

**Tribal 4(d) Rule  
Evaluation and Recommended Determination**

**Title:** Tribal Resource Management Plan for Confederated Tribes of the Colville Reservation Fishery, Hatchery, Predator Control, and Research Monitoring and Evaluation Activities

**Plan Submitted by:** The Confederated Tribes of the Colville Reservation

**ESU/DPS:** Upper Columbia River Spring Chinook Salmon ESU  
Upper Columbia River Steelhead DPS

**NMFS Tracking  
Number:** WCR-2014-388

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## **1 EVALUATION**

NOAA's National Marine Fisheries Service (NMFS) issued a final Endangered Species Act (ESA) 4(d) Rule (Tribal 4(d) Rule) adopting regulations (50 CFR 223.204) to conserve listed salmon and steelhead (NMFS 2005). Under the Tribal 4(d) Rule, ESA section 9 take prohibitions for listed species do not apply to activities described in a Tribal Resource Management Plan (TRMP) provided that the Secretary of Commerce has taken public comment and determined that implementing and enforcing the TRMP will not appreciably reduce the likelihood of survival and recovery of listed salmon and steelhead. Listed species include the Endangered Upper Columbia River Spring Chinook Salmon Evolutionary Significant Unit (ESU), and the Threatened Upper Columbia River Steelhead Distinct Population Segment (DPS), as well as the designated Critical Habitat for each.

The Confederated Tribes of the Colville Reservation (CTCR) have provided NMFS with a TRMP (CTCR 2014) and associated addenda (CTCR 2016a; CTCR 2016b; CTCR 2016c) proposed for implementation in the Columbia River mainstem from Chief Joseph Dam to the confluence of the Okanogan River and within the Okanogan Basin. As per the Tribal 4(d) rule, NMFS consulted with the applicants during the development of the TRMP through government-to-government and technical work group meetings to provide technical assistance, to exchange information and discuss what would be needed to conserve the listed species, and to be consistent with legally enforceable tribal rights and the Secretary's trust responsibilities to the Federally Recognized Tribes. NMFS determined that the TRMP was sufficient (Jones Jr. 2014) for NMFS to proceed in its evaluation of plan effects on ESA-listed Upper Columbia Spring Chinook salmon and Upper Columbia River Steelhead.

Because the TRMP describes actions involving both fisheries and hatchery activities (with associated monitoring and evaluation), we will evaluate the TRMP using criteria that address fishery plans and hatchery plans as described in the 4(d) rule for salmon and steelhead. Specifically, the following discussion evaluates how the submitted plans address the criteria similar to sections 50 CFR 223.203(b)(4) and (5) in arriving at a determination under the Tribal 4(d) rule. We will also apply the criteria from 50 CFR 223.204, which requires the Secretary to determine whether implementation of the plan will not appreciably reduce the likelihood of survival and recovery of listed salmonids, and that the plan specifies procedures by which the Tribe will enforce its provisions. Applying the criteria from Limits 4 and 5 of the 4(d) rule will assist in making the required determinations.

## **2 REVIEW CRITERIA APPLICABLE TO THE ENTIRE TRMP**

In this section NMFS will review the applicable criteria from the Tribal 4(d) Rule, and will do so in part by relying on the criteria supplied by Limits 4 and 5 of the general 4(d) Rules, which limits describe the contents of a fishery and hatchery plan. By reviewing the TRMP for consistency with these Limits, NMFS will be better able to make the required determinations pursuant to the Tribal 4(d) rule, since these Limits were created to establish the necessary contents of a fishery or hatchery plan that can be reasonably evaluated for its impacts to threatened salmonids.

## 2.1 Clearly defines scope and area of impact

### Criterion 4(i)

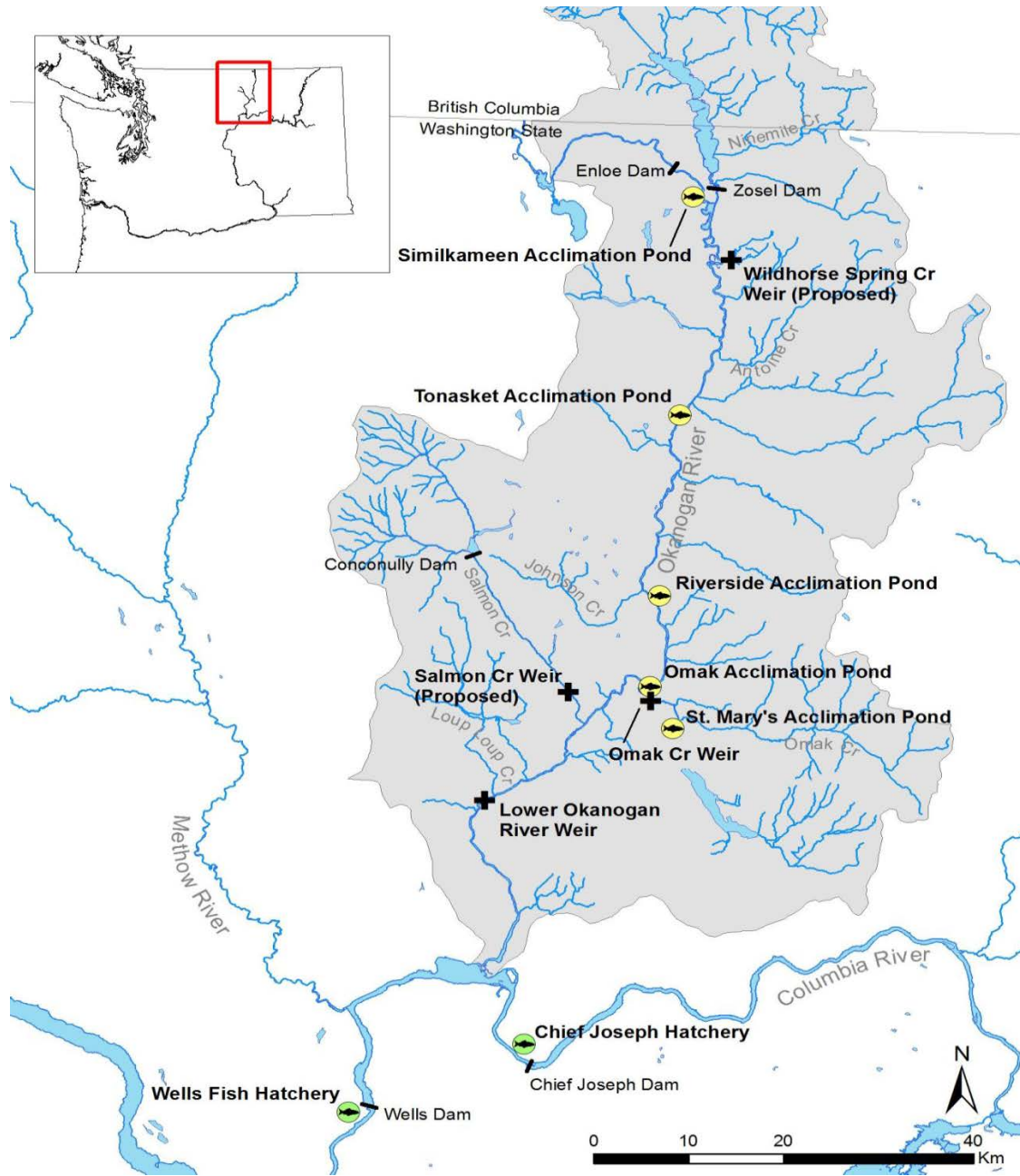
The action area scope for this TRMP includes all the Upper Columbia River above Wells Dam (i.e., Wells Pool or Lake Pateros) north to Chief Joseph Dam, including the Okanogan River Basin within Washington State (Figure 1; Figure 2). The majority of activities described in the TRMP would occur within the bounds of the Colville Reservation and North Half (Figure 2). The North Half is bounded to the east by the Columbia River/Lake Roosevelt, the north by the 49<sup>th</sup> parallel, the west by the Okanogan River and Lake Osoyoos, and the south by the current Colville Reservation northern boundary line. Some fish and habitat monitoring activities may occur beyond these geographic boundaries at Wells Dam and within the former Moses Columbia Reserve, Washington State lands, and British Columbia.

