegetation from people walking to the river at the remote locations. Such activities would take place only a few days per year, any impact would be transitory and the habitat would be expected to recover quickly.

Impacts on riparian habitat and associated vegetation related to temporary facilities that may be used for acclimating ESA-listed fish could occur throughout the few months that fish would be acclimated. Impacts would be in the form of disturbed vegetation at the point of the temporary water diversion and at the location where temporary ponds would be installed. Any temporary ponds would be located as far away from the river bank as feasible to ensure that impacts are minimal.

The release of juvenile fish from temporary acclimation facilities could result in minor, short-term impacts at the release site(s) from people walking or laying hoses over vegetated areas in the upper White River. Monitory tasks generally involve walking along the stream bank or in the margins of the stream. Any effect of these activities would be minor and transitory.

The lower White River would be impacted only by people conducting stream surveys. Such surveys would result in minor disturbance of vegetation about once a week and would not be expected to have long-term impacts.

Access to Lake Wenatchee would be gained at already disturbed established lake access locations and no additional adverse impacts would occur.

Marine derived nutrients would be added to the natural environment by returning adult salmon. Such beneficial nutrient enhancements could occur in Lake Wenatchee and throughout the White River. Most of the benefits would be expected to occur in the upper White River because that is where spring Chinook salmon from the program would spawn and die. Multiple researchers have found that nitrogen in riparian foliage along anadromous streams originated from the

marine environment (Bilby *et al*. 2003; Hildebrand *et al*. 1999; Helfield and Naiman 2001). However, over the short duration of the proposed permit, any benefits would likely not be measurable.

Compared to the No Action alternative, the riparian habitats of the White River could be affected by small localized disturbance of vegetation by people walking to access the White River or by hoses used for a few months to supply water and release fish. These disturbances would be minor and all areas would be expected to recover from the disturbance quickly. Lake Wenatchee riparian habitat is not likely to be effected because access points to the lake are already established. Potential benefits to vegetation could accrue through increased marine derived nutrients being added to all section of the White River and to a lesser extent Lake Wenatchee. Cumulatively, neither the small negative or positive affects would be measurable within the duration of the proposed permit.

4.2.4 Anadromous Fish Listed Under the ESA

The expected impacts on anadromous ESA-listed fish species in the UCR basin from the proposed artificial propagation program would mainly be limited to spring Chinook salmon in the White River. The other anadromous ESA-listed fish species expected to occur in the action area is UCR steelhead.

Upper Columbia River Spring Chinook Salmon: Compared to the No Action alternative, the Proposed Action alternative has the potential to contribute to the long term persistence of ESA-listed UCR spring Chinook salmon. The proposed artificial propagation program is intended to boost the number of adult spring Chinook salmon spawning in the White River. Egg or fry collected from the White River would result in a numeric decrease of individuals at those life stages. This numeric decrease would be approximately the equivalent of two spring Chinook salmon adults removed from the run annually compared to the No Action alternative. However, the rate of survival of individuals collected would be expected to be higher than if those individuals remain in the natural environment. The proposed program would be anticipated to return about 450 adult spring Chinook salmon to the White River annually, benefiting the ESA-listed population (GPUD 2006). Under this alternative special conditions to ensure the programs are operated to the benefit of the ESA-listed species would occur. Annual limits would be placed on the number of listed spring Chinook salmon eggs allowed to be collected based on the spawner composition each year.

While the proposed artificial propagation program has the potential to cause deleterious direct and indirect effects on the ESA-listed species, such as maladaptive genetic, physiological, or behavioral changes in donor or target populations (Hard *et al.* 1992), the program would likely be necessary to prevent the extinction of the spawning aggregate in the White River until other conditions that limit the productivity or survival of these fish in the region can be improved. Therefore, the program includes elements designed to minimize adverse impacts. The deleterious effects that might result from artificial propagation programs require a number of generations to begin to show their effects, and so are not expected to be issues for the limited duration of the proposed action. The longer-term program still to be evaluated would include discussion of long-term effects and additional actions and elements to address those effects.

Compared to the No Action alternative, eggs would be removed from the gravel, thereby reducing the total number of eggs incubating in the White River. However, the survival of eggs collected would be substantially higher compared to those left in the river. Numerically, the Proposed Action alternative could increase adult spring Chinook salmon in the White River by 400 fish.

