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# **ROCKY REACH COMPREHENSIVE BULL TROUT MANAGEMENT PLAN**

**Final Draft**

**ROCKY REACH HYDROELECTRIC PROJECT  
FERC Project No. 2145**

**February 28, 2005**



**Public Utility District No. 1 of Chelan County  
Wenatchee, Washington**

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## ***EXECUTIVE SUMMARY***

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The relicensing process for the Rocky Reach Hydroelectric Project (Project) brought fisheries agencies, tribes, and interested parties together in a Natural Resources Working Group that provided an opportunity for comprehensive review of current and future management priorities for fish resources potentially impacted by Project operations. The Natural Resources Working Group was established to identify issues, develop study plans, review study reports, and develop long-term management plans for fish and wildlife species. The development of this Rocky Reach Comprehensive Bull Trout Management Plan was an integral part of the relicensing process.

Bull trout are listed as threatened under the Endangered Species Act (ESA). Due to the listing of bull trout under the ESA within the mid-Columbia River area, and the possibility that operation of hydroelectric projects owned and operated by Chelan, Douglas, and Grant PUDs (Mid-Columbia PUDs) may have some effect on them, the Mid-Columbia PUDs decided to evaluate the status of bull trout in the Project area. Prior to relicensing studies, little was known about the life-history characteristics (e.g., movements, distribution, habitat use, etc.) of bull trout in the mid-Columbia Basin.

A radio telemetry study was initiated in 2001 where radio tags were inserted into adult-sized bull trout collected at three Mid-Columbia River dams. These fish were tracked to describe their movements and migration patterns within the mid-Columbia Basin. As part of the study, a total of 79 bull trout were tagged in 2001 and 2002 (15 fish at Rock Island Hydroelectric Project, 45 fish at Rocky Reach Hydroelectric Project and 19 fish at Wells Hydroelectric Project). Approximately half of the fish were released upstream of the dam where they were captured, and half were released downstream of the respective dam.

The radio telemetry study did not detect any adverse effects on movement or survival of tagged bull trout. (BioAnalysts 2002; 2004). There have been no documented cases of tagged adult bull trout being injured during upstream or downstream passage through Rock Island, Rocky Reach, or Wells dams. Relicensing baseline studies have not demonstrated a reduction in suitable habitat or density of forage species that bull trout rely upon to overwinter and grow in Rocky Reach Reservoir.

The goal of the Rocky Reach Comprehensive Bull Trout Management Plan is to identify, develop, and implement measures to monitor and address ongoing impacts on bull trout resulting from Project operations and facilities in a manner consistent with the US Fish and Wildlife Service (USFWS) draft bull trout recovery plan. The Rocky Reach Comprehensive Bull Trout Management Plan measures are designed specifically to meet the following objectives: 1) identify and address any adverse ongoing Project-related impacts on adult bull trout passage through the term of the New License; 2) investigate potential Project-related impacts on upstream and downstream passage of sub-adult bull trout through the Rocky Reach Dam and reservoir; and 3) investigate the potential for sub-adult entrapment or stranding in off-channel or backwater areas of the Rocky Reach Reservoir as a result of Project operations.

Section 3.3 identifies reasonable and prudent measures required by the May 12, 2004, USFWS Biological Opinion on the District's Habitat Conservation Plans, to be implemented prior to issuance of the New License, which are: 1) a radio-telemetry monitoring program for continued identification of potential Project-related impacts on upstream and downstream passage of adult bull trout; 2) video counts in the Rocky Reach adult fishway to determine off-season (November 15 through April 14) passage of adult and sub-adult bull trout; 3) PIT-tagging sub-adult bull trout to monitor movement past the Project; 4) participation in information exchanges with other entities conducting bull trout research and regional efforts to explore methods to monitor upstream and downstream movement of sub-adult bull trout in the mainstem Columbia River; and 5) investigate potential stranding and entrapment of sub-adult bull trout in the reservoir.

Specific Protection Mitigation & Enhancement (PME) measures to be implemented by Chelan PUD during the term of the New License are identified in Section 4 of the Rocky Reach Comprehensive Bull Trout Management Plan, which are: 1) radio-telemetry study; 2) correlation analysis; 3) potential facility or operations modifications; 4) sub-adult PIT-tagging; and 5) regional information exchange and monitoring.

## **SECTION 1: INTRODUCTION**

The relicensing process for the Rocky Reach Hydroelectric Project (Project) brought fisheries agencies, tribes, and interested parties together in a Natural Resources Working Group that provided an opportunity for comprehensive review of current and future management priorities for fish resources potentially impacted by Project operations. The Natural Resources Working Group was established to identify issues, develop study plans, review study reports, and develop long-term management plans for fish and wildlife species. The Natural Resources Working Group consisted of the USDA, Forest Service (USDA-FS), U.S. Fish and Wildlife Service (USFWS), NOAA Fisheries (NOAA), Washington Department of Ecology (WDOE), Washington Department of Fish and Wildlife (WDFW), the U.S. Bureau of Land Management (BLM), the Colville Confederated Tribes (CCT), the Yakama Nation (YN) Columbia River Inter-Tribal Fish Commission (CRITFC) and other interested parties. A subgroup of the Natural Resources Working Group, the Bull Trout Technical Group, completed this Rocky Reach Comprehensive Bull Trout Management Plan.

Technical groups were formed for each comprehensive plan, e.g., resident fish, white sturgeon, bull trout, Pacific lamprey, and wildlife, due to the complexity of issues surrounding each species and so that agency experts could focus on meetings pertaining to their specific expertise and not be required to attend all Natural Resources Working Group meetings. The Bull Trout Technical Group was comprised of the same parties as the NRWG. Following the effective date of the New License, the Bull Trout Technical Group will continue to function as part of the Rocky Reach Fishery Forum (RRFF). The RRFF shall be responsible for meeting to share information, coordinate efforts, and make recommendations regarding the implementation of the Rocky Reach Comprehensive Bull Trout Management Plan.

This Rocky Reach Comprehensive Bull Trout Management Plan contains sections highlighting the background of the species (Section 2), relicensing and other studies conducted to determine Project-related impacts, if any, on the species (Section 3), goals and objectives of the management plan, which were developed in conjunction Technical Working Group, are based upon study results (Section 4), and PME measures developed for achieving the goals and objectives to be implemented through the term of the new license for the Rocky Reach Project (Section 4).

### **1.1 Relationship Between the HCP Biological Opinion for Bull Trout and the Federal Draft Recovery Plan**

On June 10, 1998, the USFWS listed bull trout (*Salvelinus confluentus*) within the Columbia River basin as threatened under the ESA (63 Fed. Reg. 31,647). Later (November 1, 1999), the USFWS listed bull trout within the coterminous United States as threatened under the ESA (64 Fed. Reg. 58,910).

