

ATTACHMENT G

BIOLOGICAL ASSESSMENT AND SCOPE OF PROPOSED ACTIONS RELATED TO IMPLEMENTATION OF THE WELLS ANADROMOUS FISH AGREEMENT AND HABITAT CONSERVATION PLAN

Document submitted to the Federal Energy Regulatory Commission

by

**Public Utility District No. 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, Washington
98802-4497**

Wells Hydroelectric Project, FERC License No. 2149

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TERMS AND ABBREVIATIONS

Additional Tools	Tools in addition to those initially proposed - see Tools, below
BA	Biological Assessment
cfs	cubic feet per second
Chelan or Chelan PUD	Public Utility District No. 1 of Chelan County
Colville Tribe	Confederated Tribes of the Colville Reservation
dam	The concrete structure impounding the Columbia River (as defined in the HCP).
Douglas or Douglas PUD	Public Utility District No. 1 of Douglas County
Effective Date	Effective Date of the HCP Agreement is the later of 1) FERC's License order approving the HCP and modifying the Project license, 2) NMFS' issuance of an incidental take statement, or 3) USFWS completion of the necessary consultations under the ESA.
ESA	Endangered Species Act
FEIS	Anadromous Fish Agreements and Habitat Conservation Plans - Final Environmental Impact Statement for the Wells, Rocky Reach, and Rock Island Hydroelectric Projects, December 2002
FERC	Federal Energy Regulatory Commission
forebay	The body of water from the dam upstream approximately 500 feet (as defined by the HCP).
GBT	Gas Bubble Trauma
gpm	Gallons Per Minute
HCP or Wells HCP	Anadromous Fish Agreement and Habitat Conservation Plan for the Wells Hydroelectric Project and supporting documents.
ITP	Incidental Take Permit
kcfs	1,000 cubic feet per second
kelt	An adult steelhead that has spawned and is migrating downstream to the ocean, where it will feed before attempting to migrate upstream and spawn again.
msl	Feet above Mean Sea Level
NMFS or NOAA Fisheries	National Marine Fisheries Service
NNI	No Net Impact
Opinion	This Biological Opinion
Parties	The agencies and tribes which have, to date, conditionally signed the Wells HCP Agreement.

Permit Species	UCR steelhead, UCR spring-run chinook salmon, UCR summer/fall-run chinook salmon, and Okanogan River sockeye salmon
PIT-tag	Passive Integrated Transponder tag commonly used in juvenile and adult fish migration rate and survival studies.
Plan Species Project	Permit species and reintroduced coho salmon Wells Hydroelectric Project (FERC No. 2149) - the geographical boundaries of the Project include the reservoir, forebay, dam, and tailrace (as defined in the HCP).
PUD	Public Utility District
QAR	Quantitative Analysis Report
radio-tag	Tag composed of a small transmitter, battery, and whip antenna, commonly used in juvenile and adult fish behavior and survival studies.
reservoir	The body of water impounded by the dam extending to the tailrace of the next upstream dam.
RM	river mile
RPA	reasonable and prudent alternative
tailrace	The body of water from the base of the dam to a point approximately 1,000 feet downstream (as defined in the HCP).
TDG	total dissolved gas
Tools	Any action, structure, facility, or program (on-site only) at the Project (except those prohibited in section 9.7 of the HCP) intended to improve the survival of Permit Species migrating through the Project.
UCR	Upper Columbia River
Umatilla Tribe	Confederated Tribes of the Umatilla Indian Reservation
USFWS	United States Fish and Wildlife Service
WDFW	WDFW
WDOE	Washington State Department of Ecology
Yakama Tribe	Confederated Tribes and Bands of the Yakama Indian Nation

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1. EXECUTIVE SUMMARY

This document constitutes Douglas PUD's biological assessment (BA) pursuant to section 7(a)(2) of the ESA. It is our expectation that the USFWS will utilize this document during their preparation of a biological opinion (BO) related to the effects of the proposed actions, implementation of the Wells Anadromous Fish Agreement and Habitat Conservation Plan (Wells HCP), on ESA listed species, ESA candidate species, ESA listed species' critical habitat and ESA listed species' proposed critical habitat.

Specific actions proposed for implementation during the term of the Wells HCP include operation of adult fishways and juvenile bypass system, turbine and spillway operations, predator control measures, implementation of a Tributary Conservation Plan and a Hatchery Compensation Plan.

1.1. Summary of Findings

Endangered Species Act - Threatened and Endangered Species

Douglas PUD, the owner and operator of the Wells Hydroelectric Project (FERC Project No. 2149), is proposing to implement the Wells HCP. The Wells HCP is an innovative 50-year agreement designed to increase the survival and protect the habitat of five anadromous fish species including: spring chinook, summer/fall chinook, sockeye, steelhead and coho.

Through communication and informal consultation with the USFWS, Douglas PUD has identified 14 species of fish, wildlife, and plants that are either ESA listed or are candidates for ESA listing that are found within the three counties that border the Wells Project (Chelan, Douglas and Okanogan counties).

1. Pygmy Rabbits (*Brachylagus idahoensis*) - No Effect.
 - No suggested impact minimization measures recommended for pygmy rabbits.
2. Showy Stickseed (*Hackelia venusta*) - No Effect.
 - No measures are needed to minimize impacts to showy stickseed from the actions listed in the Wells HCP Agreement.
3. Wenatchee Mountains Checker-mallow (*Sidalcea oregana*) - No Effect and will not result in the destruction or adverse modification of critical habitat for the Wenatchee mountains checker-mallow.
 - Conduct rare plant surveys at proposed stream habitat restoration sites to determine if Wenatchee Mountains checker-mallow is present on the site.

4. Columbia River Bull Trout - May Affect – likely to adversely affect bull trout. Will not result in the destruction or adverse modification of proposed critical habitat for Columbia River bull trout.

- Bull trout stranded during fish ladder and turbine maintenance will be collected, counted and returned to the river immediately upstream of the project. All observations of bull trout recovered during these operation will be reported to the USFWS.
- Information on the number of bull trout passing through the fish ladders at Wells Dam, outside the normal fish counting period, will be collected during the winter of 2004-2005. Winter bull trout counts will begin on November 16, 2004 and will continue until April 31, 2005. After the winter bull trout counts have been compiled and examined by all interested entities, the District and the USFWS will determine whether or not winter bull trout counts should be collected during future years.
- Brood stock traps located in the fish ladder at Wells Dam will not be operated when water temperatures within the ladder exceed 69 ° F. Operation of the fish ladder traps will be limited to a maximum of 16-hours per day for no more than three days per week. The ladder traps will be manned to ensure that bull trout are safely returned to the fish ladder upstream of the trap. Should a bull trout be mistakenly anesthetized, the fish will be allowed to recover, transported to a quiet location upstream of the dam and released.
- Brood stock traps operated in the Methow Basin will be checked at least once per day during trapping operations. Bull trout collected in the tributary brood collection traps will be safely removed from the traps and released a sufficient distance upstream of the trap to ensure that the released bull trout do not become stranded on the dam, weir or on the trap intake screens.
- Hatchery evaluation activities may result in the harassment of migratory bull trout during spawning ground and snorkel surveys. During these surveys, spawning bull trout will be avoided whenever possible. Whenever observed, the location of spawning bull trout will be shared with USFWS and US Forest Service bull trout biologists.

- Juvenile spring chinook and steelhead smolt trapping activities on the Methow, Twisp and Chewuch rivers may result in the inadvertent collection of juvenile and adult bull trout. To reduce capture and handling stress, the traps will be checked and cleaned at least twice per day. Upon encountering a bull trout in one of the juvenile traps, each bull trout will be anesthetized, measured, weighed, PIT-tagged and, after recovering from the affects of the anesthetic, released downstream of the trapping facility. The information collected on each incidentally captured bull trout will be provided to the USFWS for use in monitoring bull trout populations in the Upper Columbia River.
- All Tributary Conservation Plan and Hatchery Compensation Plan projects that have the potential to disturb bull trout or proposed bull trout critical habitat will be required to go through a separate ESA Section 7(a)(2) consultation prior to initiation of the project.

5. Bald Eagle (*Haliaeetus leucocephalus*) - May Affect - Not likely to Adversely Affect.

- Stop avian predator hazing when a bald eagle is observed in the vicinity of the Wells Hatchery and Wells tailrace.
- Develop a plan to capture any eagle that is injured by the high tension wires installed in the Wells tailrace and over the Wells Hatchery rearing ponds. Transport any injured eagle to a licensed raptor rehabilitation facility.
- Contact USFWS, WDFW and US Forest Service to determine if there are any bald eagle nesting territories or bald eagle night roosts within one mile of any proposed habitat restoration project. Through the permitting process, determine the appropriate time to construct the habitat restoration project. Hold the contractor responsible for complying with all permit requirements pertaining to bald eagle activity in the area.

6. Lynx (*Lynx canadensis*) - No Effect.

- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to lynx using the Methow or Okanogan river valley during the spring.
- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction activities in the riparian areas of the Twisp, Upper Methow and Chewuch rivers should be done during the winter when lynx may migrate to lower elevations.

- In-stream restoration projects may be allowed during any time of year provided that no confirmed lynx sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a lynx is sighted or if evidence of recent lynx activity has been found within one mile of the site. All evidence of lynx activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the lynx has not been seen and no new evidence of lynx activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if lynx habitat is in the area of the project and to determine whether a lynx has been observed in the immediate vicinity of the proposed project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

7. Gray Wolf – (*Canis lupus*) – No Effect.

- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to gray wolves that may be using the Methow or Okanogan river valley during the winter.
- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction in riparian areas should be done during the winter when gray wolves may migrate to lower elevations.
- In-stream work may be allowed during any time of year provided that no confirmed gray wolf sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a wolf is sighted or if evidence of recent wolf activity has been found within one mile of the site. All evidence of wolf activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the wolf has not been seen and no new evidence of wolf activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if gray wolf habitat is in the area of the project and to determine whether a gray wolf has been observed in the immediate vicinity of the proposed project within the last 30-days. They

will also be required to follow all state and federal permit requirements for the habitat restoration project.

8. Grizzly Bear – *Ursus arctos horribilis* – May Affect – Not likely to Adversely Affect.

- To minimize any human – grizzly bear conflict at the Methow River Spring Chinook Hatchery, spring chinook traps and acclimation ponds, should a confirmed grizzly bear sighting take place within one mile of the Methow hatchery or acclimation ponds, then the existing sanitary practices at those facilities should be examined and changes made where needed. Changes in sanitary practices may include, but are not limited to, purchasing bear proof trash receptacles, cleaning up spilled fish food, hauling dead fish to the appropriate garbage transfer station and not feeding pets outside at employee housing.
- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to grizzly bears using the Methow River basin during the spring.
- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. Riparian and in-stream restoration work may be allowed during any time of year provided that a grizzly bear has not been sighted within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a grizzly is sighted or if evidence of recent grizzly bear activity has been found within one mile of the site. All evidence of grizzly bear activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the grizzly bear has not been seen and no new evidence of grizzly bear activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if grizzly bear habitat is in the area of the project and to determine whether a grizzly bear has been sighted in the vicinity of the project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

9. Marbled Murrelet (*Brachyramphus marmoratus marmoratus*) – No Effect.

- No measures are needed to minimize impacts because none of the actions proposed under Wells HCP Agreement will have an impact on the marbled murrelets or marbled murrelet nesting habitat.

10. Ute ladies'-tresses (*Spiranthes diluvialis*) – No Effect.
 - Conduct rare plant surveys at proposed stream habitat restoration sites to determine if Ute ladies'-tresses is present on the site.

11. Northern Spotted Owl – (*Strix occidentalis caurina*) – No Effect and will not result in the destruction or adverse modification of critical habitat for Northern spotted owl.
 - All stream habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and state and federal regulatory staff before a project is implemented. Contactors planning a stream habitat restoration project will be required to contact the USFWS and the US Forest Service to determine if spotted owls are nesting in the area of the project. Contractors working on stream restoration projects will be required to follow all state and federal permit requirements.