Steelhead: Native steelhead co-evolved with native spring Chinook salmon and would be expected to suffer no negative impacts from the restoration of spring Chinook salmon in the White River. ESA-listed steelhead and the ESA-listed salmon population would both be expected to benefit from the recycled marine nutrients added to the ecosystem by natural spawning hatchery fish.

Compared to the No Action alternative, no change, positive or negative, to ESA-listed steelhead would be expected to any great degree, due to the limited duration of the proposed action.

4.2.5 Other ESA-listed Fish Species

Bull trout may be present in the waters where the proposed activities would take place. However, the impacts on threatened bull trout are expected to be small. The WDFW has established specific procedures for handling bull trout when they are encountered at juvenile fish traps, with bull trout being enumerated and released unharmed back into the river. The enumeration of juvenile bull trout would provide data on the bull trout population in this area, which is currently lacking. Such data would be shared with other Federal, state, and tribal entities.

No mortalities of bull trout are expected under the Proposed Action alternative. Fluvial and adfluvial bull trout co-evolved with spring Chinook salmon in the White River and Lake Wenatchee, and restoring the fully functional ecosystem would not be expected to have a negative impact. Bull trout are piscivorous and may utilize the additional spring Chinook salmon eggs, fry, and parr as a forage resource. Bull trout would also be expected to benefit from the recycled marine nutrients added to the ecosystem by natural spawning artificially propagated spring Chinook salmon. However, given the short duration of the proposed permit, benefits would likely not be measurable.

Compared to the No Action alternative, the Proposed Action alternative could have small benefits because of increased marine derived nutrients and additional food source. The short duration of the permit would likely preclude such benefits from accruing at a measurable level.

4.2.6 Non-listed Fish Species

Non-listed fish species may be encountered during the operation of the collection traps, and affected by the hatchery effluent and the withdrawal of water. Impacts would be expected to be very small, only slightly greater than under the No Action alternative. Non-listed species that would be encountered during hatchery operations would be released unharmed, and no mortalities would be expected. Such data would be shared with other Federal, state, and tribal entities. Non-listed fish species might be affected by hatchery effluent but these effects are limited to the point of release and so would be localized and transitory. Resident fish species would be expected to benefit from the nutrient enrichment and the ecosystem restoration impacts

that would occur concurrently with the recovery of the steelhead populations, but due to the short term of the proposed action such benefits would be small and temporary.

4.2.7 Wildlife

Similar to the potential impacts on fish species, both ESA-listed and unlisted, adverse impacts to wildlife would not be expected to be much greater than under the No Action alternative because of the short duration of the proposed permit action and the limited scope of the action. The use of existing hatchery facilities for the hatching and rearing stages of the program would result in no impacts on wildlife. Additional carcasses from artificially propagated but naturally spawning salmon would be added to the environment and could provide a benefit to wildlife as a food source. However, because of the short duration of the proposed permit, benefits would likely not be measurable.

The proposed activities of egg/fry collection and smolt releases would occur in limited locations over the course of a few weeks to two months. These activities and the monitoring activities could result in wildlife moving away from the location of the activity. The disturbance would occur in a very small area and be similar to the disturbance that would occur when people are walking or hiking.

Compared to the No Action alternative, some minimal disturbance of wildlife is possible, such as an animal moving away or temporarily avoiding an area because people are present. This type of disturbance would be temporary and would occur in a very small part of the action area because the number of people that would be working at one time is small.

4.2.8 Socioeconomic Environment

Negative impacts of the decrease in anadromous fish populations on Native Americans would not be substantially improved by the proposed action because of the small scale of the proposed hatchery program and the short duration of the permit. Increases in the number of spring Chinook salmon in the White River in the short-term (i.e., within the three years that the permit would be in effect) would not result in changes in the agriculture, forestry, fishing, or hunting sectors in Chelan County.

Compared to the No Action alternative, neither positive nor negative impacts on the socioeconomic environment of the action area would be expected because of the small scale of the program and the short duration of the permit. The principal impact of the proposed hatchery program would be to restore the opportunity for non-consumptive observation of spawning spring Chinook salmon and the existence value of the species – because of the short time period of this action, any effects would be minor.