**Table 1. Proposed activities included in the TRMP. CJ = Chief Joseph.**

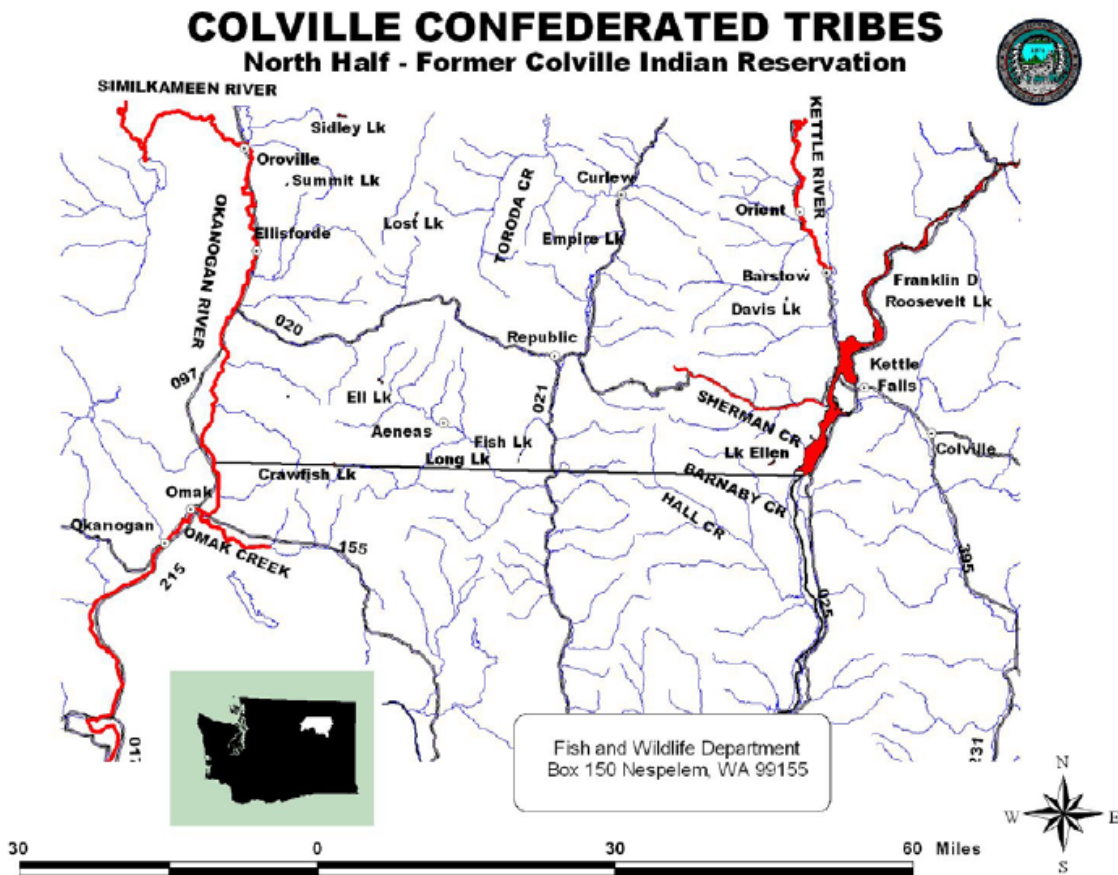
Activity Category	Specific Activity	Target Species	Activity Location <sup>1</sup>
Fishery	Non-selective fishery	summer/fall Chinook and sockeye	CJ Dam tailrace, Okanogan River
	Selective fisheries	spring and summer/fall Chinook and steelhead	Okanogan River, Columbia River including the CJ Dam tailrace
	Resident fisheries	Largemouth and smallmouth bass; burbot; walleye; whitefish; crappie; catfish; perch; sunfish; trout	Okanogan and Columbia Rivers
Hatchery	Broodstock collection	Spring and summer/fall Chinook; steelhead	Okanogan and Columbia Rivers
	Adult management	summer/fall Chinook; steelhead	Okanogan and Columbia Rivers
		Spring Chinook	Columbia River
	Juvenile rearing	Spring and summer/fall Chinook	CJ Hatchery
	Juvenile acclimation and release	Spring Chinook	CJ Hatchery
		Summer/fall Chinook	CJ Hatchery and Okanogan subbasin
Research, Monitoring and Evaluation	Adult and juvenile salmon and steelhead	spring and summer/fall Chinook; steelhead	Okanogan and Columbia Rivers
	Evaluate sturgeon in Wells pool	Sturgeon	Wells pool
Predator Control	Predator fish capture and removal	Walleye; Smallmouth bass; Pikeminnow Northern Pike	Okanogan and Columbia Rivers

Activity Category	Specific Activity	Target Species	Activity Location <sup>1</sup>
Steelhead Conservation	Kelt Reconditioning	Steelhead	Okanogan Basin

<sup>1</sup>None of the activities in the Columbia River extend downstream of Wells Pool.



**Figure 1. The Okanogan River Basin and the portion of the mainstem Columbia River (Chief Joseph Dam to Wells Dam) associated with activities in this TRMP.**



**Figure 2. A portion of the CTCR reservation and North Half. The northern boundary of the current Colville Reservation is depicted on the map near Crawfish Lake.**

## 2.2 Clearly states goals and performance indicators

### Criteria 4(i) and 5(i)(A)

According to the TRMP, the program goals are to:

- Implement monitoring and evaluation for tracking the status of ESA-listed fish populations and the effects of the hatchery programs
- Contribute to the recovery of the steelhead populations in the Columbia River mainstem and Okanogan Basin
- Ensure substantial progress towards recolonization and transition to a local steelhead broodstock within the Okanogan Basin
- Implement Grant County Public Utility District’s mitigation obligation for a 100,000 steelhead smolt release within the Columbia River mainstem and Okanogan Basin
- Fulfill federally protected reserved fishing rights for salmon and steelhead populations within the Columbia River mainstem and Okanogan Basin by supporting tribal



commercial, recreational, and tribal ceremonial and subsistence fisheries when consistent with conservation objectives

- Use the TRMP as an overview document for all CTCR fisheries-related activities in the U.S. portion of the anadromous zone of the Columbia River mainstem above Wells Dam and the Okanogan Basin
- Provide fishing opportunities for citizens of Washington State within the Columbia River mainstem and Okanogan Basin

For the hatchery program, performance objectives derived from the Northwest Power Planning Council<sup>1</sup> Artificial Production Review (Northwest Power Planning Council 2001), and performance indicators that would be used to gauge compliance with each objective are summarized in Table 2. Thus, the TRMP clearly states goals and performance indicators.