Following listing of bull trout, the USFWS initiated the development of a bull trout recovery plan. In developing that recovery plan, the USFWS identified habitat degradation, fragmentation, and alterations associated with dewatering, road construction and maintenance, mining, and

grazing; blockage of migratory corridors by dams or other diversion structures; poor water quality; incidental angler harvest; entrainment into diversion channels; and introduced non-native species as major factors affecting the distribution and abundance of bull trout. It noted that dams (and natural barriers) may isolate population segments, resulting in a loss of genetic exchange among these segments (63 Fed. Reg. at 31,657). The USFWS believes many populations are now isolated or fragmented.

On June 21, 2004 the Rocky Reach FERC license was amended to incorporate the Rocky Reach Anadromous Fish Agreement and Habitat Conservation Plan (HCP) to protect mid-Columbia anadromous salmon and steelhead. Benefits to other aquatic species, such as bull trout, are expected to occur through implementation of measures required in the HCP.

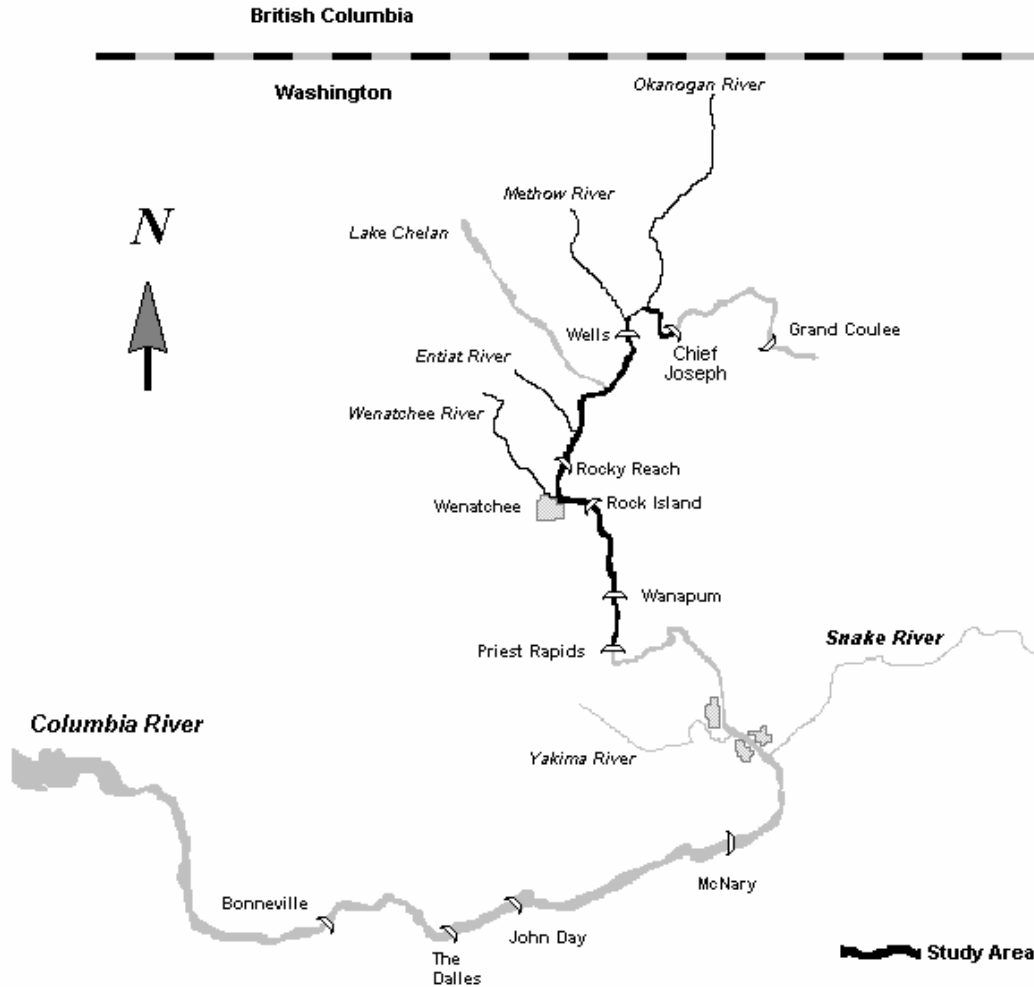
At the conclusion of its ESA section 7 consultation on operating the Project consistent with the HCP, the USFWS issued a biological opinion (Opinion) analyzing any potential effects of such operations on bull trout, which are not covered by the HCP. The USFWS concluded in the Opinion that operation of the Project, consistent with the HCP is not likely to jeopardize the continued existence of the Columbia River distinct population segment of bull trout, and is not likely to destroy or adversely modify proposed critical habitat for bull trout. Subsequent to this action (September 22, 2004) the USFWS declined to designate the mid-Columbia Basin in the final rule establishing critical habitat for the Columbia River bull trout Distinct Population Segment (DPS). In addition, it issued an accompanying incidental take statement that includes reasonable and prudent measures and terms and conditions designed to minimize incidental take at the Project. The Opinion's reasonable and prudent measures and the USFWS terms and conditions and the impact minimization measures formed the basis for developing this Rocky Reach Comprehensive Bull Trout Management Plan.

While the Opinion discusses the development of the Rocky Reach Comprehensive Bull Trout Management Plan through relicensing, it also requires implementation of certain monitoring measures in advance of the issuance of the New License, since the HCP license amendment for which the Opinion was issued was approved by FERC in 2004. Specifically, the Opinion required that Chelan PUD design a monitoring program to: (1) detect adverse effects resulting from the proposed action, (2) assess the actual level of incidental take in comparison with the anticipated incidental take level documented in the Opinion, (3) detect when the level of anticipated incidental take is exceeded, and (4) determine the effectiveness of reasonable and prudent measures and the corresponding terms and conditions. Implementation of this monitoring program was required no later than May 1, 2005. The USFWS anticipated that information from the monitoring efforts would help determine the need for future modifications to facilities or operations for the minimization of project effects on bull trout.

To a certain extent, timing and coordination issues impact how ongoing monitoring and reporting is represented in the proposed License Articles (Attachment A of the Comprehensive Settlement Agreement). Details regarding how specific License Articles relate to the broader Rocky Reach Comprehensive Bull Trout Management Plan are presented in this Plan.

**1.2 Purpose of Rocky Reach Comprehensive Bull Trout Management Plan**

This Rocky Reach Comprehensive Bull Trout Management Plan is intended to: (1) satisfy the requirements of Opinion on operation of the Project, consistent with the HCP, (2) be consistent with USFWS draft (and ultimately final) bull trout recovery plan; (3) serve as the bull trout measures agreed upon for purposes of a settlement agreement on relicensing of the Project, and (4) comprise the minimization measures that are anticipated as necessary to minimize the effect of any incidental take under a New License for the Project.