4.2.9 Environmental Justice

Under the Proposed Action Alternative, the states would gain fishing opportunities as compared to the No Action alternative. There would be opportunities to implement commercial and recreational Interim Agreement fisheries, including opportunities for low-income persons, as compared to the No Action alternative, which would limit or prevent these opportunities. However, such fishery benefits would be expected to accrue similarly to all non-tribal and tribal fishers in the area. Further, such benefits would not accrue to any great extent from the proposed action – because of its short duration – rather being made potentially available by the proposed action in terms of the longer-term program still being developed.

4.3 Alternative 3 - Issue Permits Without Conditions

The purpose of permit conditions is to prescribe requirements and/or restrictions that are expressly designed to minimize impacts to ESA-listed fish. Issuing permits and/or permit modifications without conditions would result in many of the same environmental impacts described under the No Action alternative because, as previously described, the proposed ESA-listed steelhead artificial propagation programs would likely be replaced by non-ESA-listed propagation programs. The impacts would likely also be similar to the impacts under the proposed alternative described below in sub-section 4.2 (Alternative 2 - Issue Permit 1592 With Conditions) because many of the techniques that result in permit conditions are provided as proposed strategies in permit applications. However, not imposing conditions in permits could potentially result in unexpected environmental impacts if impact minimization strategies are substantially altered or are not implemented by the Permit Holders. Establishing conditions in permits ensures that measures would be implemented by the Permit Holders to minimize adverse impacts to ESA-listed fish and that the actions of the agencies and tribes would not appreciably reduce the survival and recovery of ESA-listed species. In addition, NMFS' conditions may serve to further limit activities in such a way as to enhance the proposed conservation efforts. Permit conditions regarding regular reporting of rearing activities and monitoring activities would serve to inform NMFS, other resource agencies, and other interested parties about the program. This ongoing flow of information could be used to adjust the program if needed and would allow NMFS to ensure that the benefits of the program to the UCR spring Chinook salmon population are occurring. Without permit conditions, the flow of timely information may not occur. The effects of this alternative on the human environment would nominally be the same as under the proposed action, but the certainty of these actions would be unpredictable.

Compared to the No Action alternative, the potential impacts of issuing a permit without conditions would have the same impacts as the proposed action detailed above in Section 4.2. However, the certainty of the Permit Holders using the least intrusive methods or taking extra precautions when carrying out the hatchery program are less defined. Therefore, compared to the No Action alternative or the Proposed Action alternative, the potential for negative impacts to all segments of the human environment would be increased.

4.4 Cumulative Effects

Cumulative negative impacts from NMFS' proposed issuance of section 10(a)(1)(A) Permit 1592, including terms and conditions as described, would be minor if at all measurable. Incremental impacts on the environment are included in the discussion above. For example, only

about 2 percent of the White River would be diverted and subsequently returned to the White River for acclimation of juvenile fish. Monitoring activities would gather important information pertaining to the fish populations in the White River and help ensure that the affected ESUs are adequately protected and help counter-balance any negative cumulative impacts.

Other Federal, state, and tribal actions are expected to occur within the action area that could increase natural fish populations in the UCR basin. Federal actions for salmon recovery in the Columbia basin currently underway include initiatives by the Northwest Power and Conservation Council, the Federal Caucus basinwide recovery strategy, and others. State initiatives include recently passed legislative measures to facilitate the recovery of listed species and their habitats, as well as the overall health of watersheds and ecosystems. Regional programs are being developed that designated priority watersheds and facilitate the development of watershed management plans. Tribes have developed a joint restoration plan for anadromous fish in the Columbia River basin, known as the *Wy-Kan-Ush-Mi Wa-Kish-Wit* or *Spirit of the Salmon* plan. Please see the final Environmental Assessment on the implementation of the Interim Protection Plan for steelhead and Chinook salmon (FERC 2004) for other actions being taken by Grant PUD in the Columbia River basin. The cumulative impacts of implementing recovery programs in the UCR basin in addition to the permit reviewed in the EA are expected to increase the production and survival of natural fish in the White River with the proposed program.