 - Any road built to facilitate stream habitat restoration will be obliterated and re-vegetated after the restoration work is completed.

Endangered Species Act - Candidate Species

1. Yellow-billed Cuckoo – (*Coccyzus americanus*) – No Effect.
 - No measures are needed to minimize impacts to yellow-billed cuckoo from the actions proposed in the Wells HCP.

2. Western Sage Grouse – (*Centrocercus urophasianus phaios*) – No Effect.
 - No activities proposed in the Wells HCP Agreement will impact Western sage grouse. No impact minimization measures are necessary to protect Western sage grouse.

3. Washington ground squirrel (*Spermophilus washingtoni*) – No Effect.
 - No measures are needed to minimize impacts to Washington ground squirrels since actions proposed for implementation under Wells HCP will have no impact on Washington ground squirrels.

Table 1-1. Summary of Effect Determinations for ESA Listed Species

Listed Species	Species Determination	Critical Habitat Determination	Comments
Pygmy Rabbit (Endangered)	No effect	Critical Habitat not designated	No populations residing in HCP Action area
Showy Stickseed (Endangered)	No effect	Critical habitat not designated	No documented population within HCP Action Areas
Wenatchee Mountains Checker-mallow (Endangered)	No effect	Will not result in the destruction or adverse modification of critical habitat	No documented population within HCP Action Areas
Columbia River Bull Trout (Threatened)	Likely to adversely affect	Will not result in the destruction or adverse modification of proposed critical habitat	Migratory and resident populations present in mainstem and tributaries
Bald Eagle (Threatened)	May Affect, Not Likely to Adversely Affect	Critical Habitat not designated	Nesting location present on Wells reservoir
Canadian Lynx (Threatened)	No effect	Critical habitat not designated	Some tributary headwater locations included in Lynx Recovery Area
Gray Wolf (Threatened)	No effect	Critical habitat not designated	Some tributary headwater locations included in Gray Wolf Recovery Area
Grizzly Bear (Threatened)	May affect, not likely to adversely affect	Critical habitat not designated	Some tributary headwater locations included in Grizzly Bear Recovery Area

Table 1-1 (Continued). Summary of Effect Determinations for ESA Listed Species

Marbled Murrelet (Threatened)	No effect	Critical habitat not designated	No documented population or suitable nesting habitat within HCP Action Areas
Ute ladies'-tresses (Threatened)	No effect	Critical habitat not designated	Populations located along Rocky Reach Reservoir shoreline only
Northern Spotted Owl (Threatened)	No effect	Will not result in the destruction or adverse modification of critical habitat	Any tributary action in designated critical habitat requires federal oversight and review to ensure no effect

Table 1-2. Summary of Effect Determinations for ESA Candidate Species

Candidate Species	Species Determination	Critical Habitat Determination	Comments
Yellow-billed Cuckoo	No effect	Critical habitat not designated	No documented population or suitable nesting habitat within HCP Action Areas
Western Sage Grouse	No effect	Critical habitat not designated	No documented population or suitable nesting habitat within HCP Action Areas
Washington ground squirrel	No effect	Critical habitat not designated	No documented population within HCP Action Areas

2. INTRODUCTION AND BACKGROUND

2.1. History of the Anadromous Fish Agreement and Habitat Conservation Plan

The history leading up to the Wells HCP dates back to 1978, when the National Marine Fisheries Service (NMFS), Washington Department of Fish and Wildlife (WDFW), the Confederated Tribes and Bands of the Yakama Indian Nation (Yakama) and other entities filed various petitions with the Federal Energy Regulatory Commission (FERC) seeking spill, improved flows, and other modifications of operations at the Project to protect downstream migrating juvenile fish. In response to these petitions, the Commission in March 1979 set for hearing, before an administrative law judge, a consolidated proceeding on juvenile fish protection at all five Mid-Columbia projects. This consolidated proceeding, which is ongoing for the Priest Rapids and Rocky Reach projects, has become known as the *Mid-Columbia Proceeding*. In 1979, under the direction of then Presiding Administrative Law Judge Allen Lande, the participants in the *Mid-Columbia Proceeding* negotiated a series of interim settlement agreements that provided for spill, hatchery compensation, and studies to improve fish protection.

On January 18, 1989, the Commission approved a long-term settlement agreement for the Rock Island Project. During this same time period, Douglas PUD was involved in the development of a highly effective juvenile bypass system and was actively negotiating a long-term settlement agreement for anadromous fish resources at the Wells Project. These negotiations resulted in the long-term 1990 Wells settlement agreement. Since 1991, Douglas PUD has operated the Wells Project pursuant to the 1990 Wells settlement agreement.

The *Mid-Columbia Proceeding* continued in regard to the two remaining FERC licensed projects, *i.e.*, Chelan PUD's Rocky Reach Project, FERC Project No. 2145 and Grant PUD's Priest Rapids Project, FERC Project No. 2114.

In August 1993, Douglas, Chelan, and Grant PUDs, initiated discussions with NMFS, USFWS, and WDFW to develop a long-term, comprehensive program for managing fish and wildlife that inhabit the Mid-Columbia River Basin (the portion of the Columbia River from the tailrace of Chief Joseph Dam to the confluence of the Yakima and Columbia rivers). As these discussions proceeded and began to gain momentum, other entities, such as the Colville Tribe, the Yakama Tribe, the Umatilla Tribe, American Rivers, and FERC staff, joined the negotiations.

These discussions first explored the possibility of developing an ecosystem-based plan for managing fish and wildlife resources inhabiting the Mid-Columbia

River Basin, but because of the immense breadth of this type of plan the Parties decided to focus on an agreement for aquatic species inhabiting the Mid-Columbia River Basin, including fish, plants and animals. After extensive review, the Parties further concluded, given the likelihood that certain species of salmon and steelhead would be listed in the near future under the ESA and given the lack of information regarding other aquatic species, it was decided that the best basin-wide approach would be to develop an agreement for anadromous salmonids, specifically: spring, summer/fall chinook salmon (*O. tshawytscha*); sockeye salmon (*O. nerka*); coho salmon (*O. kisutch*); and steelhead (*O. mykiss*). These species are collectively referred to as Plan Species in this document and in the Wells HCP.

The Wells HCP is intended to be a comprehensive and long-term management plan for anadromous salmonids affected by the Project, which will replace the obligations contained within the 1990 Wells settlement agreement that is currently included in the license for the Project. The objective of the Wells HCP is to achieve “No Net Impact” for each of the anadromous fish stocks (chinook salmon, sockeye salmon, coho salmon, and steelhead), affected by the Project, and to maintain the same for the duration of the HCP. No net impact will be accomplished through fish passage at the Project, hatchery programs, and fish habitat work along tributary rivers and streams.

On July 30, 1998, following five years of negotiations, Douglas PUD submitted an unexecuted form of the HCP Agreement to the NMFS along with an Application for Individual Incidental Take Permit. NMFS, as lead agency, and the FERC, as a cooperating agency, prepared a DEIS on the unexecuted form of the HCP Agreement. Following a review of the public comments on the DEIS, the Parties developing the HCP Agreement engaged in further analysis, discussion and negotiations to clarify the terms of the HCP Agreement. The Parties executed the HCP Agreement in April 2002, subject to regulatory review.

The proposed HCP for the Wells Project is the result of over 9 years of planning and negotiations between NMFS, Douglas PUD, and other participants in the HCP process. These participants included USFWS, WDFW, the Yakama Tribe, the Colville Tribe, and Umatilla Tribe, American Rivers, Inc. and representatives of the major wholesale purchasers of electricity produced from Douglas PUD’s Wells Dam. These efforts culminated in the completion of three proposed anadromous fish agreements and habitat conservation plans (one each for Wells, Rocky Reach, and Rock Island hydroelectric projects) offered for signing on March 26, 2002.¹ All of the participants, with the exception of the Yakama Tribe

¹ The Wells Hydroelectric Project (FERC No. 2149) is owned by Public Utility District No. 1 of Douglas County (Douglas PUD). The Rocky Reach (FERC No. 2145) and Rock Island (FERC No. 943) Hydroelectric Projects are owned by Chelan PUD.

and the Umatilla Tribe, and American River, Inc., indicated their support, pending regulatory review, of the Wells HCP by signing the document in the spring of 2002.

2.2. Consultation History

On June 19, 2000, NOAA Fisheries issued a biological opinion to the FERC titled "Interim Protection Plan and Operation of the Wells Hydroelectric Project (FERC Project No. 2149)" (NMFS 2000). The 2000 interim biological opinion analyzed the effect of the actions at the Project on Upper Columbia River (UCR) steelhead, Middle Columbia River (MCR) steelhead and UCR spring-run chinook salmon. The 2000 biological opinion (BO) concluded that the proposed action, through the expiration date of the interim BO (April 1, 2002), was not likely to jeopardize the continued existence of these species or result in the adverse modification of their critical habitat. The 2000 BO also noted NOAA Fisheries' expectation that the proposed action would be superseded by a habitat conservation plan or the issuance of a new 5-year biological opinion for the Project.

On May 17, 2002, NOAA Fisheries informed FERC that the 2000 biological opinion had expired and that NOAA Fisheries was ready to expedite the consultation process in order to provide Douglas PUD continued coverage for the take of ESA-listed species (NMFS 2002b). However, FERC did not respond to this letter and ESA coverage for the Project lapsed.

As it pertains to the proposed action, implementation of the Wells HCP, NMFS noticed receiving Douglas PUD's completed Incidental Take Permit (ITP) application and Wells HCP Agreement in the Federal Register on June 25, 2002, (67 FR 42755). NMFS received public comments related to the proposed ITP through July 29, 2002.² The Environmental Protection Agency (EPA) noticed NMFS' Final Environmental Impact Statement (FEIS) in the Federal Register on December 27, 2002 (67 FR 79081), initiating a 30-day cooling-off period during which NMFS invited comments on or questions about the FEIS. NMFS received comments through February 10, 2003.³ Alternative 3 of the FEIS (Proposed Action - Project HCPs) describes the proposed action (issuing the proposed ITPs to Douglas PUD for a period of up to 50 years) and its likely effects on salmon and steelhead.

² The Federal Register Notice indicated that comments must be received no later than 5 p.m. on July 25. However, several parties requested a brief extension (2 business days) of the comment period, which was granted.

³ The initial comment period was through January 27, 2003. However, several parties requested up to a 30-day extension. In response, NOAA Fisheries granted a two-week extension through February 10, 2003.

Prior to submitting the Wells HCP plan to FERC for approval and incorporation into the projects license, NOAA Fisheries completed ESA Section 7(a)(2) consultations for not only the Wells Hydroelectric Project but also for similar HCPs proposed for the Rocky Reach and Rock Island hydroelectric projects. Subsequent to these three consultations, NMFS has issued (August 20, 2003) three separate Incidental Take Permits for each of the HCPs covering each project.

On January 10, 2000, the USFWS issued a letter requesting that the FERC and Douglas PUD participate in informal ESA section 7 (a)(2) consultation regarding ESA listed Columbia River bull trout known to pass through the Wells Hydroelectric Project. Pursuant to this request, FERC directed Douglas PUD work with the USFWS to gain information on bull trout behavior at the Wells Project. Since initiating informal consultation, the USFWS has requested that Douglas PUD participate in regional bull trout telemetry studies and that Douglas PUD ensure that appropriate fish counting technology is employed in the fish ladders at the dam to accurately count the number of bull trout that annually ascend Wells Dam. Since initiation of consultation, Douglas has participated in three years of bull trout telemetry studies and has completed extensive upgrades to the fish counting systems at the dam.

Because the proposed action would affect tribal resources, NMFS has contacted the Colville, Yakama, and Umatilla tribes pursuant to the Secretarial Order #3206 (June 5, 1997).