**Figure 1: Study Area for Assessing Migration Patterns of Bull Trout in the Mid-Columbia River.**

**Fixed radio-telemetry sites monitored the movement of bull trout near Priest Rapids, Wanapum, Rock Island, Rocky Reach and Wells dams. Fixed sites placed in the Wenatchee, Entiat, Methow and Okanogan rivers monitored time of entry and exit of bull trout in large tributaries of the mid-Columbia River.**

## **SECTION 2: BACKGROUND**

### **2.1 Geographic Range and Biology**

Bull trout are native to northwestern North America, historically occupying a large geographic range extending from California north into the Yukon and Northwest Territories of Canada, and east to western Montana and Alberta (Cavender 1978). They are generally found in interior drainages, but also occur on the Pacific Coast in Puget Sound and in the large coastal drainages of British Columbia.

Bull trout currently occur in lakes, rivers and tributaries in Washington, Montana, Idaho, Oregon (including the Klamath River basin), Nevada, two Canadian Provinces (British Columbia and Alberta), and several cross-boundary drainages in extreme southeast Alaska. East of the Continental Divide, bull trout are found in the headwaters of the Saskatchewan River in Alberta, and the McKenzie River system in Alberta and British Columbia (Cavender 1978; McPhail and Baxter 1996; Brewin and Brewin 1997). The remaining distribution of bull trout is highly fragmented.

Bull trout are members of the char group, within the family Salmonidae. Bull trout closely resemble Dolly Varden (*Salvelinus malma*), a related species. Genetic analyses indicate, however, that bull trout are more closely related to an Asian char (*Salvelinus leucomaenis*) than to Dolly Varden (Pleyte et al. 1992). Bull trout are sympatric with Dolly Varden over part of their range, most notably in British Columbia and the Coastal-Puget Sound region of Washington State.

### **2.2 Life History**

Bull trout exhibit four distinct life history types: resident, fluvial, adfluvial, and anadromous. The fluvial, adfluvial, and resident forms exist throughout the range of the bull trout (Rieman and McIntyre 1993). These forms spend their entire life in freshwater. The anadromous life history form is not known to occur outside the Coastal Puget Sound region within the coterminous United States (Volk 2000; Kraemer 1994; Mongillo 1993), and does not occur in the Columbia River. Multiple life history types may be expressed in the same population, and this diversity of life history types is considered important to the stability and viability of bull trout populations (Rieman and McIntyre 1993). For adfluvial bull trout, growth and maturation occurs in lakes or reservoirs, and for fluvial bull trout, it occurs in large river systems. Resident bull trout populations are generally found in small headwater streams, where these fish remain their entire lives.

For migratory life history types, juveniles tend to rear in tributary streams for 1 to 4 years before migrating downstream into a larger river or lake to mature (Rieman and McIntyre 1993). In some lake systems, fish less than 1 year old may migrate directly to lakes (Riehle et al. 1997). Juvenile and adult bull trout in streams frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1993), and areas with cold hyporheic zones or groundwater upwellings (Baxter and Hauer 2000).

Bull trout are believed to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Growth, survival, and long-term persistence are dependent upon habitat characteristics such as cold water, complex instream habitat, a stable substrate with a low percentage of fine sediments, high channel stability, and stream/population connectivity. Stream temperature and substrate type, in particular, are critical factors for the sustained long-term persistence of bull trout. Spawning is often associated with the coldest, cleanest, and most complex stream reaches within basins. However, bull trout may exhibit a patchy distribution, even in pristine habitats (Rieman and McIntyre 1995), and should not be expected to occupy all available habitats at the same time (Rieman et al. 1997).

Bull trout are present in both Rocky Reach and Rock Island reservoirs, including the Wenatchee, Entiat, and Methow Rivers. Three life history forms, adfluvial, fluvial, and resident, are believed to occur in the Action Area. Action Area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action [50 CFR §402-02]. Both adult<sup>1</sup> and sub-adult<sup>2</sup> bull trout are routinely observed (and counted) by Chelan PUD employees while passing through the fish ladder at Rocky Reach Dam, and through the adult fish passage facilities at Rock Island Dam. Sub-adult bull trout have been observed in the juvenile sampling facilities at both dams as well, although infrequently. Sub-adult bull trout were sampled in the Rocky Reach prototype juvenile bypass collector in 1998, 1999, 2000, 2001, and 2002, with 23, 30, 8, 4, and 5 fish observed, respectively. In 2003 and 2004, no sub-adult bull trout were sampled at the new Rocky Reach juvenile collector sampling facility, likely because sampling periods were greatly reduced (down to 2 hours per day), compared to much longer periods for the previous prototype bypass

Chelan PUD began enumerating bull trout using the adult passage facilities in 1998. A total of 83 bull trout passed Rocky Reach Dam between May 3 and July 31 that year (Chelan PUD, 2002a unpublished data). In 1999, 2000, and 2001, counts of bull trout using the fish ladder from May 1 and July 31 were 93, 183, and 176, respectively. In 2000 and 2001, counts of bull trout using the fish ladder from April 14 through November 14 were 212 and 204, respectively (BioAnalysts 2004). In 2002, a total of 204 bull trout passed Rocky Reach from April 14 to November 14, with the most (177) passing from May 1 to July 31. In 2003 (April 14 – November 14), 248 bull trout passed Rocky Reach Dam during the normal anadromous counting period. Experimental off-season fish counts conducted between November 15 and December 27, 2003 recorded another 70 bull trout passing Rocky Reach, for a total count of 318 bull trout in 2003. (April 14 – December 27). In all years on record (1998-2004), the majority of the bull trout passed the Project in May and June (75 to 90 percent). Although the full extent of bull trout passage at other times of the year is unknown, bull trout do use fish ladder facilities to pass Rocky Reach in September through and December. The general anadromous fish counting season ends around November 15 each year.

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<sup>1</sup> Adult bull trout for this document refers generally to fish 305 mm (12 in) or greater in length.

<sup>2</sup> Sub-adult bull trout for this document refers to fish less than 305 millimeters (12 inches) in length.

### **SECTION 3: STUDIES & EVALUATION OF PROJECT EFFECTS**

Due to the listing of bull trout under the ESA within the mid-Columbia River area, and the possibility that operation of hydroelectric projects owned and operated by Chelan, Douglas, and Grant PUDs (mid-Columbia PUDs) may have some effect on them, the mid-Columbia PUDs decided to evaluate the status of bull trout in the Project Area. Prior to relicensing studies, little was known about the life-history characteristics (e.g., movements, distribution, habitat use, etc.) of bull trout in the mid-Columbia Basin.

#### ***3.1 Relicensing Studies***

A radio telemetry study was initiated in 2001 where radio tags were inserted into adult-sized bull trout collected at three Mid-Columbia River dams. These fish were tracked to describe their movements and migration patterns within the mid-Columbia Basin (Figure 1) (BioAnalysts, 2002, 2004). The goal of the study was to assess the operational effects of hydroelectric projects on adult bull trout and adult bull trout migratory behavior in the mid-Columbia Basin.