**Table 2. TRMP program performance standards and indicators.**

Standard	Indicator
Produce fish for harvest while minimizing excess hatchery returns	<ul style="list-style-type: none"> <li>• Measure adult harvest and escapement</li> <li>• Mass marking to allow selective fisheries</li> </ul>
Supplement natural population	<ul style="list-style-type: none"> <li>• Increasing proportion of natural-origin fish</li> <li>• Increasing natural smolt levels</li> </ul>
Proper broodstock collection and management	<ul style="list-style-type: none"> <li>• Collected randomly throughout the run</li> <li>• Weir/trap checked regularly</li> <li>• Proportion of natural-origin fish</li> <li>• Designated mating scheme, sex ratio</li> <li>• Adheres to spawning guidelines (Seidel 1983)</li> <li>• Stray rates</li> </ul>
Meet hatchery juvenile production goal	<ul style="list-style-type: none"> <li>• Egg to fry or smolt survival is as expected</li> <li>• Release target</li> </ul>
Minimize interactions of releases with natural-origin fish	<ul style="list-style-type: none"> <li>• Juveniles released at sea-water ready life stages</li> <li>• Size and time of release accounts for listed stocks</li> </ul>
Life history characteristics of the natural population do not change	<ul style="list-style-type: none"> <li>• Stable life history patterns of natural fish</li> <li>• Age and size data for natural population</li> </ul>
Natural population genetic variation does not change due to artificial propagation	<ul style="list-style-type: none"> <li>• Proportion of naturally spawning hatchery fish</li> <li>• Genetic assessment</li> </ul>
Limit pathogen amplification and transmission	<ul style="list-style-type: none"> <li>• Follows co-manager fish health policy (NWIFC and WDFW 2006)</li> </ul>

<sup>1</sup>Now the Northwest Power and Conservation Council. ERD Colville TRMP

## **2.3 Utilizes the concepts of viable and critical salmonid population thresholds**

### **Criteria 4(i)(A, B) and 5(i)(B)**

The TRMP utilizes the concepts of “viable salmonid populations” (VSP) thresholds. NMFS has developed specific guidance for analyzing the status of salmon and steelhead populations in a VSP paper (McElhany et al. 2000). The VSP approach considers four attributes, the abundance, productivity, spatial structure, and diversity of each population (natural-origin fish only), as part of the overall review of a species’ status, as covered in the TRMP

#### **Chinook Salmon**

The Upper Columbia River (UCR) Spring Chinook Salmon ESU includes all naturally spawned populations of spring Chinook salmon in all river reaches accessible to spring Chinook salmon in Columbia River tributaries upstream of Rock Island Dam and downstream of Chief Joseph Dam in Washington. It also includes six artificial propagation programs: the Twisp River, Methow-Chewuch Composite, Winthrop National Fish Hatchery (Winthrop NFH), Chiwawa River, Nason Creek, and White River spring-run Chinook hatchery programs. The Interior Columbia Technical Recovery team (ICTRT) identified 3 extant populations (Wenatchee, Entiat, and Methow River basins) in one Major Population Grouping (MPG) of UCR spring Chinook salmon. The Okanogan River is accessible to spring Chinook salmon, but they are believed to be functionally extinct in that system and are not required for recovery of the ESU. The U.S. portion of the Okanogan population is considered of basic size, and thus has a minimum abundance threshold of 500 natural-origin spawners (ICTRT 2007). However, the CTCR recently began a reintroduction program in the Okanogan Basin for spring Chinook salmon (NMFS 2014). The TRMP claims that this may potentially provide more options for recovery scenarios in the future, and may contribute to an expansion of the spatial structure, diversity and increase abundance and productivity for the ESU. According to the TRMP, these are not anticipated to reduce the abundance, productivity, spatial structure or diversity of spring Chinook salmon in the Okanogan Basin due to their functionally extirpated status (Sections 4 and 7 of the TRMP).

#### **Steelhead**

This UCR Steelhead DPS includes all naturally spawned anadromous *O. mykiss* (steelhead) populations below natural and manmade impassable barriers in streams in the Columbia River Basin upstream from the Yakima River, Washington, to the US-Canada border (Wenatchee, Entiat, Methow, and Okanogan), as well as six artificial propagation programs: the Wenatchee River, Wells Hatchery, Winthrop NFH, Omak Creek and the Ringold steelhead hatchery programs. Two additional MPGs likely existed; the tributaries that supported them are now cut off from anadromous access by Grand Coulee and Chief Joseph Dams (ICTRT 2007). The Recovery Plan identifies that the four extant populations should be at low risk (no more than a 5% risk of extinction in 100 years), and the Crab Creek population is excluded. Therefore, the Okanogan population must meet its viability criteria for the DPS to achieve its recovery criteria. The minimum abundance threshold for a steelhead population of intermediate size (US portion only) is 500 natural-origin spawners (ICTRT 2007). Abundance has increased since the last status review and the productivity of natural-spawners has remained stable (NWFSC 2015). According

to the TRMP, the use of 100 percent local broodstock in the steelhead program will further assist the population in achieving viability through an increase in all four VSP attributes; abundance, productivity, spatial structure and diversity (Sections 4 and 7 of the TRMP).

Thus, the TRMP does utilize the concepts of viable and critical population thresholds.

## **2.4 Adequate monitoring and evaluation exist to detect and evaluate the success of the TRMP and any risks potentially impairing the recovery of the listed ESU**

### **Criteria 4(i)(E) and 5(i)(H)**

The TRMP includes the following monitoring and evaluation actions:

- Spawning ground/redd surveys and hatchery escapement to determine total escapement and percent of hatchery-origin spawners spawning naturally
- The number and distribution of fish to determine the status of the natural- and hatchery-origin salmon returns and harvest relative to goal levels
- Abundance, timing, age class, sex ratio, and fish health condition collected for broodstock to assess run traits of the target populations
- Water withdrawal and effluent discharge to ensure compliance with permitted levels
- Monitoring of broodstock collection, egg take, fish survival rates, and smolt release levels to determine compliance with program goals
- Fish health monitoring and reporting in compliance with fish health policies
- Collection of rearing and out-migrating juveniles to estimate production
- Using tags to estimate survival and migration behavior
- Sampling of natural- and hatchery-reared adults and juveniles for genetic analysis of heterozygosity, loss of rare alleles or change in allele frequencies

These activities are adequate for detecting and evaluating the success of the TRMP and any risks.

## **2.5 Provides for evaluating data and making any revisions that data show are needed.**

### **Criteria 4(i)(F) and 5(i)(I)**

The TRMP provides for evaluating data and making any revisions that the data show are needed. Data collected relating to TRMP performance and effects would be evaluated by the CTCR to determine whether performance standards were met. Annual reports for the programs assembled by the CTCR would be reviewed by NMFS to document program results, and to determine if adjustments to the TRMP's assumptions and management strategies are warranted. Any changes would be incorporated into the TRMP for implementation the following year. Thus, the TRMP outlines a clear process for evaluating data and making revisions to the proposed activities.

## **2.6 NMFS provides written concurrence of the TRMP, which specifies the implementation and reporting requirements.**

### **Criteria 4(iv) and 5(i)(J)**

After completion of the public review and comment period for this proposed evaluation and pending determination document, and after consulting with itself under section 7 of the ESA, NMFS will make a determination regarding the adequacy of the TRMP. If the determination is made that implementing and enforcing the plan will not appreciably reduce the likelihood of survival and recovery of the ESA-listed species, NMFS will notify the managers in writing, and specify any necessary implementation and reporting requirements.

## **2.7 Consistent with plans and conditions set within any Federal court proceeding with continuing jurisdiction over tribal harvest allocations.**

### **Criteria 4(i)(I), 5(i)(F), and 5(i)(K)**

The TRMP provides information that are consistent with plans and conditions set within any Federal court proceeding with continuing jurisdiction over tribal harvest allocations. The TRMP is one component of an effort to preserve and recover to a fishable status listed Chinook salmon, steelhead, and other, non-listed, anadromous salmon populations in the Okanogan region. The ESU recovery plans for Upper Columbia River spring Chinook salmon and steelhead (Upper Columbia Salmon Recovery Board 2007) has hatchery and habitat components, and includes monitoring, research, and restoration recommendations to complement artificial production. The hatchery actions proposed in the TRMP are included within, and consistent with, these recovery plans.