2.3. Proposed ESA Consultation prior to Approval of the Wells HCP

The Endangered Species Act of 1973 (16 USC 1531-1544), as amended, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS and NMFS, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their designated critical habitats.

In this instance, FERC is required to consult with the USFWS under section 7 (a)(2) of the ESA regarding implementation of the Wells HCP. The term of the Wells HCP is 50 years following approval by the FERC. Simultaneously, two related HCP plans are proposed for implementation by Chelan PUD for their operation of the Rocky Reach and Rock Island projects. All three of these projects are located in the middle-reach of the Columbia River in Chelan, Douglas and Okanogan counties, Washington. In accordance with the conservation, minimization, and mitigation measures proposed in the Wells HCP, for operations of the Wells Project, off-site hatchery facilities and

implementation of a tributary enhancement program, the USFWS has proposed to formally consult on the impact of the proposed actions on ESA listed and candidate species pursuant to section 7 of the ESA. This document shall serve as Douglas PUD's BA for listed species under the jurisdiction of the USFWS.

This document constitutes Douglas PUD's BA pursuant to section 7(a)(2) of the ESA. It is our expectation that the USFWS will utilize this document during their preparation of a biological opinion (BO) related to the effects of the proposed actions, implementation of the Wells HCP Agreement, on ESA listed or candidate species.

3. PROPOSED ACTIONS

3.1. HCP Plan Area and Project Description

Actions proposed under the Wells HCP will cover a geographic range that extends from 1000 feet downstream of Chief Joseph Dam (RM 544.9) downstream to RM 356.0⁴, a distance of nearly 190 miles and including the two primary tributaries to the Wells reservoir, the Methow and Okanogan rivers. To simplify the analysis of effects to ESA listed and ESA candidate species within the defined Wells HCP action area, this Biological Assessment (BA) further delineates the proposed action area into four major sub-action areas based upon the types of actions anticipated following implementation of the Wells HCP. These four sub-action areas are defined as: 1) Passage Survival Plan sub-action area, 2) Tributary Conservation Plan sub-action area, 3) Hatchery Compensation sub-action area and 4) Water Quality sub-action area.

The Passage Survival Plan sub-action area for the Wells HCP includes the entire mainstem Columbia River from 1000 feet downstream of Chief Joseph Dam (RM 545.6) to 1000 feet downstream of Wells Dam (515.5). This sub-action area includes all of Wells Dam and Lake Pateros including the inundated portion of the Methow and Okanogan rivers. Within this sub-action area, Douglas PUD anticipates the need to implement the Wells HCP passage survival plan including juvenile and adult survival studies, the juvenile dam passage survival plan and the adult passage plan. Components of the juvenile and adult passage survival plans include operating criteria for the juvenile bypass system and includes operating plans for the Wells spillways, fish ladders and generating units. Actions also included in the Passage Survival Plan sub-action area include the predator harassment and removal programs being implemented to increase the on-site survival of juvenile Plan Species. These programs include the operation and maintenance of predator deterring wires strung across the tailrace of the dam and includes the use of avian predator harassment and removal

⁴ RM 356.0 is the upper end of the reservoir created by McNary Dam, approximately 21 miles upstream of the confluence of the Yakima and Columbia rivers.

activities. This sub-action area also includes the implementation of a pikeminnow removal program throughout the Wells reservoir and tailrace.

The Tributary Conservation Plan sub-action area includes all of the areas that may be affected by the implementation of the Tributary Conservation Plan. The Tributary Conservation Plan sub-action area includes those portions of the Methow and Okanogan rivers that are accessible or have a direct impact on the habitat that is accessible and hence critical to the survival of the HCP Plan Species. This sub-action area also includes the mainstem Columbia River from 1000 feet below Chief Joseph Dam (RM 545.6) to 1000 feet downstream of Wells Dam (RM 515.5).

The Hatchery Compensation Plan sub-action area includes all of the portion of the tributary streams that contain brood collection traps, acclimation ponds, hatchery water diversions, diversion structures and ground water wells. The Hatchery Compensation Plan sub-action area presently includes the mainstem Methow River including the Methow Fish Hatchery and all of the Methow hatchery rearing, acclimation and water conveyance structures. The Methow Hatchery facilities includes Foghorn Dam, Foghorn Trap and the upper one half mile of the Foghorn Irrigation Ditch, the Methow hatchery and Methow rearing and acclimation ponds, Fulton Dam and the Fulton Trap, the upper one half mile of the Chewuch Canal, the Chewuch Acclimation Pond and the upper one half mile of the Twisp Irrigation Canal, Twisp Acclimation Pond and Twisp Weir and Trap. In addition, the Hatchery Compensation Plan sub-action area also includes the entire Wells Fish Hatchery including all of the associated rearing, release, water conveyance and adult trapping facilities. The Wells hatchery includes two adult ladder traps in the fishways at Wells Dam, one on-site adult volunteer channel, one surface water diversion structure, 13 ground water wells and multiple concrete, dirt and vinyl rearing vessels. In addition to these facilities, should the population of Plan Species expand over the term of the agreement, additional hatchery facilities may be required. These facilities would be required to go through a separate ESA section 7 consultation process prior to being approved and constructed.

The Water Quality sub-action area includes the mainstem Columbia River from 1000 feet downstream of Chief Joseph Dam to RM 356. Several actions identified in the proposed Wells HCP have the potential to increase spill or modify operations of the juvenile bypass system at Wells Dam. Both of these actions have the potential to increase the TDG values in the tailrace of Wells Dam (515.8) downstream as far as RM 356. Reservoir impoundment and inundation of the lower Okanogan and Methow rivers may result in a further increase in water temperatures resulting from project operations. These affects may also be detectable as far downstream as RM 356.

3.2. Term of the HCP and Species Covered

The Wells HCP will become effective upon completion of all regulatory reviews including the section 7 consultation utilizing this Biological Assessment. The Commission's incorporation of the Wells HCP Agreement into the Project license in place of the 1990 Wells settlement agreement is all that remains for the Wells HCP Agreement to become fully effective.

The Wells HCP is a 50-year agreement that will remain in effect up to and until the 50-year term of the agreement expires; the Commission issues a non-power license for the Project; the Commission orders removal of the Project; the Commission orders a drawdown of the Project; or if Douglas withdraws from the HCP Agreement.

The Parties to the HCP Agreement may elect to withdraw from the HCP Agreement when at least twenty-years has elapsed from March 1, 1998, subject to the following conditions: (1) no net impact has not been achieved or has been achieved but has not been maintained; or (2) the Project has achieved and maintained no net impact, but Plan Species are not rebuilding, and the Project is a significant factor in the failure to rebuild. In addition, the Parties may elect to withdraw from the HCP Agreement at any time upon the occurrence of any of the following situations: (1) non-compliance by Douglas PUD (2) governmental action that is detrimental to the HCP Agreement, because it materially alters or is contrary to any of the terms of the HCP Agreement; (3) impossibility; (4) revocation of the permits issued by NMFS under Section 10 of the ESA; or (5) another Party to the HCP Agreement withdraws, provided proper notice is given. In addition, NMFS and USFWS may withdraw from the HCP Agreement to seek drawdown, non-power operations, or other actions if no net impact is not achieved by 2018.

The fish species covered by the Wells Anadromous Fish Agreement and Habitat Conservation Plan are termed plan species. Plan species include UCR spring, and UCR summer/fall chinook, Okanogan sockeye, UCR steelhead and reintroduced coho. Permit species include all of the plan species listed above except for coho which have been recently re-introduced from out of basin hatchery coho stock (Table 3-1).

Table 3-1. Status of Wells HCP Plan and Permit Species.

Species	ESA Status	Evolutionarily Significant Unit	HCP Status
Steelhead	Endangered (August 1997)	Upper Columbia River	Plan and Permit Species
Spring-Run Chinook Salmon	Endangered (March 1999)	Upper Columbia River	Plan and Permit Species
Summer/Fall-Run Chinook Salmon	Not Warranted (March 1998)	Upper Columbia River	Plan and Permit Species
Sockeye Salmon	Not Warranted (March 1998)	Okanogan River	Plan and Permit Species
Coho Salmon	Extirpated	Not Applicable	Plan Species

3.3. Summary of HCP Actions

3.3.1. HCP Survival Standards

The stated goal of the Wells HCP is to provide no net impact passage survival standards for Plan Species migrating through the Wells Hydroelectric Project. According to the plan, the passage survival goals of the HCP will be achieved on a specified schedule and maintained for the duration of the Agreement for each Plan Species affected by the Project. The measurement and achievement of NNI has two components: (1) a combined adult and juvenile project survival standard of at least 91% and (2) up to 9% compensation for unavoidable project mortality provided through hatchery and tributary programs, with up to 7% compensation provided through hatchery programs and up to 2% compensation provided through tributary programs.

Douglas PUD will be responsible for achieving 91% combined adult and juvenile project survival through project improvement measures. Douglas PUD will also be responsible for: (1) funding the 2% Tributary Conservation Plan; (2) providing capacity and funding for the 7% Hatchery Compensation Plan; and (3) making capacity and funding adjustments to the Hatchery Compensation Plan to reflect and compensate for future increases in run size of each Plan Species. If Douglas is unable to achieve 91% combined adult and juvenile project survival (or, as discussed below, 93% juvenile project survival or 95% juvenile dam passage survival), Douglas PUD must consult with the Parties through the HCP Coordinating Committee, established pursuant to the HCP Agreement, to jointly seek a solution.

In accordance with Section 4 of the Wells HCP, Douglas PUD agrees to achieve and maintain a combined adult and juvenile project survival standard of 91%, meaning that 91% of each Plan Species (juvenile and adult combined) survive project effects when migrating through the Project's reservoir, forebay, dam and tailrace, including direct, indirect, and delayed mortality wherever it may occur and can be measured (as it relates to the Project) given the available mark-recapture technology. The Wells HCP acknowledges that, adult fish survival cannot be conclusively measured. Based upon regional information, the Wells HCP further acknowledges that adult survival is estimated to be 98-100%. Until technology is available to accurately differentiate hydro-related mortality from natural adult losses, initial compliance with the combined adult and juvenile survival standard will be based upon the measurement of juvenile fish survival.

Limitations associated with the best available technologies have required the development of three standards for assessing juvenile fish survival at the Project. In order of priority they are: 1) measured juvenile project survival⁵; 2) measured juvenile dam passage survival⁶; and 3) calculated juvenile dam passage survival. The survival of each Plan Species will be determined by using one of three survival measures.

For some Plan Species such as sockeye and subyearling chinook, where measurement of juvenile project survival and juvenile dam passage survival is not yet possible, the juvenile dam passage survival standard will be calculated based on the best available information, as determined by the Coordinating Committee.

3.3.2 HCP Phase Implementation

The Wells HCP contains three phases of implementation. Under Phase I, Douglas will implement: (1) juvenile and adult operating plans and criteria to meet no net impact survival standards; and 2) a monitoring and evaluation program to determine compliance with the survival standards.

Following the completion of the three-year juvenile survival studies⁷, the HCP Coordinating Committee will determine whether the pertinent survival standard

⁵ See definition for Juvenile Project Survival in HCP Agreement (sub-Section 13.14, page 51).

⁶ See definition for Juvenile Dam Passage Survival in HCP Agreement (sub-Section 13.13, Page 51).

⁷ Douglas has already completed the Phase 1 survival studies. Three years of juvenile project survival studies were conducted and the results are documented in the HCP Agreement, *Appendix B: Wells Project Survival Estimates*.

has been achieved for each Plan Species⁸. If a standard has not been achieved for a particular Plan Species, Douglas will proceed to Phase II (Interim Tools) for that species, where Douglas will implement a very specific set of interim measures that will then require additional evaluation toward the achievement of the pertinent survival standard. If those measures implemented under Phase II (Interim Tools) fail to achieve the pertinent survival standards, such Additional Tools will be chosen using specified criteria, such as likelihood of success, timing and cost-effectiveness. Until the survival standards being evaluated are achieved, Douglas will continue to implement either Interim or Additional Tools, or until the Coordinating Committee determines the standards are impossible to achieve. The HCP requires Douglas PUD to achieve no net impact by no later than 2013.