The objectives for this three-year study were to: (1) Describe the movements and migration patterns of adult bull trout in the mid-Columbia Basin; and (2) assess the effects, if any, of hydroelectric operations on the movement and migration patterns of adult bull trout in the mid-Columbia River.

As part of the study, a total of 79 bull trout were tagged in 2001 and 2002 (15 fish at Rock Island Dam, 45 fish at Rocky Reach Dam and 19 fish at Wells Dam). Approximately half of the fish were released upstream of the dam where they were captured, and the other half were released downstream of the respective project.

##### ***3.1.1 Movement and Migration Patterns in Project Area***

Study results indicate that some bull trout reside for considerable periods of time in the Columbia River mainstem reservoirs, and then pass upstream through the adult fish ladders in late spring and early summer to enter tributaries. All of the tagged fish, regardless of their release location, migrated into the Wenatchee, Entiat, or Methow rivers, presumably to spawn. Only one fish entered the Okanogan River for a brief period. It exited, swam downstream and entered the Methow River. Most of the tagged bull trout had entered tributaries by mid to late June in both years (BioAnalysts 2002, 2004). Of the 79 bull trout tagged during the study, nine fish moved downstream past Rocky Reach (5 fish in 2002 and 4 in 2003) after being released, and 10 fish moved downstream past Rock Island Dam after an extended stay in tributaries (BioAnalysts, 2004).

After exiting tributaries in late fall, a few of the tagged bull trout moved downstream of Rocky Reach Dam through turbines. One fish passed downstream through turbines at both Rocky Reach and Rock Island dams, after exiting the Entiat River in November 2001. This fish over-wintered downstream of Rock Island dam, then migrated back through adult ladders at Rock Island and Rocky Reach in May of 2002. Again, it entered the Entiat River in mid-June 2002, three days later than it did in 2001.

The frequency, timing, and route of downstream passage by sub-adult bull trout through Rocky Reach Dam are not known. Sub-adult downstream passage may occur any time, and the routes available to sub-adult fish is dependent on the time of year. From results of telemetry studies, adult bull trout in the Action Area are more likely to move downstream of Rocky Reach dam in the mid to late fall, after spawning and re-entering the mainstem Columbia River from tributaries. Because Columbia River migratory bull trout are present in very low densities compared with other fish species, and they have relatively unpredictable migration behavior (especially sub-adults), effective study methods to evaluate downstream passage have not been developed. As described in Section 3.3.4 below, however, Chelan PUD will participate in information exchanges and regional efforts to explore effective study methods.

### ***3.1.2 Project Effects on Movement***

The radio telemetry study identified no apparent adverse effects on movement or survival of tagged bull trout. (BioAnalysts 2002, 2004). It appears that none of the tagged adult bull trout were injured during upstream or downstream passage through Rock Island, Rocky Reach, or Wells dams. Of the 79 bull trout tagged in 2001 and 2002, only one mortality was verified to have occurred in the mainstem Columbia, and it was not related to Project operations.

Downstream passage routes available to bull trout include: 1) passage over spillways during spill periods (generally between April 20 and August 15); 2) the juvenile fish bypass system, comprised of one surface collector entrance (6 kcfs flow) and screened turbine units number 1 and 2 (generally operated April 1 to August 31); 3) one adult fish ladder; and 4) turbine units 3 through 11. Upstream passage is provided by a single fish ladder with three separate entrances in the tailrace, and a single exit in the forebay (see Appendix A. for fishway operations and maintenance).

### ***3.1.3 Project Effects on Habitat***

Age, length, and weight measurements taken during the study suggests fish are large for their age relative to other Columbia River bull trout populations, and their condition factor ( $\text{weight}/\text{length}^3$ )<sup>3</sup> is high. These data strongly suggest that the bull trout forage base is adequate in the reservoir. Digital photographs of bull trout passing by the counting windows at Rocky Reach Dam in 2003 and 2004 also confirm that these fish are in excellent condition (Chelan PUD, unpublished data, 2003, 2004).

The mainstem Columbia River does not contain all of the necessary habitat elements to sustain the entire life history of bull trout. Based on life history requirements, it is unlikely that the mainstem Action Area ever contained spawning habitat for bull trout. Rocky Reach Reservoir does provides other important habitat features, such as a productive forage base, a migration corridor, and a more stable, deep-water environment for safe over-wintering. Therefore, it is important that these habitat elements be maintained through the license term.

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<sup>3</sup> This formula is the Fulton's Condition Factor Formula

### **3.2 Findings to Date**

The following key findings were developed based on data collected during relicensing studies and from other information sources:

- Tagged migratory adult bull trout successfully move both upstream and downstream past the Project (radio telemetry). Total upstream fishway counts at Rocky Reach Dam in 2003 were 318 bull trout (April 14 – December 29). From the 79 bull trout radio tagged in 2001 and 2002, four bull trout passed downstream through turbines at Rocky Reach Dam with no mortalities. Eight downstream passage events occurred at Rock Island Dam through turbines from 2001 to 2003. No mortalities were observed.
- Adult bull trout make migrations upstream through Rocky Reach Dam from April through December, with peak movement in May and June. Ladder counts have not been conducted in January and February due to required annual fishway maintenance. Extended fishway counts in November and December 2003 and March 2004 identified movement of bull trout during November and December, but not in March 2004.
- Median travel times (from the tailrace to the top of the fish ladder) during the telemetry study for Rocky Reach in 2001-2003 were 3.79, 4.66, and 4.68 days, respectively. For comparison, travel times at Rock Island Dam for the same years were 2.28, 5.90, and 5.10 days, respectively. Median travel times (for ladder entrance to ladder exit) for bull trout at Rocky Reach were 1.92, and .28 days respectively in 2001 and 2002. In 2003 the ladder entrance was not monitored, but the median time for dam passage (tailrace to top of fish ladder) was 4.68 days.
- Of all tributary entrance events by bull trout (84 of 91 total events, 2001-2003), 92 percent occurred before July 1.
- Radio-tagged adult bull trout that pass upstream through the Rocky Reach ladder arrive at spawning areas from June through October (BioAnalysts 2002, 2004). These observations are consistent with other migratory populations reported for the Columbia River Basin (Fraley and Shepard, 1989; Goetz, 1989, 1991; Pratt and Houston, 1993).
- Sub-adult bull trout use the Rocky Reach Dam fishway to move upstream past the Project.
- Bull trout move downstream through the juvenile bypass system at Rocky Reach Dam. Sub-adult bull trout were sampled in the prototype juvenile bypass from 1998 through 2002 with 23, 30, 8, 4, and 5 fish sampled, respectively. No bull trout were observed in 2003 and 2004, possibly because sampling frequency was greatly decreased from previous years to reduce incidental take of listed anadromous species.
- A correlation appears to exist between the number of bull trout passing Rocky Reach Dam in May through July and the number of bull trout redds counted in the Mad River, a tributary to the Entiat River. The highest redd counts in the Mad River occurred in 2000 (45 redds) and 2003 (52 redds) (USFS, unpublished redd count reports, 2003),

corresponding to the highest bull trout ladder counts (May through July) of 198 and 186, respectively, at Rocky Reach (Chelan PUD unpublished fish ladder counts, 2000, 2003).