Two main legal processes control fisheries in the ocean (Pacific Salmon Treaty) and mainstem Columbia River (*U.S. v. Oregon*). The Pacific Salmon Treaty (PST) was signed by Canada and the U.S. in 1985 and provides the framework through which the two countries work together to conserve and manage Pacific salmon fisheries in the ocean. Unlisted summer/fall Chinook salmon from the UCR are the only species from the Action Area that are affected in ocean fisheries.

Many of the fisheries and hatchery programs in the Columbia River are influenced by the *U.S. v. Oregon* management agreement. In his 1969 *U.S. v. Oregon* decision, Judge Robert C. Belloni ruled that state regulatory power over Indian fishing is limited because, in 1855 treaties between the United States and the Nez Perce, Umatilla, Warm Springs, and Yakama tribes, these tribes reserved the rights to fish at "all usual and accustomed" places whether on or off reservation. In 1974, Judge George Boldt decided in *U.S. v. Washington* (384 F. Supp. 312) that Belloni's "fair and equitable share" was 50 percent of all the harvestable fish destined for the tribes' traditional fishing places. The following year, Judge Belloni applied the 50/50 standard to *U.S. v. Oregon* and the Columbia River.

The CTCR is an Executive Order tribe with rights to fish and hunt within the exterior boundaries of the Colville Reservation, which includes the Columbia and Okanogan rivers where they border said reservation. The CTCR is not a party to the *U.S. v. Oregon* agreement. However, the upper

Columbia River fisheries are significantly impacted by harvest levels agreed to in *U.S. v Oregon* for directed Tribal and non-Tribal fisheries in the lower Columbia River in fisheries management zones 1-6. CTCR fisheries outside of the reservation are co-managed with WDFW in accordance with the most recent management agreement in *U.S. v Oregon*.

The TRMP clearly considers other plans and conditions set within a Federal court proceeding with continuing jurisdiction over tribal harvest allocations, and based on the information from the plan summarized above, is consistent with those plans and conditions.

### **3 REVIEW CRITERIA APPLICABLE TO THE HATCHERY COMPONENTS**

#### **3.1 Taking into account health, abundances, and trends in the donor population, hatchery broodstock collection programs reflect appropriate priorities**

##### **Criterion 5(i)(C)**

The TRMP accounts for health, abundances, and trends in the donor population and states that the hatchery broodstock collection programs reflect appropriate priorities. According to the TRMP, the prioritized purpose of a broodstock collection program using listed fish is to re-establish an indigenous salmonid population for conservation purposes, including restoration of similar at-risk populations within the same ESU, and reintroduction of at-risk populations to under-seeded habitat. Under this 4(d) rule criterion, listed salmonids may be intentionally taken for broodstock only if:

1. The donor population is currently at or above the viable threshold and the collection will not impair its function, or
2. The donor population is not currently viable but the sole objective is to enhance the propagation or survival of the listed ESU, or
3. The donor population is shown with a high degree of confidence to be above the critical threshold although not yet functioning at viable levels, and the collection will not appreciably slow attainment of viable status for that population.

As stated in the TRMP, this is consistent with this prioritized purpose, the Okanogan steelhead program would be operated with the primary goal of creating a viable, self-sustaining steelhead population in the Okanogan Basin. The broodstock collection methods will enhance the survival of the population (and, by extension) the ESU with steps specifically intended to maintain the population's genetic integrity. This includes a transition from 20% natural-origin broodstock from the Okanogan River and 80% broodstock from the Wells hatchery program to 100% natural-origin broodstock from the Okanogan River within the next 10 years.

The TRMP states that no listed salmonids are taken for broodstock for the CTCR summer/fall and spring Chinook salmon programs.

Based on the above information, the TRMP has indicated that broodstock collection for these programs reflect appropriate priorities.

**3.2 Includes protocols to address fish health, broodstock collection and spawning, juvenile rearing and release, disposition of hatchery fish, and catastrophic risk management**

**Criterion 5(i)(D)**

The TRMP includes protocols to address fish health, broodstock collection and spawning, rearing and release of juveniles, disposition of hatchery adults, and catastrophic risk management.

*Fish Health:* All of the hatchery programs would be operated in compliance with the co-manager and other related fish health policies (IHOT 1995; NWIFC and WDFW 2006; Pacific Northwest Fish Health Protection Committee (PNFHPC) 1989). The policies are designed to limit the spread of fish pathogens between and within watersheds by regulating the transfers of eggs and fish. The policies also outline standard fish health diagnosis, maintenance, and hatchery facility sanitation protocols to reduce the risk of pathogen amplification and transmission within the hatchery and to fish in the natural environment during broodstock collection and mating as well as fish incubation, rearing, and release. Fish health specialists and pathologists would provide fish health management support and diagnostic fish health services.

*Broodstock Collection and Spawning:* To minimize the risk of intentional artificial trait selection, broodstock are collected over the course of the run for each species under propagation (NMFS 2012). Both natural and hatchery origin fish are used, consistent with the purpose of an integrated program. Any non-target natural-origin fish would be released back into the natural environment.

**Table 3. Number of broodstock collected and spawning approach.**

Program	# Collected	Collection Method	Spawning Approach
Okanogan steelhead	58	Weirs (Wildhorse Springs, Omak and Salmon Creeks), Wells Dam	Factorial
Summer/fall Chinook salmon	1,206 (656 NOR, 550 HOR)	Purse seine, weir, tangle, hoop and dip nets, Chief Joseph hatchery ladder, Wells Dam	Pairwise
Non-listed spring Chinook salmon	640	Leavenworth National Fish Hatchery	Pairwise

There are three broodstock categories for the Okanogan steelhead program, with broodstock managed separately for each: natural-origin, locally-adapted hatchery-origin, and Wells hatchery-origin. Factorial spawning within each broodstock category is proposed (e.g., 2 x 2; eggs from a single female are fertilized by multiple males and a single male fertilizes multiple females) because it conserves genetic diversity by limiting the risk of a sterile adult (Busack and Knudsen 2007). If males are limiting, one male may be used to fertilize eggs from two females (i.e., 2 x 1 cross).

*Rearing and Release of Juveniles:* Listed fish are only proposed for rearing and release from the Okanogan steelhead program in this TRMP. Therefore, our discussion of specific rearing protocols only pertains to this program. All fish would be released as migrating smolts to ensure rapid emigration downstream through watershed areas where interactions with rearing listed fish may occur. All Chinook salmon and steelhead would receive a mark or internal tag prior to release to allow for their differentiation from natural-origin salmon or steelhead. Release numbers, life stage, mark/tag types, and dates for all hatchery programs are detailed in Table 4.

Fertilization, eying, and incubation of Okanogan steelhead takes place at Wells Hatchery; the overall effects of operation of Wells Hatchery will be addressed in a separate analysis. Once fish reach a size of 75 to 85 fish per pound (fpp), they are transferred to the St. Mary’s acclimation site in Omak Creek or to a potential variety of direct release sites within the Okanogan Basin (e.g., Salmon, Antoine, and Johnson Creeks).

**Table 4. Fish release details from Chief Joseph (CJ) Hatchery and into the Okanogan Basin.**

Program	Program Component	Release #	Release Location	Life Stage	Mark	Release Date
Okanogan steelhead	Integrated	100,000	Okanogan Basin	Yearling	100% ad-clipped <sup>1</sup>	late April-early May
CJ summer/fall Chinook	Segregated	500,000	CJ Hatchery	Yearling	100% ad-clipped	mid April-mid May
		400,000		Subyearling	100% ad-clipped	late May-early June
	Integrated	800,000	Okanogan Basin	Yearling	100% ad-clipped	mid April-mid May
		300,000		Subyearling	100% ad-clipped	late May-early June
CJ spring Chinook salmon	Segregated	700,000	CJ Hatchery	Yearling	100% ad-clipped	April- mid May

<sup>1</sup>Except wild x wild crosses, which have a PIT tag and/or coded-wire tag.