5.0 Agencies Consulted

The following agencies and entities were consulted during the development of this environmental assessment:

Washington Department of Fish and Wildlife
Confederated Tribes and Bands of the Yakama Nation
Public Utility District No. 2 of Grant County
Colville Confederated Tribes

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DRAFT **Attachment 1** **DRAFT**

SECTION 10(a)(1)(A) PERMIT FOR TAKES OF ENDANGERED/THREATENED SPECIES

Permit Number: 1592
Permit Type: Scientific Research/Enhancement - Artificial Propagation
Program Name: Upper Columbia River Spring Chinook Salmon White River Supplementation Program
Expiration Date: 3 years from date of NMFS signature

Joint Permit Holders:
Public Utility District No. 2 of Grant County
P.O. Box 878
Ephrata, WA 98823

Contact:
Chris Carlson
Phone (509) 754-5293
Fax (509) 754-5012
ccarlso@gcpud.org

Washington Department of Fish and Wildlife
600 Capitol Way N
Olympia, WA 98501-1091

Ross Fuller
Phone: (360) 902-2655
Fax: (360) 902-2943
fullerkf@dfw.wa.gov

Confederated Tribes and Bands of the Yakama Nation (YN)
P.O. Box 151
Toppenish, WA 98948

Paul Ward
Phone (509) 865-5121, Ext. 6302
Fax (509) 865-6293
ward@yakama.com

Authorization:
The Public Utility District No. 2 of Grant County (Grant PUD), the Washington Department of Fish and Wildlife (WDFW), and the Confederated Tribes and Bands of the Yakama Nation (YN), together referred to as the Permit Holders, are hereby authorized to take endangered upper Columbia River (UCR) spring Chinook salmon (*Oncorhynchus tshawytscha*) and threatened UCR steelhead (*O. mykiss*) for enhancement purposes. The activities are described in detail in the application submitted by Grant PUD on behalf of the Permit Holders and are subject to the provisions of Section 10(a)(1)(A) of the Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531-1543), the National Marine Fisheries Service (NMFS) regulations governing ESA-listed species permits (50 CFR Parts 222-226), and the conditions hereinafter set forth.

Abstract:
The Permit Holders are authorized annual take of adult and juvenile, endangered, naturally produced and artificially propagated, UCR spring Chinook salmon associated with an artificial propagation program for the White River spawning aggregate that is part of the Wenatchee population. The program is intended to supplement the species' naturally spawned production. The authorized program includes the collection of ESA-listed eggs or fry from the White River to rear in captivity to the adult stage for broodstock, the rearing of artificially spawned progeny in hatchery facilities, the acclimation of pre-smolts in temporary facilities in the White River

basin, and the release of artificially propagated juveniles reared to a yearling smolt stage into the White River in Chelan County, Washington. All aspects of the program will be monitored in the hatchery and natural environments in a manner that allows for the evaluation of the effectiveness of this program.

This permit is issued for a term of three years based on an immediate need identified by the co-managers of the fish resources of Washington State and described in the permit application. A long-term plan in the form of a Hatchery and Genetics Management Plan (HGMP) for the supplementation of spring Chinook salmon in the White River is under development by the Priest Rapids Coordinating Committee (PRCC) Hatchery Subcommittee[1] as required by the Biological Opinion issued by NMFS on the Interim Protection Plan for Operation of the Priest Rapids Hydroelectric Project FERC Project No. 2114 (NMFS 2004). The HGMP has been purposely delayed by Grant PUD and the resource co-managers in order to solicit and incorporate public involvement in the program. Once completed, the HGMP is expected to be submitted to NMFS for consideration under the ESA and the National Environmental Policy Act (NEPA) prior to the expiration of this permit.

Supplementation activities will include:

- Collection of eggs or fry from the White River to rear in captivity to adult to use as broodstock;
- Transfer of eggs or fish between Federal, state, and private hatchery facilities as necessary to successfully rear fish to the yearling smolt stage;
- Rearing and propagation from the fertilized egg through the yearling smolt life stage at Federal, state and private hatchery facilities;
- Acclimation for up to eight weeks of pre-smolts in the White River basin,;
- Release of yearling smolt into the White River in Chelan County, Washington;
- Monitoring of the programs in the hatchery environment using standard techniques such as growth and health sampling; and
- Monitoring of the programs in the natural environment using standard techniques such as juvenile fish traps and adult spawner surveys.

This permit also authorizes the Permit Holders annual incidental takes of ESA-listed species, including threatened UCR steelhead, associated with broodstock collection activities, hatchery operations, juvenile fish releases from the program, and monitoring and evaluation activities.

A. Take Description and Levels

This permit is for activities to be conducted over a period of three years. Annual take listed below is subject to the annual authorization process (see Section C - Reports and Annual Authorization Requirements) during the period that this permit is valid.