- Adult and sub-adult bull trout utilize the reservoirs during all seasons (Rocky Reach Dam ladder observations April – December; radio telemetry detections 2001-2004).
- No radio tagged bull trout mortality was documented at Rocky Reach Dam or in the reservoir due to Project effects during telemetry monitoring in 2001, 2002, and 2003.

### **3.3 Biological Opinion Reasonable and Prudent Measures**

At the conclusion of its ESA section 7 consultation on operation of the Project consistent with the HCP, the USFWS issued a biological opinion (Opinion) analyzing any potential effects of such operations on bull trout, which are not covered by the HCP. The USFWS concluded that operation of the Project consistent with the HCP is not likely to jeopardize the continued existence of the Columbia River distinct population segment of bull trout, and is not likely to destroy or adversely modify proposed critical habitat for bull trout. In addition, it issued an accompanying incidental take statement that includes reasonable and prudent measures and terms and conditions, described below, designed to minimize incidental take of bull trout at the Project. The Opinion also included Impact Minimization Measures which are incorporated into the Rocky Reach Comprehensive Bull Trout Management Plan. As discussed in Section 1.1 above, these reasonable and prudent measures and terms and conditions formed the basis for developing this Rocky Reach Comprehensive Bull Trout Management Plan, and the measures provided in this Section 3.3 in particular, which generally are expected to be implemented prior to issuance of a new license for the Project license.

The Opinion contains four (4) terms and conditions for monitoring and minimizing incidental take of bull trout at the Rock Island Project as well as impact minimization measures. Term and condition No. 4 contains five monitoring measures which the Opinion directs Chelan PUD to complete before the Rocky Reach Comprehensive Bull Trout Management Plan comes into effect (May 1, 2005). These measures include: 1) extend fish ladder monitoring period to assess adult bull trout utilization of existing fishways outside of the traditional migratory timeframes (for 1 year); 2) continue coordinated telemetry monitoring of radio-tagged bull trout; 3) compile project operational data linked to timeframes when adult migratory bull trout pass the Project powerhouse and/or spill gates; 4) provide cost share funding with the USFWS for analysis of genetic samples from fluvial bull trout sampled during the first year of the Mid-Columbia Bull Trout Study; and 5) participate in a coordinated effort with the USFWS to increase the informational database for adult bull trout that utilize the Methow/Twisp river system. Because these measures were linked to a specific timeframe, and have been, or will be completed before implementing this Rocky Reach Comprehensive Bull Trout Management Plan, they will not be addressed again here. Chelan PUD will report on actions related to the measures in Term and Condition No. 4 in the 2005 and 2006 annual reports as required by the Opinion

#### ***3.3.1 Adult Bull Trout Measures***

##### ***3.3.1.1 Monitoring Program***

Chelan PUD shall implement a monitoring program to identify potential Project-related impacts on upstream and downstream passage of adult bull trout through the Rocky Reach Dam and any

incidental take of bull trout. The monitoring program will begin prior to expiration of the current license. However, the monitoring plan, including the timeframe for future surveys and reporting, will be an important component of the New License. This section is intended to clarify the relationship between pre-and post-new license monitoring.

Between May 2005 and July 2007, Chelan PUD will capture and insert active tags (2 year radio tags, plus PIT tags) in 30 adult bull trout annually (representing about 23% of the average annual ladder count May – July, 1998-2003) from May 2005 through July 2007 (three years of tagging for a total of 90 fish for the three-year period). All tagged fish will be released upstream of Rocky Reach Dam, and each fish will be counted as one successful adult fishway passage event for the year it is tagged. Because of variable tag retention times in individual fish, and inherent inconsistencies in transmitter battery life, take levels will be calculated using data from only the first year (365 days) of tag life for each tagged fish. Tag detections occurring outside of this period will not be used for take monitoring, but will continue to be compiled (through July 2008) to assist the USFWS in characterizing movements of bull trout in the Columbia River mainstem.

Chelan PUD will use appropriate tracking methods to monitor tagged adults, including installation and maintenance of receiver arrays necessary to adequately monitor upstream and downstream passage through Rocky Reach Dam for a three-year period, 2005 – 2008. The receiver arrays will include fixed receiver sites at the dam and tributary entrances to monitor passage routes through turbines, spillway, and juvenile bypass as well as tributary entrances. Additional mobile tracking methods may include aircraft, boat, and/or vehicle surveys.

Utilizing these tracking methods, Chelan PUD will monitor monthly movements of tagged fish for a three-year period from May 2005 through July 2008 while such fish are within the Project boundary (dam and reservoir) until the tagged fish enter a tributary. Tracking will continue for all fish that re-enter the reservoir.

Tag detection and tracking data from May 2005 through July 2008 will be compiled and evaluated by Chelan PUD to determine the status and location of tagged adult bull trout, tag status, and any need to engage in tag recovery operations. Chelan PUD shall report any Project-related bull trout incidental take within the Project boundary to the USFWS within 48 hours of detection by Chelan PUD, under this section and in subsequent monitoring described in section 4.1.1.

To assist the USFWS in identifying the core areas and local populations of bull trout affected by Rocky Reach Dam, Chelan PUD will collect and fund genetic analysis of tissue samples taken from up to 30 adult bull trout *per year* for three years (up to 90 samples total) at Rocky Reach Dam, 2005 - 2007. Samples will be preserved and submitted to the USFWS Central Washington Field Office in Wenatchee, Washington.

The total cost of these studies is estimated to be \$480,100.

### **3.3.1.2 Incidental Take Reporting**

Chelan PUD will prepare a final report by December 31, 2008 on the passage survival and level of incidental take of adult bull trout for each passage route at the Project during this three-year

monitoring period. An annual summary report will be prepared by April 15 for years 2005 through 2007. The upstream and downstream passage results will be analyzed to determine the number of tagged fish known to have passed through each of the four possible routes: the turbines, spillway, juvenile bypass system and adult fishway. Authorized take levels for passage through the spillway, juvenile fish bypass, and adult fishways (ladders) are 2 percent respectively and 5 percent through turbines per year. Allowable take resulting from pikeminnow predator control activities is two fish per year. The incidental take for each passage route, if any, will be estimated by the number of observed mortalities to tagged fish that are attributable to that passage route divided by the total number of tagged fish known to have passed through that route.