*Disposition of Hatchery Adults:* Surplus hatchery adults and spawned carcasses will be distributed to tribes and public entities if suitable for human consumption, used for supplementing spawners in under-escaped areas (e.g. Upper Omak Creek), or used for nutrient enhancement.

*Catastrophic Risk Management:* Measures taken to reduce the likelihood of catastrophic loss of fish at the hatchery facilities (Chief Joseph Hatchery and various Acclimation Ponds) include:

- Alarms for low water and power loss
- Hatchery personnel on station at Chief Joseph Hatchery
- Fish checked daily at acclimation sites

### **3.3 Evaluates, minimizes, and accounts for the propagation programs' genetic and ecological effects on natural populations**

#### **Criterion 5(i)(E)**

The TRMP evaluates, minimizes, and accounts for the propagation programs' genetic and ecological effects on natural populations.

#### **Genetic effects**

Artificial fish production may result in a loss of within-population genetic diversity (the reduction in quantity, variety and combinations of alleles in a population), outbreeding depression (loss in fitness caused by changes in allele frequency or the introduction of new alleles) and/or hatchery-influenced selection (Busack and Currens 1995). Genetic effects of Summer/Fall Chinook Salmon in the Upper Columbia on the two listed species are unlikely because these species do not interbreed. Therefore, the discussion of genetic effects in the TRMP focuses on the propagation of spring Chinook salmon and steelhead. In addition, this discussion of genetic effects are related to broodstock collection and composition only for the segregated spring Chinook program at CJ Hatchery.

The broodstock for the Okanogan steelhead program are currently a combination of steelhead locally-adapted to the Okanogan Basin and returns to Wells Hatchery. Steelhead in both locations are part of the same DPS and are not genetically distinct. The program aims to increase the natural-origin steelhead population in the Okanogan by transitioning to 100 percent locally-adapted broodstock with a PNI target of 0.67. The TRMP states the following information to potentially minimize genetic risks to listed salmon and steelhead populations within the Okanogan Basin:

- Broodstock are collected throughout the adult return to target full representation of run timing, return location, age class, and sex ratio
- Natural-origin broodstock collection will not exceed 33% of the natural-origin returns
- Factorial mating provides an opportunity for all fish contribute to the production of progeny to retain genetic diversity
- Spawning distribution is monitored to assess proportions of hatchery- and natural-origin Chinook salmon and straying
- Juveniles are acclimated at their site of release when possible to decrease straying potential. Acclimation of hatchery juveniles before release increases the probability that hatchery adults will “home” back to the release location, reducing their potential to stray into non-target natural spawning areas (Dittman and Quinn 2008)

The spring Chinook salmon stock reared at Chief Joseph Hatchery originated from un-listed Carson stock fish propagated at the Leavenworth National Fish Hatchery. The program is operated as an isolated harvest program, and contribution to natural spawning is not an objective. The TRMP states the following information that may potentially minimize and account for genetic risks to listed spring Chinook salmon:



- Uniquely marking fish to identify them as hatchery fish to ensure rejection from unmarked natural-origin fish in broodstock
- Monitoring straying of these fish into natural spawning areas by tagging portions of releases and by utilizing spawning estimate information from Washington Department of Fish and Wildlife.
- Releasing juveniles only from Chief Joseph Hatchery to minimize straying into the Okanogan Basin

### **Ecological effects**

The primary ecological risks to natural-origin salmon and steelhead populations posed by salmon and steelhead hatchery programs are increased pathogen transfer, competition, and predation (NMFS 2012). All hatchery actions would be implemented in accordance with the co-manager and other applicable fish health policies (NWIFC and WDFW 2006; USFWS 2004), to account for and minimize the risks of pathogen amplification and transmission.

The TRMP also evaluates the risks of competition and predation, and has incorporated the following measures to minimize risks associated with program implementation:

- Juveniles are released in multiple locations to prevent a disproportionate amount of competition and predation in one area
- All fish produced would be released as migration-ready smolts to foster rapid emigration seaward, which should limit competition with natural-origin fish
- Allows for volitional release of steelhead and places any non-migrant steelhead downstream below natural-origin rearing areas to reduce effects of residualism

### **3.4 Adequate artificial propagation facilities exist to properly rear progeny, maintain population health and diversity, and avoid hatchery-influenced selection**

#### **Criterion 5(i)(G)**

The TRMP states information that artificial propagation facilities exist to properly rear progeny, maintain population health and diversity, and avoid hatchery-influenced selection. Only the Okanogan steelhead program rears listed fish. Thus, the TRMP's discussion of this criterion is limited to this one program. The hatchery facilities used to implement the programs have adequate surface and groundwater sources, fish trapping and holding facilities, egg incubation and fish rearing vessels, and fish acclimation and release facilities to ensure proper rearing. As indicated in Table 4, the program has a demonstrated record of maintaining high egg-to-fish-release survival rates, consistent with goal rates identified for well-run hatchery programs (Fuss and Ashbrook 1995).

## 4 REVIEW CRITERIA APPLICABLE TO IMPLEMENTATION OF FISHERIES

### 4.1 Sets escapement objectives or maximum exploitation rates

#### Criterion 4(i)(C)

The effects of the TRMP on listed natural-origin species will be covered in Subsection 4.2.

Escapement objectives are detailed below in Tables 5 through 7 by species except for the selective steelhead fishery in the Okanogan Basin. This fishery will only be implemented as a conservation tool to target hatchery fish in excess of broodstock and escapement needs. The current escapement objective for the Okanogan River is 1050 total hatchery and natural spawners (plus 58 broodstock). Once 1108 steelhead are anticipated to be returning to the Okanogan River, tribal fisheries may be implemented to remove excess hatchery fish. Columbia River conservation fisheries may be implemented to remove hatchery fish in excess of broodstock and spawn escapement objectives as agreed to by fishery managers and approved by NMFS.

**Table 5. Tribal and recreational allocations for selective harvest of Chief Joseph Hatchery spring Chinook salmon above Wells Dam<sup>1</sup> (CCT and WDFW 2007; Table 4).**

Wells Dam Ad-Clip Chinook Count <sup>2</sup> April 1 – June 30	Maximum CTCR Ad-Clip Chinook Harvest (%)	Maximum Recreational Ad-Clip Chinook Harvest (%)	Escapement/broodstock (%; minimum = 640)
< 1,000	30	0	70
1,001 – 1,500	40	0	60
1,501 – 2,000	50	0	50
2,001 – 4,000	50	20	30
4,001 – 6,000	60	20	20
6,001 – 10,000	70	20	10

<sup>1</sup>This table was developed before the proposal for a non-essential experimental population of spring Chinook in the Okanogan under section 10(j) of the ESA, which does not include directed harvest.

<sup>2</sup>Adjustment to the Wells Dam spring Chinook salmon count possible to account for ad-clipped fish from Methow releases.

**Table 6. Number of summer Chinook salmon available for harvest by CTCR fisheries (CCT and WDFW 2007; Tables 2 and 2a).**

Columbia River mouth run size	Total fish available for harvest <sup>1</sup>	Harvest below PRD	Harvest above PRD	% of non-treaty harvest above PRD reserved for the CTCR
0 – 29,000	1,450 – 1,740	0	1,450 – 1,740	90
29,001 – 50,000	1,500 – 10,500	150 – 1,050	1,350 – 9,450	70
50,001 – 60,000	10,500 – 14,250	1,050 – 4,275	9,450 – 9,975	50
60,001 – 75,000	14,250 – 19,875	4,275 – 6,956	9,975 – 12,919	50

75,001 – 100,000	19,875 – 29,250	6,956 – 11,700	12,919 – 17,550	50
> 100,000	>29,250 <sup>2</sup>	>11,700	>17,550	>55

<sup>1</sup>Derived from the summer Chinook salmon fishery framework in the U.S. v Oregon management agreement (NMFS 2008).