[1] PRCC voting members are NMFS, Grant PUD, WDFW, YN, the Confederated Tribes and Bands of the Colville Reservation, and the U.S. Fish and Wildlife Service.

Permit Holders means any of the three permit holders and any employee, contractor, or agent of any of the permit holders.

The Permit Holders must ensure that listed species are taken only at the levels, by the means, in the areas, and for the purposes stated in the permit application, and according to the terms and conditions in this permit.

B. Intentional Take

1. Endangered UCR spring Chinook salmon eggs or fry may be collected from the White River in Chelan County, Washington State, for captive rearing to the adult stage to be used as broodstock.
   a. Up 1,500 eggs or fry of White River origin may be collected annually, if non-White River origin spring Chinook salmon are identified on the spawning grounds; up to 3,000 eggs may be collected to achieve the brood group target of 1,200 eggs or fry of White River lineage.
   b. Hydraulic egg collection or fry trapping must be conducted by appropriately trained staff and supervised in the field by a journey level biologist.

2. Up to 150,000 endangered UCR spring Chinook salmon may be released into the White River as yearling pre-smolts.
   a. If possible, up to eight weeks prior to the target release date, yearling pre-smolts should be transported from the hatchery environment and placed into ponds, net pens, or side channels in the White River basin to acclimate on White River water.
   b. If acclimation is not feasible, at a minimum, yearling pre-smolts shall be tempered to White River water for at least two hours for every degree (Fahrenheit) difference between the rearing water at the hatchery facility and the receiving White River water.

3. The Permit Holders may capture, handle, and release up to 20 percent of the naturally produced spring Chinook salmon juveniles emigrating from the White River annually using standard juvenile fish trapping techniques such as rotary screw traps.
   a. For the purposes of developing population estimates, the Permit Holders may apply marks (caudal fin clip) to the spring Chinook salmon juvenile prior to release.
   b. For the purposes of monitoring natural fish emigration to the ocean, the Permit Holders may apply tags (e.g., coded-wire or passive integrated transponder (PIT) tags) to the spring Chinook salmon juvenile prior to release.
   c. Lethal take may not exceed two percent of the fish captured.

4. The Permit Holders may capture, handle, and release up to 20 percent of the hatchery reared and released spring Chinook salmon juveniles emigrating from the White River annually to monitor the supplementation program.
   a. Trap(s) should not be operated during periods when large numbers of hatchery fish are expected to be moving through the trap location area.
   b. Lethal take may not exceed two percent of the fish captured.

5. The Permit Holders may collect tissue samples from fish captured during juvenile emigration monitoring activities authorized above.

a. Tissue collection should be minimized to the extent possible by using fin-clips applied for developing population estimates.
b. This tissue may be for the investigation of reproductive success of naturally spawning hatchery and natural-origin spring Chinook salmon.
c. Collected tissue may be transferred to a laboratory approved by the PRCC Hatchery Subcommittee for micro-satellite DNA analysis.

C. Incidental Take

Incidental take of UCR steelhead may occur during the juvenile monitoring activities in the White River. This incidental take would be in the form of capture, handle, and release at a trap such as a rotary screw trap. Since little is known about UCR steelhead in the White River, any incidental encounter with juvenile UCR steelhead could provide valuable information to fish resource managers. To that end, the Permit Holders should collect basic biological data on UCR steelhead collected during the monitoring activities and the following terms and conditions apply.

1. UCR steelhead encountered during monitoring activities shall be enumerated and sampled for basic biological data such as length, weight, and stage of smoltification.
   a. The incidental take in the form of capture, handle, and release shall not exceed 20 percent of the White River tributary population.
   b. Lethal take shall not exceed one percent of the trapped UCR steelhead.

D. Program Management and Operation Conditions

The following conditions address program management, fish handling, hatchery facility operations, and monitoring activities.

Captive Rearing of Broodstock (F_1 Generation)

1. The eggs or fry retained to rear in captivity for broodstock shall be marked and/or tagged for identification to the family level.

2. The fish retained to rear in captivity for broodstock may be reared in holding ponds, treated with antibiotics, and artificially spawned.

3. Sperm from males reared in captivity may be cryo-preserved for potential future use.

4. Carcasses of the ESA-listed fish spawned in captivity must either be distributed in the watershed of origin for nutrient enrichment if disease protocols, as determined by fisheries co-managers are met, donated for educational purposes, incinerated, or disposed of at waste disposal facilities.