The pooled passage data from the three-year study will be statistically analyzed to detect if the level of incidental take for each passage route exceeds the anticipated incidental take level authorized in the applicable USFWS incidental take statement. The statistical analysis will be a one-tailed test of the hypothesis that the anticipated incidental take level is not exceeded. The passage survival and level of incidental take of bull trout will be assessed annually for each passage route at the Rocky Reach Project. The upstream and downstream passage results will be analyzed to determine the number of tagged fish known to have passed through each of the four possible routes: the turbines, spillway, juvenile bypass system, and adult fishway. A statistical analysis will be used to detect if the level of incidental take for each passage route exceeds the anticipated incidental take level anticipated in the applicable USFWS Opinion.

The statistical analysis will be a one-tailed significance test of the hypothesis that the anticipated incidental take level is not exceeded. The anticipated take level for the turbine passage route is that no more than five (5) percent of radio-tagged bull trout passing through turbines will be killed by turbine operation. A one-tailed test for significance will be used to determine the probability that the observed incidental take is different from what could be occurred by chance if the true take level is  $\leq$  five (5) percent. For example, if 20 fish were observed to have passed through the turbines in the first year, incidental take by the turbines would not be exceeded statistically until four (4) fish are killed by turbine operation (binomial probability, test of hypothesis  $H_0 \leq 5\%$ , 95% significance level,  $p$ -value for 1, 2, 3, or 4 fish being killed is .64, .26, .075, and **.015**, respectively, significant value is bolded). Thus, an experimental result of three fish killed out of 20 passing through the turbines would not be considered to exceed the anticipated incidental take level of five percent ( $\alpha = 0.05$ ).

### ***3.3.1.3 Off-Season Passage Counts***

Chelan PUD will determine off-season (November 15 – April 13, except for ladder maintenance period) bull trout passage (numbers and passage dates) at Rocky Reach for an experimental period 2003 – 2006. Specifically, for an experimental three-year period, from November 2003 through March 2006, Chelan PUD will implement off-season video counts of the adult fishway for the purpose of determining off-season bull trout passage. Video counts will be conducted between November 15 and April 13 of each year, except during ladder maintenance periods. Count results will be evaluated by Chelan PUD to determine whether passage trends exist and to identify when ladder maintenance would have the least impact on bull trout passage. If trends are identified, Chelan PUD will investigate the most reasonable and feasible times for ladder

maintenance activities during low-usage periods for bull trout that do not conflict with adult anadromous fish passage.

The estimated cost is \$45,000 for the three years.

### **3.3.2 Sub-adult Bull Trout Measures**

One objective of this Rocky Reach Comprehensive Bull Trout Management Plan for sub-adult bull trout is to investigate potential Project-related impacts on upstream and downstream passage of sub-adult bull trout through the Rocky Reach Dam and reservoir. The stakeholders participating in the RRF (including USFWS) agree that it is not feasible to fully assess sub-adult passage at Rocky Reach, because of an inability to collect a sufficient sample size of sub-adult bull trout. However, Chelan PUD will implement the following measures to address this objective of the Rocky Reach Comprehensive Bull Trout Management Plan: (1) PIT-tagging of sub-adult bull trout when incidentally collected at the Project or in tributary traps; (2) participating in information exchanges and regional efforts to develop effective monitoring methods; and (3) determining off-season, sub-adult bull trout passage through the adult fishway.

#### **3.3.2.1 PIT-Tagging**

The stakeholders to the HCP and Rocky Reach relicensing process agree at this time that because of the inability to collect a sufficient sample size of sub-adult bull trout, it is not feasible to assess sub-adult passage or take at Rocky Reach. However, when incidentally collected at the Project, or in tributary traps, sub-adult bull trout will be PIT tagged.

- Chelan PUD will provide up to 80 PIT tags per year for three years (combined total for both Rocky Reach and Rock Island Plans), equipment and facilitate training to enable PIT tagging of sub-adult bull trout when these fish are incidentally collected during certain fish sampling operations. Fish sampling operations that could have incidental captures of sub-adult bull trout include the Rocky Reach adult fishway trap during operations for capture of other species, the Rocky Reach juvenile bypass system, the Rock Island bypass trap, the adult collection traps at Tumwater Dam, Dryden Dam, and the Chiwawa broodstock trap, and at juvenile tributary traps on the Chiwawa River, below Lake Wenatchee, lower Wenatchee River. Different entities conduct these fish sampling operations, thus the provision of tags, equipment and methodology should be standardized. Chelan PUD will provide the following for selected sites: 10 PIT tags (or more if appropriate) and tagging syringes, and a list of standardized methods developed in consultation and coordination with the USFWS. selected Chelan PUD will facilitate an annual pre-season coordination meeting with the fish sampling entities. Three years after completion of the Rocky Reach adult fishway PIT tag detection system, the number of fish tagged and tag recovery data from these sub-adult tagging operations will be reviewed with the USFWS to evaluate whether or not to continue the program.
- Chelan PUD will install a PIT tag detection system in the adult fishway at Rocky Reach Dam in early 2006 and monitor upstream movements for PIT-tagged, sub-adult (and adult) bull trout at Rocky Reach Dam for an experimental period 2006 through mid-2009. Three years after completion of the detection system, Chelan PUD will review

the number of fish tagged and tag recovery data from these sub-adult tagging operations with the USFWS to evaluate whether or not to continue the program.

- Monitor upstream movements for PIT tagged sub-adult bull trout at Rocky Reach for and experimental period 2006 through 2009.

The cost of these PIT tag programs is estimated to be \$15,000 annually.

### ***3.3.2.2 Off-Season Passage Counts***

Chelan PUD will determine off-season sub-adult bull trout passage through the adult fishway (numbers and times of year) at Rocky Reach for an experimental period of three-years, 2003 - 2006. Specifically, for an experimental three-year period, from 2003 through 2006, Chelan PUD has implemented and will continue to implement off-season video counts of the adult fishway to record dates and times of sub-adult bull trout passage. Video counts will be conducted and will continue to be conducted between November 15 and April 13 of each year, except during ladder maintenance periods. Count results will continue to be evaluated by Chelan PUD to determine whether monthly passage trends exist and to identify when ladder maintenance would have the least impact on sub-adult bull trout passage. If trends are identified, Chelan PUD will investigate the most reasonable and feasible times for ladder maintenance activities during low-usage periods for sub-adult bull trout that do not conflict with adult anadromous fish passage.

### ***3.3.3 Evaluate Rocky Reach Inflow Patterns, Reservoir Elevations, and Backwater Curves to Determine If Stranding or Entrapment of Bull Trout May Occur***

To meet this objective, Chelan PUD will investigate Rocky Reach inflow patterns, reservoir elevations, and backwater curves to determine if stranding or entrapment of bull trout may occur. More specifically, the investigation will include: (1) a review of the Rocky Reach forebay elevations, back-water curves, and historical discharges (daily, hourly) from Wells Dam to determine Rocky Reach Reservoir surface water elevations during low flow periods; (2) a determination by Chelan PUD of whether backwater locations exist that could lose connectivity to the river during low flows hours; and (3) a determination by Chelan PUD of backwater area elevations to identify flow scenarios that could result in de-watering or isolation that could result in incidental take.