If the Coordinating Committee determines, either at the end of Phase I or anytime during Phase II, that a survival standard has been achieved, then the Parties will proceed to Phase III of the HCP Agreement, during which Douglas agrees to maintain the survival standard throughout the remaining term of the HCP Agreement. During Phase III, juvenile survival will also be evaluated, every ten years, as determined by the Coordinating Committee.

3.3.3. HCP Coordinating Committees

To accomplish the HCP objectives, the Wells HCP proposes to utilize three committees to adaptively manage the major technical components of the Wells HCP and one committee to provide policy oversight in the event of disputes among the Parties to the HCP Agreement. Each committee acts upon the unanimous vote of those members present. More detailed descriptions of these committees may be found in the FEIS (section 2.3.4.7) and Wells HCP Agreement (sections 6, 7.3, 8.2, and 11.1).

The Wells HCP Coordinating Committee consists of one representative from each of the Parties to the Wells HCP Agreement and one non-voting observer acting on behalf of Douglas PUD's power purchasers who have also signed the Wells HCP Agreement. The Coordinating Committee will oversee all aspects of the standards, methodologies, and implementation of the Wells HCP by: (1) establishing protocols and methodologies for determining whether survival standards are being achieved for each Plan Species; (2) determining whether the Parties are carrying out their responsibilities under the HCP Agreement; (3) determining whether NNI is achieved; (4) determining the most appropriate survival standard to measure survival for each Plan Species; (5) approving

⁸ During the HCP negotiations, the Parties determined that the juvenile project survival standard had been achieved for steelhead and yearling chinook and that the juvenile dam passage survival standard has likely been achieved for sockeye and subyearling chinook.

studies prior to implementation; (6) reviewing study results and determining their applicability; (7) adjusting the Passage Survival Plan to address survival and unavoidable project mortality; (8) resolving disputes; and (9) adjusting schedules and dates of performance.

The predecessor to the proposed Wells HCP Coordinating Committee, the Wells Coordinating Committee, has been a successful forum for resolving fish issues associated with the Wells Project without having to resort to alternative dispute resolution provisions contained within the 1990 Wells settlement agreement. The Wells HCP Coordinating Committee will also work to resolve disputes, should they arise, in the Hatchery and Tributary coordinating committees.

The Hatchery Committee would be composed of one voting representative of each Signatory Party choosing to appoint a representative to the committee and a single non-voting observer representing Douglas PUD's power purchasers. The Hatchery Committee is responsible for developing recommendations and implementing the hatchery elements of the Wells HCP that Douglas PUD is responsible for funding. The Hatchery Committee's responsibilities include overseeing the implementation of improvements, as well as monitoring and evaluation relevant to Douglas PUD's hatchery programs.

The Tributary Committee would be composed of one voting representative of each Signatory Party choosing to appoint a representative to the committee. In addition to non-voting representatives of USFWS and a single non-voting observer representing Douglas PUD's power purchasers, the Tributary Committee may select other expert entities, such as land and water trusts/conservancy groups, to serve as non-voting members of the committee. The Tributary Committee is charged with the task of selecting projects and approving project budgets from the Plan Species Account for the purposes of implementing the Tributary Plan.

The Policy Committee would also be comprised of one designated representative of each Signatory Party. The primary function of the Policy Committee would be to resolve disputes among the Parties. The Parties shall choose and Douglas PUD shall fund a neutral third party to act as the chair of each committee, excepting that the chair of the Coordinating Committee shall also serve as the chair of the Policy Committee. The committee chairs would prepare annual lists of understandings based on the results of studies, progress reports, and meeting minutes; facilitate and mediate the meetings; and assist the members of the respective committees in making decisions.

3.3.4. HCP Dispute Resolution

The HCP provides a non-binding dispute resolution process. Disputes which cannot be unanimously resolved within 20 days by the Tributary or Hatchery committees may be raised with the Coordinating Committee. If, at the end of an additional 20 days, the Coordinating Committee is unable to reach unanimous agreement on the dispute, then the chair of the Coordinating Committee or any Party may request that the Policy Committee convene to resolve the dispute. Upon referral, the Policy Committee would have 30 days to convene and consider the dispute.

If the Policy Committee is successful at resolving the dispute, then the Parties shall implement all aspects of the settlement that can lawfully be implemented without FERC approval, or the approval of any other Federal agency. If FERC or any other Federal agencies approval is needed, all settling Parties shall jointly present the resolution of the dispute to FERC or the appropriate Federal agency for approval. If the Policy Committee is unable to unanimously resolve the dispute, then any Party may pursue any other right they might otherwise have. More detailed descriptions of the dispute resolution process may be found in the FEIS (section 2.3.4.6) and Wells HCP Agreement (section 11).

3.3.5. HCP Measures

To achieve the applicable survival standards (see section 4 and Figure 1 of the Wells HCP Agreement), a combination of measures identified in the juvenile and adult fish passage plans, including predator control measures, would be utilized at the Project. The appropriate mix of measures would vary depending upon the results of survival studies. Initial operations are described below.

3.3.5.1. Adult Fishway Operations

Douglas PUD has included detailed fishway operating plans (see Wells HCP Agreement, appendix A). The adult fish passage plan includes requirements to have both adult fish ladders in operation from March 1 to December 1 of each year and at least one ladder in operation from December 1 to February 28. Maintenance of each individual fish ladders is scheduled during the December 1 to February 28 time period to avoid impacting adult fish migration. From May 1 to November 15, the fishway is monitored 24 hours per day via digital recording fish counting equipment. Douglas PUD is required to fund fish counters to read the recordings from the previous day and report the fish counts to the U.S. Army Corps of Engineers. The two adult fishways are mirror image left and right bank fishway facilities. Each of the two fishways contains a single main entrance, a collection gallery, a fish ladder, an adult count station, trapping facilities, and an exit in the forebay adjacent to the earthen embankment section of the dam. Each fishway will be operated to maintain water velocities of 7 to 8 feet per second in entrance structures and 1 to 4 feet per second in the transportation channels. The

ladder will be operated such that water depths over weirs in the ladder will be maintained at 1.0 to 1.2 feet. During the migration season, the adult fishway will be inspected once each day. WDFW personnel will inspect the facilities on a monthly basis and provide monthly inspection reports to the Fish Passage Center.

Measures to enhance safe passage of adult Plan Species will be emphasized in order to give high priority to adult survival in the achievement of 91% combined adult and juvenile project survival as described in the FEIS and Wells HCP Agreement. The Wells HCP Coordinating Committee may agree to implement additional measures to meet or achieve and maintain the 91% combined adult and juvenile project survival standard.

More detailed descriptions may be found in the Wells HCP Agreement (section 5.4.2 and appendix A) and in section 2.3.4.8 of the FEIS.

3.3.5.2 Juvenile Bypass, Spillway, and Turbine Operations

Douglas PUD will operate the juvenile bypass system each year in order to provide a non-turbine passage route through the dam for 95% of the spring-run and summer-run juvenile Permit Species outmigrations. This system includes five surface bypass entrances that convey water and fish into five modified spillways. The procedures set forth in the Wells HCP are intended to guide the operating criteria for the Wells juvenile bypass system. This plan also includes specific operating criteria for the turbines and spillways sufficient to maximize fish use and survival through the juvenile bypass system.

The Wells HCP Coordinating Committee may either approve or amend this document in future years. A more detailed description of juvenile bypass, spillway and turbine operations may be found in section 4.3 and appendix A of the Wells HCP Agreement, section 2.3.4.8 of the FEIS and in section 3 of the 2003 Wells BO.

3.3.5.3. Predator Control Measures

Douglas PUD, in cooperation with the Wells HCP Coordinating Committee, will refine and implement a comprehensive predator removal and harassment program for the protection of Plan Species. For northern pikeminnow, activities may include, but not be limited to, angling and long-line fisheries and a sport fishing derby in the project area. For piscivorous birds, including but not limited to Caspian terns, double-crested cormorants, and various gull species, activities may include, but not be limited to, foraging deterrents (e.g., steel wires in the Project tailrace), hazing, and lethal removal of individual birds. These programs will generally occur in the spring and summer, coinciding with the juvenile outmigration.

3.3.5.4. Tributary Conservation Plan

The Tributary Conservation Plan is detailed in section 7 of the Wells HCP.² To implement the Tributary Conservation Plan, Douglas PUD shall provide a Plan Species Account to fund projects for the protection and restoration of Plan Species habitat within the Columbia River watershed (from the Chief Joseph tailrace to the Wells tailrace), and the Okanogan and Methow river watersheds, in order to compensate for up to 2% of unavoidable project mortality (the assumed 9% mortality caused by the project that is compensated through the tributary and hatchery programs). However, if adult passage survival is determined to be greater than 98% and the juvenile project passage survival is greater than 93% for any one of the Plan Species, contributions to the Plan Species Account would be reduced to reflect the actual adult survival estimate of that particular Plan Species.

Once the Wells HCP Agreement has been approved by FERC, Douglas PUD shall make an initial contribution of \$1,982,000 in 1998 dollars to the Plan Species Account. Five years after the initial contribution to the Plan Species Account, Douglas PUD shall do one of the following: 1) make annual payments of \$176,178 (2%) in 1998 dollars as long as the Wells HCP Agreement is in effect; or 2) provide an upfront payment of \$1,761,780 (2% for 10 years) in 1998 dollars, but deducting the actual cost of bond issuance and interest.

The first installment is due within 90 days of the Effective Date of the Wells HCP. The rest of the installments are due by the 31st day of January each year thereafter. The dollar figures shall be adjusted for inflation on the 1st day of January each year based upon the Consumer Price Index for all Urban Consumers for the Seattle/Tacoma area, published by the U.S. Department of Labor, Bureau of Labor Statistics. If said index is discontinued or becomes unavailable, a comparable index suitable to the Tributary Committee shall be substituted.

Douglas PUD will provide an additional \$200,000 to monitor and evaluate the relative performance of projects approved by the Tributary Committee. It is not the intent of the evaluation to measure whether the Plan Species Account has

²The Tributary Conservation Plan is supported by Supporting Document A, "Aquatic Species and Habitat Assessment: Wenatchee, Entiat, Methow, and Okanogan Watersheds," and Supporting Document D, "Tributary Plan, Project Selection, Implementation and Evaluation." These documents (prepared in 1998) summarize information on aquatic species and their habitats in the four major tributaries to the Mid-Columbia River in Washington State. These documents describe how habitat conditions affect the natural productivity and diversity of aquatic populations native to these watersheds and provide guidance for Tributary Committee decisions regarding prioritization and funding of tributary habitat protection or restoration projects.

provided a 2% increase in survival for Plan Species, because any statistical assessment of such small survival improvements would be lost within variation resulting from naturally fluctuating environmental conditions. Instead, the evaluation will ensure that the dollars allocated to the Plan Species Account are utilized in an effective and efficient manner.

The Tributary Committee is charged with the task of selecting projects and approving project budgets from the Plan Species Account for purposes of implementing the Tributary Conservation Plan. The Tributary Committee shall also make sure that an appropriate number of projects are chosen upstream of Wells Dam. Whenever feasible, projects selected by the Tributary Committee shall take into consideration and be coordinated with other conservation plans or programs. Whenever feasible, the Tributary Committee shall cost-share with other programs, seek matching funds, and piggyback programs onto other habitat efforts. Habitat protection and restoration projects could include, but are not limited to, the following:

1. opening fish passage to blocked stream sections or oxbows,
2. changing the points of origin for problematic irrigation withdrawals to less sensitive site(s),
3. purchasing, on a willing buyer/seller concept, water shares for the Trust Water Rights Program or conservation easements on private property,
4. providing alternative sources of irrigation and domestic water to mitigate impacts of problematic surface water diversions,
5. removing dams or other passage barriers on the tributaries,
6. using mechanical means to encourage natural development of riparian areas,
7. using engineering techniques which increase complexity of permanently altered habitats.