Progeny of Broodstock Intended for Release (F2 Generation)

5. The eggs generated from spawning broodstock shall be incubated and juvenile fish shall be reared in captivity to a yearling pre-smolt stage. If the annual egg take from the broodstock is substantially above the number needed to reach the 150,000 yearling smolt release target,

then the eggs should be reared to a size sufficient for marking or tagging and released into the White River basin, provided that the estimated natural population rearing in the White River is not likely to exceed the production capacity of the White River.

6. All artificially propagated UCR spring Chinook salmon juveniles shall be externally marked or tagged (i.e., visual implant elastomer tag or adipose fin clipped) or internally tagged (coded-wire or PIT tags) prior to release.

7. Measures shall be applied to ensure that artificially propagated UCR spring Chinook salmon juveniles are ready to actively migrate to the ocean with minimal delay.
   a. To meet this condition, fish must be released at a uniform size and state of smoltification.
   b. To prevent catastrophic mortality or to reduce the preponderance of chronic disease, variance from the yearling smolts-only release requirement may be pursued through agreement with the PRCC Hatchery Subcommittee.
   c. Conditions such as flooding, water loss to raceways, or vandalism may warrant early release into appropriate environments after review by the PRCC Hatchery Subcommittee.
   d. Any emergency release of UCR spring Chinook salmon covered under this permit shall be reported to NMFS within 48 hours.

Both Broodstock (F1) and Progeny for Release (F2)

8. Fish in the hatchery environment shall be monitored to acquire meristic and morphological information through the course of rearing. Up to 60 fish from each annual brood group may be sacrificed to obtain otoliths for future reference and/or to obtain pertinent pathological or physiological information. ESA-listed fish mortalities associated with capturing, handling, and transporting activities must not exceed five percent of the total fish collected.

9. The Permit Holders shall ensure that water intakes into artificial propagation facilities be properly screened in compliance with 1995 NMFS screening criteria and the 1996 addendum to those criteria (NMFS 1996). As an alternative, they shall comply with transitional criteria set forth by NMFS in 2000 for juvenile fish screens constructed prior to the establishment of the 1995 criteria, to minimize risks to listed salmon and steelhead. The Permit Holders shall inspect and monitor the water intake screen structures at their hatchery facilities to determine if listed salmon and steelhead are being drawn into the facility; the results of this monitoring shall be included in annual reports.

10. The Permit Holders shall implement the "Salmonid Disease Control Policy of the Fisheries Co-managers of Washington State" (NWIFC and WDFW 1998) and Pacific Northwest Fish Health Protection Committee (PNFHPC 1989) guidelines to minimize the risk of fish disease amplification or transfer and to ensure that artificially propagated fish would be released in good health.

11. The Permit Holders shall conduct hatchery operations and monitor hatchery effluent in compliance with applicable National Pollutant Discharge Elimination System (NPDES) (EPA 1999) permit limitations.

Natural Environment Activities

12. To the extent possible without imposing increased risk to listed species, the Permit Holders shall enumerate and identify marks and tags on all anadromous species encountered at juvenile trapping sites.

13. Each ESA-listed fish handled out-of-water for the purpose of recording biological information must be anesthetized. Anesthetized fish must be allowed to recover (e.g., in a recovery tank) before being released. Fish that are simply counted must remain in water but do not need to be anesthetized.

14. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during sampling and processing procedures. Adequate circulation and replenishment of water in holding units is required. When using methods that capture a mix of species, ESA-listed fish must be processed first. The transfer of ESA-listed fish must be conducted using equipment that holds water during transfer (e.g., sanctuary net or boot).

15. ESA-listed juvenile fish must not be handled if the water temperature exceeds 69.8°F (21°C) at the capture site. Under these conditions, ESA-listed fish may only be identified and counted.

16. The Permit Holders shall monitor the incidence of, and minimize capture, holding, and handling effects on, listed salmon and steelhead encountered during trapping.

17. Visual observation protocols must be used instead of intrusive sampling methods whenever possible. This is especially appropriate when merely ascertaining the presence of anadromous fish.

18. The Permit Holders shall conduct spawning ground and carcass surveys to assess the distribution and impact of artificially propagated UCR spring Chinook salmon on the natural-origin spring Chinook salmon populations.