In the event the evaluation identifies locations that may be dewatered or isolated, Chelan PUD will undertake a reasonable and feasible fish sampling effort to determine if sub-adult bull trout are using the identified areas during low flow hours. If sampling results show that incidental take of sub-adult bull trout occurs due to stranding or de-watering, then Chelan PUD will collaborate with stakeholders of the RRF to develop a plan to minimize the effect of such incidental take.

The cost of these studies is estimated to be \$60,000.

### ***3.3.4 Information Exchange and Regional Monitoring Efforts***

Chelan PUD will participate in information exchanges with other entities conducting bull trout research and regional efforts to explore methods to monitor upstream and downstream movement of sub-adult bull trout in the mainstem Columbia River. If methodologies become available,

Chelan PUD will evaluate them in conjunction with the RRF. Upon the recommendation of the RRF, Chelan PUD will implement those methods it determines to be reasonable and feasible for monitoring sub-adult bull trout at Rocky Reach Dam.

### **3.3.5 Impact Minimization Measures**

The impact minimization measures are included within the Objectives and related PME, except the following which are hereby incorporated into the Rocky Reach Comprehensive Bull Trout Management Plan:

- Tributary Habitat Enhancement – Chelan PUD will consider collecting and hauling large woody material from Rocky Reach Dam and placing in tributaries as part of the tributary enhancement plan.
- Chelan PUD will investigate feasibility of providing video monitoring of the adult separator at the Rocky Reach juvenile fish bypass system to enumerate adult bull trout.

### **3.3.6 Conservation Measures**

Chelan PUD will collect and fund analysis of tissue samples taken from sub-adult bull trout that are PIT tagged at the Rocky Reach juvenile fish bypass, and smolt and broodstock traps funded by Chelan PUD (eight sites, up to 10 fish per site, 2005 - 2007), under **3.3.2.1** of this plan. *NOTE:* Up to 80 genetic samples per year for three years will be the combined total for both the Rocky Reach and Rock Island Bull Trout Plans. Genetic samples will be preserved and turned over to the USFWS Central Washington Field Office in Wenatchee, WA. Chelan PUD will also provide up to 20 PIT tags per year and coordination only (no genetic sampling), for PIT tagging sub-adult bull trout at the USFWS Entiat and Peshastin smolt traps, 2005 - 2007. *NOTE:* The 20 PIT tags per year is a combined total for both the Rocky Reach and Rock Island Bull Trout Plans.

The estimated cost of this analysis is \$21,600 for the three year period.

Chelan PUD will participate in information exchanges and regional efforts to coordinate radio-tag frequencies for bull trout monitoring. If radio-tag frequencies deployed by Chelan PUD are not compatible with other monitoring efforts, the efforts, the PUD will (when feasible) allow the use of their portable telemetry equipment for periodic aerial telemetry efforts.

## **SECTION 4: ACHIEVEMENT OF OBJECTIVES AND IMPLEMENTATION**

Implementation of the HCP will benefit bull trout by providing a positive effect on bull trout reproduction and numbers through:

- 1) improving survival of adults and sub-adults by providing a safe passage route (the juvenile bypass system) through the Project;
- 2) providing tributary habitat enhancement, thereby increasing stream productivity; and
- 3) implementing the hatchery plan will increase density of historically important prey items.

In addition to the measures that Chelan PUD will implement through the HCP and pursuant to Section 3.3 above, Chelan PUD will implement the following additional measures which are expected to be implemented in the post-licensing phase under the New License to satisfy the goals of identifying, developing, and implementing measures to monitor and address ongoing impacts on bull trout resulting from Project operations and facilities. Through monitoring and implementation of Rocky Reach Comprehensive Bull Trout Management Plan measures, this Rocky Reach Comprehensive Bull Trout Management Plan is designed specifically to meet the following objectives:

Objective 1: identify and minimize any adverse Project-related impacts on adult bull trout passage through the life of the New License; and

Objective 2: investigate potential Project-related impacts on upstream and downstream passage of sub-adult bull trout through the Rocky Reach Dam and reservoir.

The measures proposed in this section are intended to be consistent with recovery actions as outlined in the USFWS draft bull trout recovery plan. Moreover, this Rocky Reach Comprehensive Bull Trout Management Plan is intended to be an adaptive approach, where strategies for meeting the goals and objectives may be re-worked under a collaborative effort by the RRF, based on new information and ongoing monitoring results.

The commitments described in this section are intended to serve both as PME measures for bull trout through the term of the New License and to adequately monitor and minimize any incidental take of bull trout consistent with Section 7 of the ESA.

### **4.1 Objective 1: Identify and Address Any Adverse Project-Related Impacts on Adult Bull Trout Passage through the Term of the New License**

Chelan PUD will implement a monitoring program to identify potential Project-related impacts on upstream and downstream passage of adult bull trout through the Rocky Reach Dam and any incidental take of bull trout.

#### **4.1.1 PME Measure: Radio Telemetry Study**

Chelan PUD will implement an adult bull trout telemetry program to continue to monitor adult upstream and downstream passage within the Project boundary and implement appropriate measures to monitor any incidental take of bull trout. Specifically, beginning in 2018, and every

ten years thereafter during the term of the new license, Chelan PUD will conduct a one-year monitoring program for the purpose of determining whether Chelan PUD remains in compliance with the Project's allowable level of incidental take of bull trout due to upstream and downstream passage, as authorized in an incidental take statement for the new Project license. The same study protocols used in monitoring described in section 3.3.1 will be employed for these monitoring studies. Chelan PUD shall prepare an annual report during each of the one-year periods for the purpose of updating the USFWS on the results of monitoring. Chelan PUD shall report any Project-related bull trout incidental take within the Project boundary to the USFWS within 48 hours of detection by Chelan PUD. If the authorized incidental take level is exceeded during any one year period, Chelan PUD will conduct additional monitoring in the succeeding year. If the authorized incidental take level is exceeded in the second year, Chelan PUD will work with stakeholders through the RRF to develop a collaborative plan to address the identified factors contributing to exceedence of the allowable level of incidental take.

The estimate cost of a one-year study is \$144,000 (2005 dollars)

#### ***4.1.2 PME: Correlation Analysis***

Chelan PUD will analyze passage results and operational data to determine if correlations exist between upstream and downstream passage times and project operations.

As part of this annual report described in Section 4.1.1, Chelan PUD will examine whether a correlation exists between Project operations and upstream and downstream passage times. The examination will include a compilation and characterization of Project operations (e.g., spill, turbines, and pool elevations) and ladder operations during times of upstream and downstream passage for tagged adult bull trout.

#### ***4.1.3 PME: Facility or Operations Modifications***

If upstream or downstream passage problems are identified (as agreed to in conjunction with the USFWS and Chelan PUD), Chelan PUD will collaborate with the RRF to identify and implement reasonable and feasible options to modify upstream and downstream passage facilities or operations that reduce the identified impacts to bull trout passage.