The overarching goal of the Tributary Enhancement Fund is the long-term protection or enhancement of Permit Species' habitats in the tributaries, which in turn, should improve the productivity of salmon and steelhead populations in the Methow and Okanogan river basins. NMFS and the USFWS anticipate that some activities will require additional permitting and ESA consultation. Through these means and through its active participation on the Tributary Committee, NMFS and the USFWS would ensure that any negative impacts to Permit Species due to in-water or riparian tributary protection and enhancement activities would be minimized to the extent practical through choice of methodology, seasonal timing of work, and mitigation measures for short-term impacts and would not jeopardize ESA-listed Permit Species.

More detailed descriptions may be found in section 7 and supporting document D of the Wells HCP Agreement and section 2.3.4.8 of the FEIS.

3.3.5.5. Hatchery Compensation Plan

Section 8 of the Wells HCP establishes a Hatchery Compensation Plan, whereby Douglas PUD agrees to provide funding and capacity to compensate for unavoidable project mortality. Douglas will provide funding and capacity required to meet the 7% hatchery compensation level necessary to achieve no net impact. The Phase I production commitments for juvenile passage losses and initial inundation effects are satisfied by maintaining current production commitments as described in the 1990 Wells settlement agreement. Upon the completion of Phase I¹⁰, hatchery production commitments for passage losses will be adjusted based upon juvenile project survival estimates.

The initial estimates of production capacity will be adjusted in 2013 and every 10 years thereafter to compensate for unavoidable project mortality¹¹. Hatchery production commitments for passage losses will be adjusted periodically based upon the results of juvenile project survival estimates¹². Douglas agrees to operate the hatchery facilities according to the terms of the Hatchery Compensation Plan developed by the Hatchery Committee and the required permits issued by NMFS pursuant to Section 10 of the ESA. The Hatchery Committee will be responsible for determining program adjustments considering the methodology described in the Biological Assessment and Management Plan and for providing recommended implementation plans to Douglas PUD. Douglas PUD will be responsible for funding the implementation plan.

The Hatchery Committee shall oversee development of recommendations for implementation of the hatchery elements of the Wells HCP that Douglas PUD is responsible for funding. This includes overseeing the implementation of improvements, monitoring and evaluation relevant to Douglas PUD's hatchery programs (as identified in the Hatchery Compensation Plan, section 8 of the Wells HCP), the Hatchery Permits, and the Wells HCP. Hatchery Committee decisions shall be based upon the likelihood of biological success, the time

¹⁰ Phase I survival studies conducted at the Wells Project have documented juvenile project survival for yearling chinook and steelhead at 96.2%. Due to the inability to measure sockeye and subyearling chinook survival, hatchery compensation for these Plan Species will be maximized at 7%.

¹¹ See HCP Agreement sub-Section 8.4.4 Adjustment of Hatchery Compensation – Population Dynamics, page 30.

¹² See HCP Agreement sub-Section 8.4.5 Adjustment of Hatchery Compensation – Survival Studies, page 31.

required to implement, and cost-effectiveness of solutions. The Hatchery Committee shall also coordinate in-season information sharing and shall discuss unresolved issues.

Through its active participation on the Hatchery Committee and through future permits for hatcheries and associated biological opinions, NMFS and the USFWS would ensure that the negative hatchery effects (including incidental and direct take of ESA listed species as a result of these programs) would be minimized to the extent practical and would not jeopardize ESA-listed Permit Species.

More detailed descriptions may be found in section 8 of the Wells HCP and section 5.3.15 of the FEIS. Proposed hatchery mitigation actions have already been or are now being evaluated by NMFS in separate species-specific biological opinions.

4. ENVIRONMENTAL BASELINE

4.1. Wells Hydroelectric Project

The Wells Hydroelectric Project is located on the mainstem Columbia River at RM 515.8 and is approximately 12 miles north of the city of Chelan, Washington (see FEIS Figure 1-1). The dam spans 4,460 feet, with the hydrocombine structure (spillway, turbine and fishways combined into one structure) comprising 1,130 feet (see FEIS Table 2-2). Wells Dam is a 185 foot high concrete gravity dam completed in 1967. The reservoir formed by the project extends upstream 29.5 miles, past the cities of Pateros, Brewster and Bridgeport and up to the Army Corps of Engineer's Chief Joseph Dam (see FEIS Figure 1-2), totaling 331,200 acre feet of water, and having a surface area of 9,740 acres at the normal pool elevation of 781 feet above msl. Based on a draft limit of ten feet, usable storage is 98,000 acre-feet. The annual median flow is 109 kcfs (see FEIS Table 2-1).

The project includes a spillway, powerhouse, an earthen embankment section, a juvenile bypass system and two adult fishways (see FEIS Figures 2-2). The spillway consists of 11 spillway gates with a combined capacity of 1,180 kcfs. The powerhouse has 10 Kaplan turbine units with a combined hydraulic capacity of 205 kcfs with a peak generating capacity of 840 MW of electricity (see FEIS Table 2-2, FEIS section 2.2.1.1). The two adult fishways are mirror image left and right bank fishway facilities. Each of the two fishways contains a single main entrance, a collection gallery, a fish ladder, adult count station, trapping facilities and an exit in the forebay adjacent to the earthen embankment section of the Project. The juvenile bypass system consists of five evenly spaced surface collector entrances that guide fish into and through the juvenile bypass system and into the tailrace of the dam.

Because the Wells HCP Agreement proposes to fund activities for the protection and restoration of Plan Species habitat, the geographic boundaries of the Wells HCP also include several tributaries. These tributary streams include the Okanogan and Methow rivers.

4.2. Project Operations

In general, the Wells Project is operated to meet instantaneous demands for power. The project produces a varying amount of power throughout a typical 24-hour period, with typical daytime peaks being about 135 percent of the nighttime power production (NMFS, 2002). With lower demands for power, hydropower projects use fewer turbines and discharge less water. When more power is needed, hydropower projects use more turbines and discharge more water.

The number of turbines in use changes the most during the early morning and late evening hours. In most cases, there are more turbines in operation during the day than at night, which means that more water passes the dams during daytime. Since the Mid-Columbia River projects do not store large amounts of water, their ability to generate power depends to a large degree on upstream storage projects. Flow releases from Chief Joseph Dam (the large reservoir dam upstream of the Wells Dam) are timed to meet daytime load demands at the downstream dams throughout the day.

The operators of Columbia River hydropower projects coordinate project operations to ensure the best use of the available water and the most efficient generation of power to meet demand. Upstream projects pick up more of the load in the morning, and downstream projects use this pulse of flow to generate electricity in the afternoon and evening. This coordination maximizes generation efficiency at the plants by minimizing reservoir drafting and maintaining efficient “operating heads” for the turbines.

As a general rule, Douglas PUD operates the turbines at Wells Dam at the highest power efficiency possible for a given flow to maximize power generation and revenue for the facility. Operating the units at or near the peak efficiency reduces the turbulence and cavitation of water passing through the unit, resulting in more efficient generation conditions. Reduced turbulence and cavitation improves the flow conditions for fish passing through the turbines, and is expected to result in reduced injury and mortality rates.

Each of the ten turbine units receives approximately the same amount of wear and tear through alternating turbine use. When dams discharge water over their spillways rather than through their turbines, they lose the ability to use that water to generate power. Generally, dam operators prefer to minimize the

amount of water they discharge through the spillway. Forced spill is necessary when more water is entering the reservoir than the powerhouses can discharge. Because the dam operators along the Columbia River now coordinate their operations, the amount of forced spill has dropped significantly. When forced spill does occur, it typically is at night when energy demand is lowest, or during a period of high run-off.

At Wells Dam, 9 of 11 spill gates have dedicated automatic hoists to accommodate sudden storm or flood events in accordance with FERC requirements. The remaining two spill gates are opened and closed using gantry cranes that also are used to perform other maintenance duties. It is generally preferred to conduct spill through hoist-equipped gates, so that the gantry cranes remain available for other uses. Ice and floating debris that accumulates in the forebay are usually removed with a crane. In extreme circumstances, floating material can be removed by passing it through sluice gates located at the reservoir surface level. Since the sluice gates at these projects are much smaller than the spill gates, they may also be used during forced spill events when the discharge volumes are small.

4.3. Tributary Watersheds

Methow River

The Methow River is located along the northeastern slopes of the Cascades in Okanogan County in north central Washington. The Methow drainage is bounded by Sawtooth Ridge on the south, the Cascade Crest to the west and originates in the Pasayten Wilderness located to the west and north. The Methow drainage is also located immediately adjacent to the Okanogan River drainage to the east. The Methow River originates high in the Cascade Mountains and flows southeast to its confluence with the Columbia at the town of Pateros, draining approximately 1,772 square miles. There are two major tributaries to the Methow River, the Twisp and Chewuch rivers. Elevations throughout the basin range from a maximum of 8,957 feet at the top of North Mount Gardner to 771 feet at the mouth of the Methow River near the town of Pateros. There are several small reservoirs located within the basin including Pearrygin, Patterson, Twin and Alta. During normal project operations, the lower 1.5 miles of the Methow River are influenced by the backwater effect of Wells Dam.

Okanogan River

The Okanogan River is located along the eastern slopes of the Cascades in Okanogan County in north central Washington. The Okanogan drainage flows in a north to south direction and is bounded on the west by the Methow River and on the east by the Sanpoil River and the Colville Indian Reservation. The Okanogan River originates high in the Canadian Cascade Mountains and flows

south to its confluence with the Columbia at RM 533.5. The Okanogan Basin drains an area approximately 8,280 square miles. There is one major tributary to the Okanogan River, the Similkameen River. Elevations throughout the basin range from a maximum of 8,333 feet at the top of Windy Peak to 771 feet at the mouth of the Okanogan River. The primary irrigation storage reservoirs located within the basin include Upper and Lower Conconully reservoirs and Okanogan, Skaha and Osoyoos lakes. The lower 12 miles of the river is influenced by the backwater effect of Wells Dam.

The Wells HCP will require Douglas PUD to provide funding to the Plan Species Account. The Plan Species account will pay for tributary habitat protection and restoration projects in the Methow, Okanogan and mainstem Columbia rivers upstream of Wells Dam. This funding is intended to provide compensation for an assumed 2 percent unavoidable adult project mortality. The Wells HCP also provides a mechanism to modify Douglas PUD's contributions to the Plan Species Account based upon the results of adult survival studies. If adult survival is determined to be greater than 98 percent and the juvenile project passage survival is greater than 93 percent, then the contribution level would be reduced in proportion to the actual project impact on Permit Species. A more complete description of the Plan Species Account and its intended uses can be found in section 7 of the Wells HCP Agreement.

4.4. Hatchery Facilities

The primary means to achieve no net impact to the Plan Species is to increase the survival of fish passing the projects. However, to compensate for up to 9 percent unavoidable project-related mortality associated with project passage for Plan Species, compensation would be accomplished through hatchery production and tributary habitat protection and restoration projects.

The Wells HCP provides adequate funding and sufficient hatchery production capacity to compensate for 7 percent mortality, the level of hatchery production necessary to achieve no net impact to each Plan Species will be determined by survival studies. The initial hatchery production levels were based on pre-HCP production levels, average adult returns of the Plan Species for a baseline period, a 7 percent compensation requirement, and baseline adult/smolt survival rates. This estimated initial production capacity would be adjusted periodically (every 10 years after 2013) to account for changes in average adult run size, changes in adult-to-smolt survival, and changes to smolt-to-adult survival from the hatchery facilities. Compensation levels established to mitigate for initial inundation by the projects would not be adjusted through the Wells HCP.