C. Reports and Annual Authorization

NMFS contact for all reports and notifications:

NMFS - Salmon Recovery Division
1201 NE Lloyd Blvd., Suite 1100
Portland, Oregon 97232
Phone: (503) 230-5409
Fax: (503) 872-2737

1. The Permit Holders must notify NMFS as soon as possible, but no later than two days, after any authorized level of take is exceeded or if such an event is likely (such as a mortality event of greater than 10 percent of the brood group). The Permit Holders must submit a written report detailing why the authorized take level was exceeded or is likely to be exceeded.

2. The Permit Holders must submit in writing any plans for future projects and/or changes in sampling locations or enhancement/research protocols and obtain approval from the PRCC Hatchery Sub-committee prior to implementation of such changes.

3. Each year, prior to the conduct of activities authorized under this permit, the Permit Holders must identify in writing and submit to NMFS the personnel designated to act under the authority of this permit and confirm their experience through resumes or other evidence of their qualifications.

4. The Permit Holders shall provide a written summary to NMFS by December 15 of each year, the projected number of fish to be released by location and identifying marks or tags for the coming year.

5. The Permit Holders must report the take of any ESA-listed species not included in this permit when it is killed, injured, or collected during the course of activities authorized under this permit. Notification should be made as soon as possible, but no later than two days after the unauthorized take. The Permit Holders must then submit a detailed written report of the non-permitted take. Pending review of these circumstances, NMFS may suspend enhancement/research activities.

6. The Permit Holders shall develop through the PRCC Hatchery Subcommittee the reporting responsibilities of each of the three joint Permit Holders. Final approval of report content, responsibilities, and reporting time lines shall be obtained from NMFS within six months of the issuance date of this permit. The following issues should be considered for required reporting:
    i. *Within Hatchery Environment Monitoring Reporting*
        (1) The numbers, pounds, dates, tag/mark information, and locations of fish releases;
        (2) Standard survival benchmarks within the hatchery environment as defined by the PRCC Hatchery Subcommittee;
        (3) Monitoring activities that occur within the hatchery environment;
        (4) Coefficient of variation around the average (target) release size immediately prior to their liberation from the acclimation sites as an indicator of population size uniformity and smoltification status;
        (5) Any problems that may have arisen during conduct of the authorized activities;
        (6) A statement as to whether or not the activities had any unforeseen effects; and
        (7) Steps that have been and will be taken to coordinate the research or monitoring with that of other researchers.
    ii. *Natural Environment Monitoring Reporting*
        (1) Annual adult return information shall include estimates of the number and proportion of artificially propagated fish on the spawning grounds;
        (2) The number and location of artificially propagated adults that were recovered outside the release areas (e.g., in fisheries or strays to other rivers);
        (3) Total and index redd counts by tribuatary basin;
        (4) Carcass recovery summary which includes sex, origin, tributary location, age, and stock data;

(5) Broodstock monitoring and collection summary by location, including summary of all species encountered;
(6) Summary of all activities monitoring juvenile UCR spring Chinook salmon in the natural environment including trap locations, tributary population estimates;
(7) Biological sampling conducted on artificially propagated and natural-origin juveniles in the natural environment;
(8) Injuries or mortalities of listed species that result from monitoring activities; and
(9) Any other information deemed necessary for assessing the program defined by the PRCC Hatchery Subcommittee.

7. The Grant PUD shall assume the lead, and work in coordination with the other joint Permit Holders and the PRCC Hatchery Subcommittee, in developing the long-term HGMP for the Upper Columbia River Spring Chinook Salmon White River Supplementation Program and submit the HGMP to NMFS for consultation under the ESA prior to the expiration of this permit.

D. General Conditions

8. The Permit Holders must ensure that the ESA-listed species are taken only by the means, in the areas, and for the purposes set forth in the permit application, as limited by the terms and conditions in this permit.

9. The Permit Holders must ensure that all ESA-listed species are handled carefully. Should NMFS determine that a procedure provided for under this permit is no longer acceptable, the Permit Holders must immediately cease such activity until NMFS determines an acceptable substitute procedure.

10. The Permit Holders, in effecting the take authorized by this Permit, are considered to have accepted the terms and conditions of this permit and must be prepared to comply with the provisions of this permit, the applicable regulations, and the ESA.