<sup>2</sup>The total number of harvestable fish at run sizes greater than 50,000 is to be determined by the following formula: (0.75 \* (runsize-50,000)) + 21,000 (US v Oregon Agreement).

**Table 7. Non-treaty sockeye harvest rates for the Columbia River (CCT and WDFW 2007).  
PRD = Priest Rapids Dam.**

Sockeye run at mouth of Columbia River	Harvest below PRD (%)	Wanapum band harvest (%)	Recreational harvest above PRD of Okanogan origin (%)	CTCR harvest of Okanogan origin (%)
<50,000	< 1	< 1	< 1	3
50,001 – 75,000	< 1	< 1	< 1	5
75,001 – 100,000	1	< 1	1	8
100,001 – 150,000	3	1	2	10
150,001 – 200,000	5	1	2	Excess of escapement <sup>1</sup>

<sup>1</sup>This escapement value is an agreed to value by all parties to the current and any new fishery agreement.

#### **4.2 Rationale demonstrating that the harvest management strategy will not appreciably reduce the likelihood of survival and recovery of the ESU in the wild, and restrictions that minimize take of listed species**

##### **Criteria 4(i)(D) and 4(i)(H)**

- Harvest efforts for spring Chinook salmon and steelhead will focus on marked hatchery-fish.
- Listed spring Chinook salmon and steelhead encountered in any fishery will be released and the estimated incidental mortality tallied against the total proposed take limits (Table 9 and Table 10).
- The Pacific Salmon Commission oversees the implementation of the Pacific Salmon Treaty between the U.S. and Canada to ensure conservation goals are achieved.
- Hook-and-line snag fishery below Chief Joseph Dam that targets summer/fall-run Chinook and sockeye salmon occurs from July 1 to mid-November, with little overlap with natural-origin spring Chinook salmon.
- The CTCR has experimented with selective fishing gear since 2007 to test the feasibility and evaluate the costs and effectiveness of 12 different live-capture fishing gears. Each of the methods continue to be evaluated with the purse seine, weir, ladders, beach seine, tangle net, hoop net, and dip net having the strongest potential for catching fish and allowing non-target species to be released with the lowest potential for unintended mortality.
- Associated with each gear type/method is a unique estimated release mortality rate used to

calculate the incidental mortality attributable to harvest (Table 8).

- The resident fisheries occur above Chief Joseph Dam, outside of current anadromous waters. This TRMP proposes to continue coordination with enforcement personnel to monitor whether any anadromous fish are caught by anglers targeting resident fish in the anadromous area, and evaluate any potential impacts that may result.

**Table 8. Mortality estimates for all species of fish fish handled and released from specific harvest gears types in the Okanogan Basin and Columbia River above Wells Dam by the CTCR.**

Gear	Timing	Estimated Release Mortality (%) <sup>1</sup>
Purse seine	July-October	1
Snag fishery (hooked but not landed)	July-November	50
Tangle net	May-June	5
	July-Sept	10
	Oct-Nov	5
Hook and line (caught and released)	May-June	5
	July-Sept	10
	Oct-March	5
Hoop net and dip net (Columbia River)	May-November	2
Beach seine	July-November	2
Floating fish trap	May-November	2

<sup>1</sup>When temperatures exceed 21°C, the CTCR will contact NMFS to discuss mortality estimate recalculations to reflect additional potential impacts.

**Table 9. Anticipated maximum mortality of adult natural and hatchery-origin steelhead in the Okanogan Basin as a result of the CTCR proposed actions (all fishery, hatchery, RM&E, predator control, and kelt reconditioning). The assumed percent handled is 60%.**

Natural steelhead in the Okanogan basin <sup>1</sup>	Indirect mortality (%)	Hatchery steelhead in the Okanogan basin	Indirect mortality (%)
25-200	4.0	25-200	4.0
201-225	4.2	201-225	4.2
226-250	4.4	226-250	4.4
251-275	4.6	251-275	4.6
276-300	4.8	276-300	4.8
301-400	5.2	301-400	5.2
401-500	5.6	401-500	5.6
501-750	6.5	501-750	6.5
751-1000	8.5	751-1000	8.5
1001-1100	10	1001-1100	10

1100+

12

1100+

12

<sup>1</sup>Based on counts and run-timing at Wells Dam.**Table 10. Anticipated maximum handling and indirect mortality of natural and hatchery-origin adult steelhead in the Columbia River as a result of CTCR proposed actions.**

Natural steelhead at Wells Dam <sup>1</sup>	% of natural steelhead handled	Indirect mortality (%)	Hatchery steelhead at Wells Dam <sup>1</sup>	% of hatchery steelhead handled	Indirect mortality (%)
0-500	12	5	≤1000	17	5
501-1000	15	6	1001-2000	27	8
1001-2000	18	7	2001-3000	31	15
2001-3000	20	8	3001-4000	38	25
3001-4000	25	10	4001-5000	46	38
4001+	>25	12	5000+	50	50

<sup>1</sup>Based on run predictions/counts at Wells Dam.**Table 11. Anticipated<sup>1</sup> handling and mortality of natural and hatchery-origin spring Chinook salmon in the Okanogan Basin as a result of the CTCR proposed actions.**

Natural spring Chinook salmon in the Okanogan basin	% Natural spring Chinook salmon handled	Indirect mortality (%)	Hatchery spring Chinook salmon in the Okanogan basin	% Hatchery spring Chinook salmon handled	Indirect mortality (%)
1-250	10	1.0	1-250	30	3.0
251-500	15	1.5	251-500	40	4.0
501-750	20	2.0	501-750	50	5.0
751-1000	25	2.5	751-1000-	60	6.0
1001+	30	3.0	1000+	70	7.0

<sup>1</sup>There is considerable uncertainty in the values in this table because the Spring Chinook salmon reintroduction program began in 2014, so there are no data regarding the handling and mortality of returning adults.**Table 12. Anticipated handling and mortality of adult natural and hatchery-origin spring Chinook salmon upstream of Wells Dam in the Columbia River as a result of CTCR proposed actions.**

Natural spring Chinook salmon escapement at Wells Dam	Natural spring Chinook salmon handled (%)	Indirect mortality (%)	Adipose present hatchery spring Chinook salmon <sup>1</sup> escapement at Wells Dam	Adipose present hatchery spring Chinook salmon handled (%)	Indirect mortality (%)
1-250	10	1	1-250	20	2
251-500	20	2	251-500	30	3
501-750	30	3	501-750	40	4
751-1000	40	4	751-1000	50	5
1001-2750	50	5	1001-2750	60	6

2751+                      50+                      5+                      |                      2751+                      60+                      6+

<sup>1</sup> Currently, hatchery spring Chinook with conservation objectives in the Upper Columbia have intact adipose fins, a coded-wire tag, and primarily include the Methow Hatchery, Okanogan 10j reintroduction and stray Chiwawa River programs.

**Table 13. Anticipated handling and mortality of ESA-listed, adipose-clipped hatchery-origin spring Chinook salmon upstream of Wells Dam in the Columbia River as a result of CTCR proposed actions.**

# of ESA natural-origin spring Chinook salmon at Wells Dam	Indirect mortality of ESA-listed, adipose clipped spring Chinook from CTCR activities in the Columbia River (%)
0-899	up to 100% adipose clipped Chinook salmon encountered as necessary to achieve a WNFH pHOS of $\leq 0.20$
900-1499	up to 100% adipose clipped Chinook salmon encountered as necessary to achieve a WNFH pHOS of $\leq 0.15$
>1500	up to 100% adipose clipped Chinook salmon encountered as necessary to achieve a WNFH pHOS of $\leq 0.10$

Based on the above information, The TRMP demonstrates the CTCR’s rationale that the harvest management strategy will not appreciably reduce the likelihood of survival and recovery of the ESU in the wild, and proposes restrictions that minimize take of listed species.