Hatchery production is currently based on initial inundation of fish habitat by the projects and ongoing mitigation for unavoidable passage losses from project operations. Under the existing FERC license and settlement agreement,

assumptions were made concerning ongoing fish losses at the projects. The Wells HCP, once implemented, would require Douglas PUD to provide supplementation hatchery production levels sufficient to provide a maximum of 7 percent hatchery production. This level of production is in addition to the levels established to mitigate for project inundation.

Under the Wells HCP, hatchery production to compensate for project passage losses would decrease for some species compared to existing, Wells settlement agreement, production levels. These decreases are because the production levels stipulated in the existing licenses and settlement agreements for project passage losses exceed the maximum 7 percent Wells HCP level. The existing hatchery compensation level for fish passage losses at Wells Dam was assumed to be 14 percent, while the HCP compensation level is 7% and will be further reduced to 3.8 percent, based on project survival studies that measured the average juvenile project passage survival rate at 96.2% for yearling chinook and steelhead. Therefore, compensation for passage losses provided for the Wells Project will decrease by about 70 percent compared to existing conditions. A similar reduction would also be expected under the 1990 Wells settlement agreement. The proposed reductions in hatchery programs will remain at the levels specified in section 8 of the Wells HCP Agreement until 2013 when the production levels will be reviewed by the Hatchery Committee.

The existing Methow and Wells hatchery programs require water diversions and withdrawals in order to maintain proper fish health and in order to adequately acclimate juvenile fish to natal waters.

The Methow Fish Hatchery has a water right to divert up to 18 cfs of surface water from the mainstem Methow River at Foghorn Dam. The surface water right is conditioned on not adversely impacting mainstem river flow during periods of established minimum flow in the Upper Methow River Basin. During periods of established minimum flow, the hatchery must either cease to withdraw surface water or all withdrawn surface water, after passing through the facility, must be pumped back to the point of surface water diversion. The Methow hatchery also has a ground water right to withdraw up to 4500 gpm from four wells located on the hatchery facility grounds.

The Twisp and Chewuch Acclimation ponds each have a water right for 6 cfs of surface water. Surface water for the Twisp Pond is diverted at the Twisp Valley Power Irrigation Canal diversion. Surface water for the Chewuch acclimation pond is diverted at the Chewuch Dam and is delivered to the acclimation pond through the Chewuch Ditch which is operated by the Chewuch Ditch Company. Both the Twisp and Chewuch surface water withdrawals can only be used in a non-consumptive manner that furthers the propagation of fish in their respective

drainages. Both withdrawals are limited to the months of February, March, April and May.

All of the water withdrawals for Douglas PUD hatchery programs located within the Methow River are compliant with NOAA Fisheries fish screen criteria. The surface water diversion at the Wells Fish Hatchery includes water for rearing juvenile chinook and steelhead as well as for operating the volunteer brood collection channel and trap. The Wells Fish Hatchery has a water right for 171.8 cfs of Columbia River water. The fish screen for this facility is not compliant with the 1995 NOAA Fisheries fish screen criteria but is consistent with the 2000 NOAA Fisheries transitional fish screen criteria (Nordlund, 2000). Douglas PUD has established a schedule for meeting compliance at the Wells Fish Hatchery surface water withdrawal. Because the intake at Wells is utilized 11.5 months per year for rearing juvenile steelhead and summer/fall chinook the replacement of the existing screens with screens that will meet the 1995 NOAA Fisheries fish screen criteria will have to be phased in over several years. Barring any unforeseen circumstances, the water diversion for the Wells Fish Hatchery will be compliant with the 1995 NOAA Fisheries fish screening criteria, including the criteria for bull trout fry, by December 2005.

Although no specific modifications to the hatcheries were identified in the HCPs, there is the potential that hatchery operations could be altered in future years. A detailed description of existing hatchery facilities can be found in section 2.2.3.4 and Table 2.5 of the FEIS. These potential alterations are likely to be the result of requirements under the independent Section 10 permits or after 2013.

5. ANALYSIS OF EFFECTS TO LISTED SPECIES

5.1 Pygmy Rabbit (*Brachylagus idahoensis*)

Endangered - Washington State

Geographic Boundaries

The pygmy rabbit is the smallest native rabbit in North America. Its distribution is scattered in the sagebrush-dominated shrub steppe areas of the Great Basin. This includes portions of Oregon, California, Nevada, Utah, Idaho, Montana, Wyoming, and Washington states. Washington populations are discontinuous from the rest of the species' range. Genetic testing shows that Washington pygmy rabbits are genetically distinct from pygmy rabbits in the rest of the species range (WDFW, 2001). Habitat changes since the last ice age disconnected the Washington population from rabbits in Oregon and Idaho. The known range of the Washington pygmy rabbit formerly occupied sagebrush habitat in five counties: Benton, Adams, Grant, Lincoln, and Douglas (WDFW, 1995). Currently, pygmy rabbits are known to survive only at sagebrush flat in south-central Douglas County (WDFW, 2003).

Pygmy rabbits are usually found in areas of dense sagebrush cover with relatively deep, loose soils. Pygmy rabbits dig their burrows underneath sagebrush bushes. They depend almost exclusively on sagebrush for food during the winter. From spring through fall, native bunch grasses and forbs are also eaten by pygmy rabbits along with sagebrush. Barely hanging on in the wild, pygmy rabbits have been collected for a captive breeding program in the hopes of building up numbers and reintroducing them. For a successful reintroduction, habitat needs to be identified, connected, and protected, and grazing and off-road vehicle use curtailed in identified critical habitat.

Presence in Action Area

Pygmy rabbits are not found in the Wells Dam action areas including the Passage Survival Plan, Tributary Conservation Plan, Hatchery Compensation Plan and Water Quality sub-action areas.¹³ The only population of pygmy rabbits is in Douglas County at Sagebrush Flat on land owned by WDFW (WDFW, 2003). Sagebrush Flat is in the south-central part of Douglas County, approximately 60 air kilometers from the Wells Project.

Analysis of Effects

Operation of the Wells Project, Wells and Methow hatcheries, acclimation ponds, and fish traps will not occur in the vicinity of the pygmy rabbits or pygmy rabbit habitat. As a result, the proposed actions will not benefit or negatively impact the survival of pygmy rabbits. Specifically, the avian hazing program and northern pikeminnow control program will not benefit or negatively impact pygmy rabbits. No project funded under the Tributary Conservation Plan will benefit or negatively impact pygmy rabbits.

Impact Minimization Measures

No measures are needed to minimize impacts to pygmy rabbits from the actions listed in the Wells HCP.

Compliance with Recovery or Management Plans

On March 5, 2003, the USFWS listed the Columbia Basin pygmy rabbit as endangered under the Endangered Species Act (ESA). Because of the extreme risk of extinction, this population was given emergency protection under the ESA on November 30, 2001. WDFW developed the *Washington State Recovery Plan for the Pygmy Rabbit* in July 1995 (WDFW, 1995). The plan was modified in August 2001 and May 2003 (WDFW, 2003).

¹³ A description of the Wells HCP sub-action areas can be found in section 3.1 of this document.

The HCP for the Wells Project, Wells and Methow hatcheries, acclimation ponds, and fish traps, predator control program and Tributary Conservation Plan complies with the recovery plan for pygmy rabbits.

Determination of Effect

No effect to pygmy rabbits.

5.2 Showy Stickseed (*Hackelia venusta*) Endangered - Chelan County

Geographic Boundaries

Showy stickseed is locally endemic to the Wenatchee Mountains in the Eastern Cascades physiographic province of Chelan County, Washington. There is currently only one known population of this plant and the number of individuals in that population has been in decline (WA Natural Heritage Program, 2003). The last known population of plants exists on less than 2.5 acres of land on the lower slopes of Tumwater Canyon entirely on federal land (USFWS, 2002a).

This plant occurs in dry, loose soils and crevices on granite or talus slopes that range from 25-70 degrees slope. It generally occurs at elevations of 1500 - 2500 feet. Associated species include opportunists which grow in disturbed areas where competition is low.

Presence in Action Area

Showy stickseed occurs in the Wenatchee Mountains on the hillside above Tumwater Canyon and is not known to occur within the Wells Dam HCP action areas including the Passage Survival Plan, Tributary Conservation Plan, Hatchery Compensation Plan and Water Quality sub-action areas.

Analysis of Effects

Operation of Wells Dam fish ladders and juvenile bypass system, turbines and spillways will not have an affect on showy stickseed. Operation of the Wells Hatchery and the predator control provisions of the HCP will also not affect showy stickseed. Operation of the Methow Spring Chinook Hatchery, acclimation ponds, and fish traps will also have no effect on showy stickseed.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. All habitat restoration projects will be required to do a rare plant survey before construction is permitted. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Coordinating Committee. The committee, made up of various fisheries agencies and the Tribes, including the USFWS, will decide if the projects meet criteria for

funding. Habitat restoration projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Copies of the rare plant surveys will be provided for review along with all other permit application data. Actions funded under the Tributary Conservation Plan along the Methow and Okanogan rivers or their tributary streams will not benefit or negatively impact showy stickseed populations because this plant population is presently known to only occur in the Tumwater Canyon region of the Wenatchee River.

Impact Minimization Measures

No measures are needed to minimize impacts to showy stickseed from the actions listed in the Wells HCP Agreement.

Compliance with Recovery or Management Plans

Showy stickseed is listed as Endangered by the state of Washington and is listed as Endangered by the USFWS (WA Natural Heritage Program, 2003). There is not a federal recovery or management plan for showy stickseed. Several threats and management concerns are associated with showy stickseed. Collection, physical disturbance of the plants and habitat by humans, competition, shading by native plants, highway maintenance such as spreading of sand and salt and use of de-icers during winter, the combination of fire suppression and fire itself pose a threat to this population (USFWS, 2002a). Highway maintenance and reconstruction activities need to be coordinated with the U.S. Forest Service and USFWS. Noxious weeds (Dalmatian toadflax and diffuse knapweed) occur within the species' range and control of these weeds should be considered a high priority. Recreation and mineral exploration are additional threats to this population (WA Natural Heritage Program, 2003).

The HCP for the Wells Project, associated hatcheries, acclimation ponds and fish traps, predator control program and Tributary Conservation Plan will not affect the Tumwater population of showy stickseed, will not affect the location where showy stickseed grows and are not in conflict with the management plans and concerns for showy stickseed.

Determination of Effects

No effect to showy stickseed.

5.3 Wenatchee Mountains Checker-mallow (*Sidalcea oregana*) Endangered - Chelan County

Geographic Boundaries

The historical range of the Wenatchee Mountains checker-mallow covered an area of approximately 11 miles by 3 miles, extending south to southeast from Leavenworth in Chelan County, Washington (WA Natural Heritage Program, 2003). The general area is in the vicinity of Camas Meadows and Camas Creek, east of Peshastin Creek.

Presence in Action Area

Wenatchee Mountains checker-mallow occurs in the Wenatchee Mountains south to southeast from Leavenworth in Chelan County, Washington and is not known to occur within the Wells Dam HCP action areas including the Passage Survival Plan, Tributary Conservation Plan, Hatchery Compensation Plan and Water Quality sub-action areas.

Analysis of Effects

Operation of the Wells Project, Wells and Methow hatcheries, associated acclimation ponds, and fish traps will not occur within the vicinity of Wenatchee Mountains checker-mallow populations. The piscivorous bird hazing program and the northern pikeminnow control programs will not benefit or negatively impact this plant because those actions occur along the Columbia, Methow and Okanogan rivers and not in the vicinity of Wenatchee Mountains checker-mallow populations (Calypso Consulting 2002, Caplow, 1989, Caplow 1990). Actions funded under the Tributary Conservation Plan along the Methow and Okanogan rivers or their tributary streams will not benefit or negatively impact Wenatchee Mountains checker-mallow populations because this plant population is presently known to only occur in the Wenatchee Mountains.