11. The Permit Holders are responsible for the actions of any individual operating under the authority of this permit. Such actions include capturing, handling, releasing, transporting, maintaining, and caring for any ESA-listed species authorized to be taken by this permit.

12. The Permit Holders, personnel, or designated agent acting on the Permit Holders' behalf must possess a copy of this permit when conducting the activities for which a take of ESA-listed species or other exception to ESA prohibitions is authorized herein.

13. The Permit Holders may not transfer or assign this permit to any other person(s), as person is defined in Section 3(12) of the ESA. This permit ceases to be in force or effective if transferred or assigned to any other person without prior authorization from NMFS.

14. The Permit Holders must obtain any other Federal, state, and local permits/authorizations necessary for the conduct of the activities provided for in this permit. In addition, before

taking ESA-listed species in the territorial waters of a foreign country, the Permit Holders must secure consent from, and comply with the appropriate laws of, that country.

15. Any personnel of the Permit Holders requiring Federal or state licenses to practice their profession must be duly licensed under the appropriate law.

16. The Permit Holder must coordinate with other co-managers and/or researchers to ensure that no unnecessary duplication and/or adverse cumulative effects occur as a result of the Permit Holders' activities.

17. The Permit Holders must allow any NMFS employee(s) or any other person(s) designated by NMFS to accompany field personnel during the activities provided for in this permit. The Permit Holders must allow such person(s) to inspect the Permit Holder's records and facilities if such records and facilities pertain to ESA-listed species covered by this permit or NMFS's responsibilities under the ESA.

18. Under the terms of the regulations, a violation of any of the terms and conditions of this permit will subject the Permit Holders, and/or any individual who is operating under the authority of this permit, to penalties as provided for in the ESA.

19. The Permit Holders are responsible for biological samples collected from ESA-listed species as long as they are useful for research purposes. The terms and conditions concerning any samples collected under this authorization remain in effect as long as the Permit Holders maintain authority and responsibility of the material taken. The Permit Holders may not transfer biological samples to anyone not listed in the application without obtaining prior written approval from NMFS. Any such transfer will be subject to such conditions as NMFS deems appropriate.

20. The Salmon Recovery Division, Northwest Region, NMFS, may amend the provisions of this permit after reasonable notice to the Permit Holders.

21. 50 CFR Section 222.23(d)(8) allows NMFS to charge a reasonable fee to cover the costs of issuing permits under the ESA. The fee for this permit has been waived.

22. NMFS may revoke this permit if the activities are not carried out in accordance with the conditions of the permit and the purposes and requirements of the ESA, or if NMFS otherwise determines that the findings made under section 10(d) of the ESA no longer hold.

23. Any falsification of annual reports or records pertaining to this permit is a violation of this permit.

E. Penalties and Permit Sanctions

24. Any person who violates any provision of this permit is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the ESA and 15 CFR part 904 [Civil Procedures].

25. All permits are subject to suspension, revocation, modification, and denial in accordance with the provisions of subpart D [Permit Sanctions and Denials] of 15 CFR part 904.

F. Signatures

D. Robert Lohn — Date
Regional Administrator

Tom Dresser — Date
Public Utility District No. 2 of Grant County

Ross Fuller — Date
Washington Department of Fish and Wildlife

Paul Ward — Date
Confederated Tribes and Bands of the Yakama Nation

G. References

GPUD (Public Utility District No. 2 of Grant County). 2006. Application for Permit for Scientific Purposes and to Enhance the Propagation or Survival of Listed Species Under the Endangered Species Act of 1973. Grant PUD. Ephrata, Washington.

EPA (Environmental Protection Agency). 1999. National Pollutant Discharge Elimination System (NPDES) Permit Program. Available at *http://www.epa.gov/owm/gen2.htm*.

NMFS (National Marine Fisheries Service). 1996. Juvenile fish screen criteria for pump intakes. Available at *http://www.nwr.noaa.gov/1hydrop/pumpcrit1.htm*.

NWIFC (Northwest Indian Fisheries Commission) and WDFW (Washington Department of Fish and Wildlife). 1998. Salmonid disease control policy of the fisheries Co-managers of Washington state. Formally adopted on March 17, 1998. Fish Health Division, Hatcheries Program. Washington Dept. Fish and Wildlife, Olympia, Washington.

PNFHPC (Pacific Northwest Fish Health Protection Committee). 1989. Model comprehensive fish health protection program. 19 pp.