**4.3 Provides for (a) effective enforcement, (b) education, (c) coordination among involved jurisdictions**

**Criterion 4(i)(G)**

CTCR has adopted and periodically revises the Colville Law and Order Code (hereinafter “Code”), a comprehensive code enacted for the purposes of strengthening Tribal self-government, providing for the judicial needs of the Reservation, and assuring the maintenance of law and order on the Colville Reservation. Title 4 Chapter 4-1 of the Code specifically addresses fishing, hunting, and general enforcement provisions including both criminal and civil sanctions for enrolled Tribal members and civil infractions, field bonds, and other violations and forfeitures for non-members.

CTCR employs approximately a dozen Natural Resources Enforcement Officers throughout the Reservation, the North Half, and their boundary waters whose duties include, among other things, enforcement of Tribal fisheries laws and regulations and protection of ESA-listed salmonids and their habitats. Several of these officers work under a dedicated Conservation Enforcement Project which has among its objectives: (1) increasing the presence or harvest and habitat enforcement in the waterways within CTCR’s jurisdiction; (2) promoting cooperation and coordinated efforts between the appropriate entities with co-management and shared enforcement responsibilities; and (3) presenting information to resource users. This approach is intended to raise public awareness and participation in enforcement efforts to prevent ESA violations, and inform resource users about the consequences of ESA violations for listed species and for violators.

In addition to the public education and outreach efforts conducted by CTCR's Natural Resources Enforcement Officers, CTCR employs a Public Affairs Specialist responsible for integrating communication strategies with Department goals and objectives, specifically relating to protection of ESA-listed salmonids and their habitat. Thus, the TRMP provides for effective enforcement, education, and coordination among involved jurisdictions.

## **5 EFFECTS OF OTHER TRMP ACTIVITIES ON LISTED SPECIES**

### **Sturgeon Research, Monitoring, and Evaluation (RM&E)**

Artificial substrate mats will be used to monitor white sturgeon embryos (eggs). Sampling for eggs will be conducted in June and July in the Columbia River upstream of the confluence with the Okanogan River to the tailrace of Chief Joseph Dam. Although some disturbance of the substrate could occur during deployment, any salmonid eggs would have already hatched and this gear will primarily be set in the faster flowing areas near Chief Joseph Dam where listed salmonids are not known or expected to spawn and rear.

Three types of gear will be used to capture larval sturgeon: benthic beam trawl, a stationary bottom trawl, and a paired D-ring style benthic plankton net. The CTCR anticipates very little bycatch of listed salmonids because Chinook salmon and steelhead generally migrate at depths <10m, sampling occurs after smolt migration for steelhead and spring Chinook (June–September), the location of the bottom trawl, and plankton D-ring net sampling is upstream of the spawning tributaries.

Small-mesh (5.1 cm stretch mesh) gill nets are generally used for the capture of sub-yearling (age 0) white sturgeon (Burner et al. 2000; Howell and McLellan 2008) to assess natural recruitment and evaluate supplementation efforts. Results of sub-yearling white sturgeon indexing in the lower Columbia River (below Bonneville Dam) and in the lower Columbia River reservoirs (Bonneville, The Dalles, John Day, and McNary) indicated that by-catch of salmonids was relatively low in small-mesh gill nets. For example, between 2008 and 2010 there were three adult Chinook salmon, two juvenile Chinook salmon, and three adult steelhead captured in approximately 450 overnight sets with small-mesh gill nets in the lower Columbia River reservoirs (T. Jones, Oregon Department of Fish and Wildlife, personal communication). Additional efforts to prevent the incidental capture of ESA-listed salmonids in gill nets will include setting gill nets parallel to shore, at depths >10 m, limiting sampling to areas upstream of Wells Dam, and sampling in late August and/or September.

Baited setlines are the primary gear utilized to capture large juvenile (90-110 cm fork length), sub-adult (>110 cm but sexually immature), and adult (>110 cm but sexually mature) sturgeon. Setline sampling would be conducted throughout the Wells Reservoir and potentially in the lower reaches of the Okanogan River. Sampling would be conducted between April and November. This gear has very low by-catch and to CTCR knowledge, has not resulted in the capture of any salmonids. Angling will also be used in June to capture adult white sturgeon using large circle halibut hooks baited with pickled squid to avoid bycatch of salmonids.

### **Predator Assessment and Removal**

The Wells Pool and Okanogan Basin contain many fish, birds, and mammals that prey on juvenile salmonids. Several of these predators are not indigenous to North Central Washington and anthropogenic structures (dams) or effects (inundation, altered flow regime) allow for native and non-native predators to have enhanced foraging opportunities. The extent that these predators and conditions limit the survival of juvenile salmonids in the Okanogan is uncertain, but believed to be important. Therefore, the CTCR intends to implement an assessment to quantify the effects of predation and test particular gear types and protocols for effectiveness of predator removal.

According to the TRMP, the goal for the predator assessment program would be to determine the extent of predation and potential effects on abundance and productivity, for juvenile salmonids in the Okanogan and Columbia Rivers adjacent to the Okanogan Basin. Most effective would be a quantitative assessment of consumption by various predators throughout multiple spatial and temporal strata. At this time, the CTCR Fish and Wildlife Department has not determined a course of action or timeline for predator assessment and removal. However, potential methods include Electroshocking, hook and line, gill net, and set line. The TRMP will be updated and discussions with NMFS initiated to be sure that any predator control measures comply with the ESA.

### **Kelt Reconditioning**

The TRMP states that steelhead recovery may be enhanced through increased productivity from kelt reconditioning efforts through the artificial manipulation of maturation timing and mating strategies. Post-spawned females are either able to restore energy lost from migration and spawning, redevelop a mature ovary, and spawn consecutively, or they will skip a spawning season. As mentioned in the TRMP, the primary goal of reconditioning is to regenerate vigor in kelts in order to increase the chances of repeat spawning, thereby increasing productivity. This is accomplished by capturing, holding, and feeding post-spawned steelhead in an artificial rearing environment until they are ready to be released to spawn again.

The TRMP proposes to capture steelhead kelts in the Okanogan Basin. Kelt will either be trapped in the weir or will be dip-netted from the upstream side of the weir. Female kelts in good body condition will be anesthetized, visually inspected, measured, weighed, given antibiotics, injected with a PIT tag if needed, and will have a genetic sample taken. Steelhead will then be fed a high lipid diet for nine to eleven months before being released into the Okanogan River near the confluence with the Columbia River. While the proposed handling of UCR steelhead is invasive and potentially harmful to individual kelts, this is not a concern because the majority of these fish would not be expected to survive, post-spawning. Moreover, this technique potentially increases repeat spawning and productivity of UCR steelhead in the Okanogan Basin, providing a benefit to the survival, future reproduction, and productivity of ESA-listed UCR steelhead.

## **6 PROCEDURES FOR ENFORCEMENT OF THE TRMP PROVISIONS**

The TRMP meets the criteria in 50 CFR 223.204(b), which requires a plan to specify the procedures by which the Tribe will enforce its provisions. Please refer to the specific provisions



for enforcement as previously discussed in Section 4.3 of this document.

## **7 PUBLIC REVIEW AND COMMENTS**

As required by the Tribal 4(d) Rule, the Secretary published notice of his proposed evaluation and pending determination together with a discussion of the biological analysis underlying that determination on December 15, 2016 (81 FR 90783). We received one public comment letter. These comments are addressed in Section 11, Response to Comments.

## **8 RECOMMENDED DETERMINATION**

Based on this review and evaluation, NMFS' determination is that activities implemented as described in this TRMP would not appreciably reduce the likelihood of survival and recovery of ESA-listed Upper Columbia River Chinook salmon or steelhead. If the Regional Administrator concurs with this pending determination, take prohibitions would not apply to activities implemented in accordance with the TRMP. In addition, the activities in this TRMP would operate in conjunction with on-going habitat restoration and harvest management actions, implemented consistent with recovery plan objectives for listed species, until natural-origin salmon populations that would sustain fisheries are restored.