Operation of the Wells Dam fish ladders and juvenile salmonid bypass system, turbines and spillways will not have an affect on Wenatchee Mountains checker-mallow. Operation of the Wells Hatchery and the predator control provisions of the HCP will also not affect the Wenatchee Mountains checker-mallow. Operation of the Methow Spring Chinook Hatchery, acclimation ponds, and fish traps will also have no effect on Wenatchee Mountains checker-mallow.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. All habitat restoration projects will be required to do a rare plant survey before construction is permitted. Habitat restoration projects and plans to purchase conservation easement or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various fisheries agencies and the tribes,

will decide if the projects meet criteria for funding. Habitat restoration projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Copies of the rare plant surveys will be provided for review along with all other permit application data.

Impact Minimization Measures

No measures are needed to minimize impacts to Wenatchee Mountain checker-mallow from the actions listed in the Wells HCP Agreement.

Compliance with Recovery or Management Plans

Wenatchee Mountains checker-mallow is listed as Endangered by the state of Washington and is listed as Endangered by the USFWS (WA Natural Heritage Program, 2003). The federal recovery plan for Wenatchee Mountains checker-mallow was recently released by the USFWS (USFWS, 2003b). Threats and management concerns that are associated with Wenatchee Mountains checker-mallow include habitat fragmentation and destruction, rural residential development, alterations to hydrology, grazing, timber harvest, and a multitude of recreational activities (USFWS, 1999, WA Natural Heritage Program, 2003). Fire was likely important in maintaining suitable habitat for the species by improving light and soil moisture conditions and keeping succession in check. Fire suppression has likely influenced patterns of plant succession where this species occurred.

The HCP for the Wells Project, associated hatcheries and acclimation ponds, and fish traps, predator control program and Tributary Conservation Plan will not affect the location where Wenatchee Mountains checker-mallow grows and are not in conflict with the management plans and concerns for the Wenatchee Mountains checker-mallow.

Effects on Designation of Critical Habitat

On September 6, 2001 (USFWS, 2001b), the USFWS designated 6,135 acres of seasonal wetlands on state, Federal and private lands in central Washington as critical habitat for the endangered Wenatchee Mountains checker-mallow. The checker-mallow is a federally endangered plant native to the Wenatchee Mountains of Chelan County in central Washington. Most of the approximately 3,600 individual checker-mallow plants in existence are found on about 95 acres of seasonal wetlands (wetlands that dry up in late summer and fall) on the Washington Department of Natural Resources' Camas Meadows Natural Area Preserve in Chelan County. Other checker-mallow plants are scattered on adjacent U.S. Forest Service land and on a small parcel of private property in Pendleton Canyon.

Continued operation of the Wells Project, implementation of the Tributary Conservation Plan, implementation of the Hatchery Compensation Plan and continued implementation of the predator harassment and control programs, as envisioned by the Wells HCP Agreement, will not result in the destruction or adverse modification of designated critical habitat for Wenatchee mountains checker-mallow.

Determination of Effects

No effect and will not result in the destruction or adverse modification of critical habitat designated for the Wenatchee mountains checker-mallow.

5.4. Columbia River Bull Trout Threatened – Columbia Basin

Species Status

The USFWS issued a final rule listing the Columbia River and Klamath River populations of bull trout (*Salvelinus confluentus*) as a threatened species under the ESA on June 10, 1998 (63 FR 31647). The Columbia River Distinct Population Segment of bull trout includes all naturally spawning populations in the Columbia River Basin and its tributaries within the United States. The Columbia River Distinct Population Segment is threatened by habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, and past fisheries management practices such as the introduction of nonnative species.

Geographic Boundaries and Life History

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 drainages of British Columbia.

Bull trout currently occur in rivers and tributaries in Montana, Idaho, Washington, 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). The remaining distribution of bull trout is highly fragmented.

Bull trout populations may exhibit four distinct life history types: resident, fluvial, adfluvial, and anadromous. 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 currently only known to occur in the Coastal-Puget Sound region within the coterminous United States (Mongillo, 1993).

The majority of the growth and maturation of anadromous bull trout occurs in estuarine and marine waters; for adfluvial bull trout, the major growth and maturation occurs in lakes or reservoirs; and for fluvial bull trout, the major growth and maturation occurs in large river systems. Resident bull trout populations are generally found in small headwater streams where the 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, lake, or estuary and/or nearshore marine area to mature (Rieman and McIntyre, 1993).

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 in-stream 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.

The Upper Columbia River Recovery Unit is located in central and north-central Washington State on the east slope of the Cascade Mountains. The Upper Columbia River Bull Trout Recovery Team has identified three tributaries to the Columbia River, the Wenatchee, Entiat, and Methow rivers, as essential to the long-term persistence and recovery of Columbia River bull trout. (USFWS, 2002b). The mainstem Columbia River contains core habitat elements for bull trout that are important for migration, feeding, and overwintering. However, no bull trout spawning habitat has been identified within the mainstem Columbia downstream of Chief Joseph Dam (USFWS, 2002b).

Presence in Action Area

Recent information on the migration and use of the mainstem Columbia River by fluvial/adfluvial bull trout has been verified by fish counts at mainstem dams. Prior to 1999 bull trout observed in the fishways at Wells Dam were not accounted for separately but were instead lumped into the general count of

miscellaneous trout including rainbow trout, brown trout, lake trout and brook trout.

Starting in the spring of 1995, Douglas PUD initiated 24-hour video fish counting for all anadromous and resident fish species. Fish counts were collected and reported to the Corps of Engineers daily between May 1st and November 15th. “Winter” fish counts have been collected two days per week between November 15th and April 30th. The winter fish counts are not reported to the Corps of Engineers but the records have been stored by District staff.

In the fall of 1999, Douglas PUD initiated an effort to train and test the Wells fish counting staff to accurately identify the differentiate brown trout, brook trout, lake trout and bull trout. Starting in the spring of 2000, fish count staff have been recording and reporting the number of bull trout passing upstream over Wells Dam. Bull trout counts have ranged from a high of 108 fish in 2001 to a low of 90 fish in 2000. The vast majority of the bull trout counted at Wells Dam have been observed during the months of May, June and July with only sporadic counts of fish in August and only one observation of a bull trout being counted outside the April - August time period. To date, no bull trout have been counted passing the dam during the November 16th to April 30th counting period.

Analysis of Effects

In addition to enumerating bull trout ascending the dam, Douglas PUD has participated in annual bull trout radio-telemetry studies at the Wells, Rocky Reach and Rock Island projects. These studies have also included the collection of detailed behavior and spawning location information for fish found in the Methow, Entiat and Wenatchee rivers. During the 2001 and 2002 bull trout telemetry studies, adult bull trout were collected and radio-tagged at each of the three Upper Columbia River dams (Wells, Rocky Reach and Rock Island dams). These studies were designed, in consultation with the USFWS and FERC, to determine the effects of the Wells, Rocky Reach and Rock Island hydroelectric projects on adult radio-tagged bull trout (BioAnalyst, 2002; BioAnalyst, 2003 [Draft]).

During the 2001 telemetry study, 10 migratory bull trout were radio-tagged at Wells Dam. Half of these fish were released upstream of the dam and the other half were released in the project tailrace. Nine of the ten fish tagged at Wells Dam migrated into the Methow River. The remaining fish migrated downstream to the Entiat River (BioAnalyst, 2002).

During the 2002 study, nine bull trout were radio-tagged at Wells Dam. Five tagged fish were released upstream of the dam and four were released in the project tailrace. During the 2002 study, a total of 11 radio-tagged fish passed

through Wells Dam, which included five 2002 fish tagged at Rocky Reach, four 2002 fish released into the tailrace of Wells Dam, and two fish from the 2001 tagging period. Eight of the nine fish tagged at Wells Dam in 2002 migrated upstream of the dam and entered the Methow River. One of the nine 2002 Wells tagged fish, released into the Wells tailrace, moved downstream through the Rocky Reach Project and ultimately entered the Wenatchee River (BioAnalyst, 2003 [Draft]).

Based upon the results of these studies, Columbia River bull trout are utilizing portions of all four of the Wells Dam HCP action areas including the Passage Survival Plan, Tributary Conservation Plan, Hatchery Compensation Plan and Water Quality sub-action areas. In particular, bull trout from the Methow River population are utilizing all four of the Wells HCP sub-action areas whereas Wenatchee and Entiat river bull trout have only been observed utilizing the Passage Survival Plan and Water Quality sub-actions areas. At the present time, no spawning populations of bull trout have been documented in the Okanogan River (USFWS, 2002b) and none of the radio-tagged bull trout detected at Wells Dam have ascended the Okanogan River (BioAnalyst, 2002; BioAnalyst, 2003 [Draft]).

The general effects of implementing the proposed Wells HCP, including project operations, continuation of the predator harassment and removal program, implementation of the tributary enhancement activities and operation of the hatchery enhancement programs, were evaluated with respect to impacts on listed Columbia River bull trout. A summary of the potential affects to bull trout resulting from implementation of the Wells HCP can be found in the following sections of this chapter of the BA.

Upstream Passage - Fish Ladders

Bull trout are afforded access to upstream tributary streams through the adult fish ladder facilities. The majority of bull trout ascend Wells Dam during the months of May, June and July with the preponderance of these fish destined for the Methow River (BioAnalyst, 2002; BioAnalyst, 2003 [Draft]).

Adult bull trout migrating upstream through the dam can be impacted by project operations in several different ways. Although under normal conditions it is likely that very few adult bull trout are directly killed or injured when traveling upstream through the adult fish ladders however, the potential does exist for fish to come in contact with components of the fishways. In addition to direct injury and mortality resulting from potential contact with structural elements within the fish ladder, bull trout moving upstream can be delayed during the operation of the adult brood stock collection traps. Delays in fish passage may require bull trout to expend more energy to pass the project. Although delay may require

fish to expend more energy to pass over mainstem dams, it is generally accepted that the localized increase in energetic activity required to ascend the ladder is overall compensated for by faster travel times and lower rates of energetic expenditure for fish migrating through the slower velocity reservoirs located upstream of the dams (NOAA Fisheries, 2003).

Telemetry studies conducted in 2001, 2002 and 2003, have failed to document a delay of bull trout in the tailrace or adult fish ladders. In addition, all of the bull trout radio-tagged at Wells Dam have been successful at migrating into one of the three tributary streams, known to support reproducing populations of bull trout, well in advance of the initiation of tributary spawning activity. To date, all of the bull trout tagged within the Wells Project Survival sub-action area have successfully migrated out of this sub-action area and into a tributary stream (BioAnalysts, 2002; BioAnalysts, 2003 DRAFT).

Continued operation of the two adult fishway ladders, as described in section 3.3.5.1, Appendix A and as required by the Wells HCP Agreement for anadromous fish, will continue to provide migratory bull trout with a safe and effective migration route from the Rocky Reach reservoir to Lake Pateros and the important spawning, rearing and overwinter habitat located in the Methow River.

Downstream Passage - Reservoir, Project, Spillway, Bypass and Turbine Operations

Mainstem Columbia River dams have the potential to affect the movements of both juvenile and adult bull trout. Juveniles and non-migratory adult bull trout may spend considerable time in the reservoir foraging and overwintering.

Adult and juvenile bull trout rearing in Lake Pateros and adult bull trout moving upstream or downstream to tributary spawning areas, may sometimes intentionally or unintentionally pass downstream through the dam.

Downstream passage through the dam can expose bull trout to passage routes other than the adult fish ladders. Routes of downstream passage at Wells include the adult fish ladders, juvenile bypass system, spillways or turbines.

Downstream passage is generally separated into two different behaviors: voluntary and involuntary passage. Involuntary downstream passage takes place when an upstream migrating fish becomes involuntarily entrained into either a spillway, juvenile bypass system or turbine. Voluntary downstream passage takes place when a downstream migrating fish voluntarily passes the dam via the turbines, spillways, juvenile bypass system or adult fishway facilities.

Downstream passage through the dam can result in both direct or indirect effects to juvenile and adult bull trout. Direct effects are a consequence of physical injuries that may be incurred during passage, resulting in immediate or delayed mortality. Indirect effects result from debilitated, disoriented, or stunned fish being exposed to additional sources of mortality, such as predation and disease.