### **4.2 Objective 2: Assess Project-Related Impacts on Upstream and Downstream Passage of Sub-Adult Bull Trout**

One objective of this Rocky Reach Comprehensive Bull Trout Management Plan for sub-adult bull trout is to investigate potential Project-related impacts on upstream and downstream passage of sub-adult bull trout through the Rocky Reach Dam and reservoir. The stakeholders participating in the RRF (including USFWS) agree that it is not feasible to assess sub-adult passage at Rocky Reach, because of an inability to collect a sufficient sample size of sub-adult bull trout. Nevertheless, for a one-year period beginning 2018 and every 10 years thereafter, Chelan PUD will implement the following PMEs to assess whether there are ongoing Project-related impacts on sub-adult bull trout.

#### **4.2.1 PME: Sub-adult bull trout PIT-Tagging**

Upon the recommendation of the RRFF, Chelan PUD will implement reasonable and feasible methods for monitoring sub-adult bull trout at Rocky Reach Dam. For example, Chelan PUD may continue to provide PIT tags and equipment, and facilitate training, to enable fish sampling entities to PIT tag sub-adult bull trout when these fish are incidentally collected during certain fish sampling operations. If PIT-tagging is continued in the future, then protocols described in section 3.3.2 will continue to be implemented.

If PIT tagging programs are continued, the cost is estimated to be \$5,000 annually (2005 dollars)

#### **4.2.2 PME: Collection and Funding of Tissue Samples for Genetic Analysis**

Beginning in 2018, and every 10 years thereafter for the term of the Rocky Reach license, Chelan will collect and fund genetic analysis of up to 80 bull trout tissue samples (eight sites, up to 10 samples per site) for a period of one year, upon agreement and recommendation by the RRFF. (Note: Up to 80 genetic samples per year will be the combined total for both the Rocky Reach and Rock Island Plans.)

If genetic analysis is conducted, the cost is estimated to be \$5,400.

#### **4.2.3 PME: Information Exchange and Regional Monitoring Efforts**

Chelan PUD may continue to participate in information exchanges with other entities conducting bull trout research and regional efforts to explore methods to monitor upstream and downstream movement of sub-adult bull trout in the mainstem Columbia River. If methodologies become available, Chelan PUD will evaluate them in conjunction with the RRFF. Upon the recommendation of the RRFF, Chelan PUD will implement reasonable and feasible methods for monitoring sub-adult bull trout at Rocky Reach Dam.

#### **4.3 Reporting**

Upon locating any dead, injured or sick bull trout in the Rock Island Project boundary, Chelan PUD will report the finding to the USFWS's Central Washington Field Office (Wenatchee Washington, telephone 509-664-0658) within 48 hours.

During tagging and monitoring years (2005-2008), Chelan PUD will prepare an annual, summary report by April 15 of the following year, describing the progress of the Rocky Reach Comprehensive Bull Trout Management Plan, including implementation of the incidental take statement terms and conditions, and the impact minimization measures as well as the conservation recommendations. The annual report provides an update to the USFWS on tag status and take monitoring. Chelan PUD will prepare a final take monitoring report by December 31, 2008, to include a three year average annual take level for the Project.

Annual reports will be prepared for all subsequent testing and monitoring periods after December 31, 2008, and delivered to FERC and USFWS by April 15 of the year following the testing periods.

Table 1: Criteria for Achievement of Objectives for Bull Trout

<b>Use/Action</b>	<b>Objective</b>	<b>Measured Parameter</b>	<b>Schedule</b>	<b>Actions if Objective Achieved</b>	<b>Alternative Management Actions</b>
Adult Bull trout	Adult upstream passage	Radio-telemetry study and monitor incidental take	Every 10 years	Maintain Action. No additional action needed.	Collaborate with stakeholders of the RRFF to develop a plan to address the identified problems as defined in Section 4.1.3.
	Adult upstream passage	Correlate passage and Project facilities and operation	????	No additional action needed.	Pursue feasibility of Project operations or facilities if passage problems are identified as defined in Section 4.1.3.
Sub-adult Bull trout	Sub-adult downstream passage	PIT-tagging juveniles where captured; monitor passage through adult fishways	As recommended by RRFF	Maintain Action. No additional action needed.	Pursue feasibility of Project operations or facilities if passage problems are identified as defined in Section 4.1.3.
Monitoring and Evaluation	Measure Incidental take	Measure potential reservoir stranding or entrapment	????	Maintain Action. No additional action needed.	Collaborate with stakeholders of the RRFF to develop a plan to address the identified problems as defined in Section 4.1.3.

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## **APPENDIX A: CHELAN COUNTY PUD FISHWAY OPERATIONS AND MAINTENANCE AT ROCKY REACH DAM**

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The Rocky Reach fishway is operated continuously for adult fish passage from approximately 1 March to the last week of December. The only exceptions to this continual operation would be unanticipated mechanical/electrical breakdown in the fishway requiring an immediate outage (dewatering may also be necessary), or removal of excessive milfoil/debris from attraction water system (AWS) pump intake screens/trashracks (dewatering is not required; however pumps must be shut off from four to six hours). A buildup of milfoil on the AWS intake screens/trashracks will reduce the pumping efficiency and prevents the fishway from maintaining the required operational criteria. Two to three AWS pump outages may occur over the months of August and September (depending on milfoil production).

Between the last week of December and 1 March, the fishway undergoes an annual maintenance period to keep the fishway operating in an optimum and prescribed manner. During the maintenance period, 1) the entire fishway is inspected and cleaned by fishway attendants; 2) worn or broken equipment is replaced and/or repaired by mechanics and wiremen; and 3) critical operating equipment (e.g. AWS pumps, motorized operating valves, etc.) are thoroughly evaluated to confirm their readiness for the upcoming fish season. In some instances, depending on the maintenance schedule and operational demands, an overhaul of this critical equipment may be necessary. For example during the current fishway maintenance period at Rocky Reach Dam, one of the AWS pumps is being completely overhauled.

Due to the complexity of removing, overhauling and re-installing the pump, the Habitat Conservation Plan Coordinating Committee (HCPCC) and Larry Basham (Fish Passage Center) have granted Chelan County PUD a special dispensation to extend the current fishway outage until 31 March. If Chelan County PUD foresees that extra time will be needed during the fishway maintenance periods, the PUD will contact the HCPCC and Larry Basham at least three months ahead of the outage start date and request the extra fishway outage time. However, the request for extra outage time may have a shorter advance notice, if an unknown mechanical or electrical problem is discovered after the fishway is dewatered for maintenance. The remaining two AWS pumps at Rocky Reach Dam will be overhauled over the next two years, one during the 2006 maintenance period and the other during the 2007 maintenance period; both overhauls will require a longer fishway outage time.