## **9 REEVALUATION CRITERIA**

NMFS will reevaluate this determination if: (1) the actions described by the TRMP are modified in a way that causes an effect on the listed species that was not previously considered in NMFS' evaluation; (2) new information or monitoring reveals effects that may affect listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may affect NMFS' evaluation.

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## **11 RESPONSE TO COMMENTS**

Response to Washington Department of Fish and Wildlife (WDFW) Comments on the Confederated Tribes of the Colville Reservation Draft Proposed Evaluation and Pending Determination

**Letter dated January 17, 2017**

**Responses correspond to each numbered comment.**

### **1. Comment:**

WDFW commented that there was an error in Table 1, and that the non-selective fishery target species should include hatchery-origin steelhead, and frequently catches natural-origin steelhead.

### **Response:**

Comment noted. Steelhead are not targeted in the proposed non-selective fisheries. Therefore, this was not included in the Proposed Action. Any incidental catch of natural-origin steelhead has been accounted for in the Biological Opinion.

After checking with the Confederated Tribes of the Colville Reservation (CTCR), the initial information included in Table 1 included one error. The project area for the selective steelhead fishery should include the Columbia River Chief Joseph Hatchery Dam tailrace.

### **2. Comment:**

WDFW commented that there is little evidence to suggest that the CTCR reintroduction efforts (10j) will contribute to diversity within the ESU, due to the fact that Methow lineage spring Chinook is used for broodstock. Moreover, they commented that these hatchery efforts might not increase the productivity of natural-origin spawners.

### **Response:**

Comment noted. The reintroduction of the 10j Spring Chinook salmon population is not being covered in this Proposed Action.

In the short-term, diversity may not increase however these fish are likely to adapt and experience genetic drift over the long-term. Both of these processes could result in the introduction or modification of genes.

NMFS has qualified the influence of hatcheries on natural-origin spawner productivity with the term “potentially”.

### **3. Comment:**

WDFW caught a typo that the number of natural-origin steelhead spawners as the minimum abundance threshold for the Okanogan should not be 7,500.

**Response:**

Comment noted, thank you for catching this typo. The minimum abundance threshold has been changed to 500 natural-origin steelhead spawners in the U.S. portion of the Okanogan.

**4. Comment:**

WDFW commented that there is an error in Table 3. They commented that the summer/fall Chinook salmon numbers do not reflect additional adults collected for adult/juvenile releases in Canadian waters of the Okanogan River as proposed by Okanogan Nation Alliance and Department of Fisheries and Ocean Canada or above the blocked area.

**Response:**

Comment noted. However, the activities mentioned in WDFW's comment are not part of the Proposed Action. Moreover, activities taking place in Canadian waters of the Okanogan River are not within NMFS jurisdiction.

**5. Comment:**

WDFW commented that there was a significant lack of detail regarding where under-escaped areas were in regards to the disposition of hatchery adults. In addition, they commented that there is interest in trans-locating adults to areas above the blocked area of the Columbia River as well as juvenile Chinook salmon releases into the Okanogan River in the Canadian portion of the basin.

**Response:**

Comment noted. Historic information regarding under-escaped areas has been added to this section of the PEPD.

At this time, there is no intent to release fish above the Chief Joseph Dam or within the Canadian portion of the Okanogan River as part of the Proposed Action.

**6. Comment:**

WDFW inquired about what kinds of monitoring programs exist to minimize straying in the Okanogan Subbasin and the potential straying effects into other tributaries.

**Response:**

Comment noted. Current monitoring and evaluation efforts exist to estimate and minimize straying outside of the Okanogan Subbasin. CTCR tags portions of their releases with PIT tags. WDFW provides CTCR with spawning estimate information in the other Subbasins including small tributaries. CTCR uses this monitoring information alongside the PIT Tag Information System (PTAGIS) to understand straying in these areas. These calculations are done to make sure that the stray rates for target fish on non-target populations are less than 5%. These efforts are ongoing.

**7. Comment:**

WDFW commented on Table 8 that the reader is not able to evaluate mortality estimates without knowing methodology. Furthermore, they suggest conditioning approval of the TRMP with certain limitations on angling practices when water temperatures exceed 21°C.

**Response:**

Comment Noted. When temperatures exceed 21°C, the CTCR will contact NMFS to discuss mortality estimate recalculations to reflect additional potential impacts.

**8 Comment:**

WDFW questioned how non-migrant residuals would remain downstream below natural-origin rearing areas to reduce effects of residualism.

**Response:**

Comment noted. We analyze the ecological effects of the proposed action in the Biological Opinion. Although there is no guarantee that non-migrants would remain downstream, we believe moving these fish downstream limits their potential interactions on natural-origin salmonids by reducing spatial overlap more than releasing them from the acclimation site higher in the watershed.

**9. Comment:**

WDFW questioned if we fully understand where natural-origin rearing versus where hatchery-origin rearing is occurring.

**Response:**

Comment noted. These monitoring and evaluation efforts are ongoing. NMFS will consider new spawning information as it surfaces.

**10. Comment:**

WDFW commented on the statement that only the Okanogan steelhead program rears listed fish, as being proposed in the TRMP. They commented that the 10j Spring Chinook salmon are also reared at Chief Joseph Hatchery.

**Response:**

Comment noted. This is correct that the 10j Spring Chinook salmon are reared at Chief Joseph Hatchery, but this program was assessed in a previous biological opinion and is not covered in the Proposed Action for this TRMP.

**11. Comment:**

WDFW commented on Table 7, stating that there was a typo regarding asterisk for a footnote.

**Response:**

Comment noted and the correct asterisk for the footnote has been added to Table 7.

**12. Comment:**

WDFW commented on Tables 9 and 10. They stated that the sliding scale for the Okanogan was reasonable, but they thought that the allowable impacts for the Columbia River seemed excessive. They thought it was inappropriate to apply mortality values on run escapements at Wells Dam, as they thought this could exceed impacts to the Okanogan steelhead population. WDFW had an alternative method of calculating take. Furthermore, they suggested that the snag fishery could be run as a catch and release fishery with typical angling gear.

**Response:**

Comment noted.

NMFS calculated allowable take to cover all activities proposed in the TRMP, including incidental take from Research, Monitoring, and Evaluation; steelhead kelt reconditioning; broodstock collection; predator removal; and fisheries activities. Therefore, the calculated allowable impacts were not from fisheries alone.

The 1999-2000 Assessment of Adult Steelhead Migration through the Mid-Columbia River using Radio-Telemetry Techniques presents findings that are not consistent with WDFW's comments regarding proportions of steelhead populations above Wells Dam. Table 19 indicates that 50 steelhead were detected in the Okanogan River and 90 were detected in the Methow River. This proportion (36% in the Okanogan River and 64% Methow River) does not match WDFW's comment that 79% of steelhead above Wells Dam migrate into the Methow River. Moreover, steelhead of multiple populations during the summer run often move past Wells Dam and hold near Chief Joseph Dam before returning to the Methow and/or Wenatchee Rivers. This biological phenomenon makes it difficult to assess the proportions of each population in the mainstem Columbia River on which to base steelhead take. When new information becomes available regarding steelhead proportions above Wells Dam, NMFS' will consider a revision to the calculation of steelhead take.

In addition, the CTCR is not planning to include recreational catch and release fisheries in their proposed action. Tribal members use the snag fishery for traditional subsistence fishing.

**13. Comment:**

WDFW commented on Table 11, stating that a 10% post release mortality is a reasonable value to apply for the water temperatures fish would be encountered in.

**Response:**

Comment noted.