In order to move downstream over the dam, adult and juvenile bull trout must be present in the forebay of the dam. Radio-telemetry and ladder count information indicates that the preponderance of the adult bull trout present at Wells Dam are present at the project during the months of May, June and July. Fortunately at Wells Dam, the juvenile bypass system provides a safe non-turbine passage route for downstream migrating juvenile and adult bull trout during the months of April, May, June, July and August. This lengthy bypass operating window is expected to continue throughout the 50-year term of the Wells HCP Agreement. When the bypass is operating, greater than 92% of downstream migrating anadromous fish utilize the juvenile bypass system (Skalski, 1993). Because juvenile bull trout are morphologically similar to anadromous salmonids and because radio-tagged bull trout are frequently observed along the shorelines of the Columbia River in water less than 50 feet of water, it is expected that a similarly high proportion of juvenile bull trout will also utilize the surface bypass system rather than sounding over 75 feet to pass through the turbines. Survival for juvenile Plan Species passing through the Wells surface bypass system and through the Wells spillways is estimated to be greater than 98% (FEIS, 2002). Survival for juvenile bull trout passing through the Wells surface bypass system and spillways is expected to be comparably high due to similarities in fish size, shape and location in the water column.

Route specific survival estimates for adult bull trout and adult anadromous fish have not been developed at any of the 14 mainstem Columbia River hydroelectric facilities including Wells Dam. The reasons for not conducting adult survival studies includes the inability to differentiate tag loss, tag failure, and fish mortality. In addition, the inability to differentiate between natural and project-related mortality further complicates the assessment of project related effects on adult bull trout and adult anadromous fish (NMFS, 2002).

Bull trout that pass downstream through the project, during non-bypass operating periods, must do so through one of the two fish ladders, through one of the eleven spillways or through one of the ten turbine units. Survival through an adult ladder or through a spillway is expected to be very high as discussed in the previous paragraph. Downstream passage through an operating turbine unit is expected to result in a lower rate of survival than through the other passage routes previously discussed. Juvenile anadromous fish survival through the turbines at Wells Dam is expected to range from 90-93% when including both

direct and indirect affects (NMFS, 2002). Turbine survival for juvenile bull trout is also expected to range from 90-93% at Wells Dam. Turbine survival studies on adult bull trout and adult anadromous salmonids have not been conducted for various reasons. No estimates of turbine survival for adult bull trout are available for Wells Dam.

Predator Control Program

The Wells HCP Agreement proposes to continue the longstanding northern pikeminnow (*Ptychocheilus oregonensis*) and avian predator (primarily California and ring-billed gulls, double crested cormorants, Caspian terns, and common mergansers) control programs to reduce predation on juvenile Plan Species.

The Douglas PUD pikeminnow control program differs from many of the other pikeminnow control programs due to the exclusive use of long-lines placed on the bottom of the Columbia River immediately below Wells Dam and in Lake Pateros. The gabions attached to the long-lines are tied with short, ultra-light monofilament line baited with small crickets. This particular fishing technique is highly effective at catching pikeminnow while minimizing the incidence of non-target resident and anadromous fish species (Jerald, 2003).

Direct effects to individual bull trout from the Douglas PUD funded pikeminnow control program could occur through both immediate or delayed hooking mortality. Because of concerns related to the capture and handling of ESA listed and economically important game fish species, the pikeminnow removal program has been modified to the maximum extent possible to minimize the capture of all fish species other than pikeminnow. During the 9 years of the pikeminnow control program at Wells Dam, the program's staff have yet to capture a single bull trout. To date, (August 28, 2003), the pikeminnow control program has removed over 64,000 adult pikeminnow and has not captured a single adult or juvenile bull trout.

Continued implementation of the pikeminnow removal program will have a net benefit to all of the Wells HCP Plan Species. The NMFS (1998) has determined that these benefits are particularly beneficial to ESA listed spring chinook and steelhead. In addition to benefiting Plan Species, continued implementation of the selective long-line pikeminnow removal program will likely provide a net positive benefit to both juvenile and adult bull trout found throughout the Wells Passage Survival Plan sub-action area. Benefits to bull trout will likely include a reduction in the direct predation of adult pikeminnow on juvenile bull trout and a reduction in the competition between adult pikeminnow and adult bull trout for prey items including juvenile Plan Species. In addition, the increased abundance of other pikeminnow prey items, resulting from the removal of large numbers of adult pikeminnow, will likely translate into an increase in the

foraging success of both juvenile and adult bull trout in the mainstem Columbia and tributaries action areas.

Avian control methods consist largely of land based activities that include gull wires installed across the project tailrace and pyrotechnics discharges to discourage predation on juvenile salmonid smolts. The avian control program may include lethal removal of birds each year when necessary. The increased human activity associated with control measures will not have an impact on bull trout or proposed critical habitat for Columbia River bull trout.

Tributary Conservation Plan

A detailed description of the Tributary Conservation Plan, the Plan Species Account, and its allowable uses by the Tributary Committee can be found in section 7 of the HCP and in sections 2.3.4.7 and 2.3.4.8 of the FEIS. The following discussion is a brief summary of possible impacts to bull trout resulting from the implementation of projects funded by the Tributary Conservation Plan.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Coordinating Committee. Examples of projects to be funded by the Tributary Conservation Plan may include, but not be limited to, 1) providing access to currently blocked stream sections or oxbows, 2) removing dams or other passage barriers on tributary streams, 3) improving or increasing the hiding and resting cover habitat that is essential for these species during their relatively long adult holding period, 4) improving in-stream flow conditions by correcting problematic water diversion or withdrawal structures, or 5) purchasing (or leasing on a long-term basis) conservation easements to protect or restore important aquatic habitat and shoreline areas.

The Tributary Coordinating Committee, made up of various fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies, including the USFWS, to receive permits for construction projects. Habitat preservation projects will have a benefit to bull trout through the protection of proposed critical habitat found within the Methow River Basin. Projects that result in an increase in in-stream flow in the Methow Basin will benefit all life stages of bull trout.

In general, the Tributary Coordinating Committee will be guided by the general strategy outlined in supporting documents A and D to the HCP: protection of existing productive habitat and restoration of high priority habitat by restoring, when practical, natural processes that, over time, will create and maintain

suitable habitat conditions without human intervention. The implementation of habitat preservation within the Methow and Okanogan drainages should benefit adult and juvenile bull trout. Should the Tributary Coordinating Committee decide to implement restoration actions in the Methow and mainstem Columbia rivers, then the USFWS representative on the Tributary Committee will be tasked with ensuring that negative consequences resulting from the implementation of in-stream restoration activities are minimized or reduced to the extent practical.

Habitat restoration projects will require a period of construction that may disturb bull trout using the surrounding area. In the long run these projects will likely have a positive benefit to bull trout if additional aquatic habitat is created by the project or if upstream passage barriers are removed allowing bull trout access back into historically utilized watersheds.

Protection or restoration projects requiring in-water work or physical alterations to adjacent lands (riparian habitat or flood-plain) could have short-term minor negative impacts to spawning, incubating, and rearing Permit Species by 1) negatively impacting substrate and juvenile food supplies (temporarily elevating sedimentation rates and removing food organisms from aquatic or terrestrial sources); 2) negatively impacting water quality (e.g., increasing turbidity); 3) negatively impacting structures providing cover and shelter to both adults and juveniles; 4) negatively impacting (e.g., removing, replacing, etc.) riparian vegetation; and 5) negatively impacting space and conditions for safe passage (e.g., noise, vibrations, physical presence of people or equipment, etc.) for both adults and juveniles. In the long-term, these actions should have a neutral to slightly beneficial effect on adult and juvenile bull trout.

All Tributary Conservation Plan restoration projects that have the potential to disturb bull trout or bull trout habitat will be required to go through a separate ESA section 7(a)(2) consultation and authorization of incidental take of ESA-listed Permit Species.

Hatchery Compensation Plan

Hatchery-based artificial propagation techniques are intended to benefit anadromous fish populations, both ESA-listed and unlisted. By increasing populations of anadromous salmonids within the mainstem Columbia and Methow rivers, the hatchery compensation plan will likely benefit ESA listed bull trout by providing additional prey items (smolts) and by providing additional marine derived nutrients (adult carcasses) into bull trout rearing streams (Bilby et al., 1996). Short-term negative impacts may be observed during the construction of additional acclimation ponds, hatchery water diversion structures or brood stock collection facilities. Delay in upstream movements may be associated with the operation of hatchery brood stock collection facilities

including the brood stock traps in the Methow, Chewuch and Twisp rivers and the brood stock collection facilities located at the Wells Fish Hatchery and in the fishways at Wells Dam.

Incidental collection of bull trout has taken place at the Wells fishway traps, and at each of the three Methow tributary traps. During 1999 and 2000, spring chinook brood stock were only collected from the fish ladders at Wells Dam. Incidental collection of bull trout during 1999 and 2000 included 49 and 8 bull trout, respectively. In 2003 spring chinook were collected only from tributary trapping facilities located on the Twisp, Chewuch and Methow rivers. Incidental collection of bull trout during the 2003 trapping activities totaled 91 fish.

Hatchery evaluation activities including spawning ground surveys, snorkel surveys and the operation of rotary screw traps within the Methow River Basin, may result in the harassment or collection of migratory bull trout. The effect of these proposed actions is expected to be minimal but will be minimized through the impact minimization measures discussed in the next section.

Water Quality

The Mid-Columbia River has been designated a "Class - A" or excellent quality body of water (FEIS, 2002). Bull trout rearing and migrating in the Mid-Columbia River and rearing, migrating and spawning in the Methow, Entiat and Wenatchee rivers are the beneficial water uses most sensitive to degraded water quality. High water temperatures may delay or impede passage of adult bull trout and may increase the vulnerability of juvenile bull trout to disease, predation and competition from exotic fish species.

As a run-or-river hydroelectric project with very limit storage, the Wells Project has little impact on water temperatures in the mainstem Columbia River.

Total dissolved gas supersaturation is a prominent water quality concern in the Mid-Columbia River. Water containing more than 100 percent total dissolved gas is in a supersaturated condition. Total dissolved gas supersaturation occurs during times of high run-off and spill at hydroelectric facilities and occurs primarily due to the entrainment of gases into the water when turbulent water is plunged to depth in the tailrace (FEIS, 2002). The amount of total dissolved gas forced into solution is dependent upon the rate of spill, depth of tailrace below the spillway, water temperature, and presence of gas abatement structures. Fish that are exposed to excessive total dissolved gas supersaturation can develop gas bubble disease, a harmful and often fatal condition.

Total dissolved gas levels at Wells Dam rarely exceed the 115% forebay and 120% tailrace criteria established by a waiver prepared by the WDOE. Exceptions

include abrupt loss of load, power emergencies, flood events, and high run-off periods that coincide with limited demand for electricity.

The Wells and Methow Fish hatcheries divert surface water from the Methow, Twisp, Chewuch and mainstem Columbia rivers. All of the ground water withdrawals and surface water diversions are in compliance with existing WDOE issued water rights and facility operating permits. All surface and ground water discharges from the hatchery and all hatchery effluent are dealt with according to National Pollution Discharge Elimination System (NPDES) permits issued by the WDOE. These permits require frequent monitoring of hatchery outfall systems to ensure compliance for levels of suspended solids, settleable solids, and water temperature. In addition to routine fish husbandry practices, the hatchery staff also are required to strictly adhere to fish disease control guidelines developed by the Integrated Hatchery Operations Team (1995) and the Pacific Northwest Fish Health and Protection Committee (1989) to reduce the incidences of fish disease in natal and hatchery discharge waters.

Impact Minimization Measures

Bull trout stranded during fish ladder and turbine maintenance will be collected, counted and returned to the river immediately upstream of the project. All observations of bull trout recovered during these operation will be reported to the USFWS.

Information on the number of bull trout passing through the fish ladders at Wells Dam, outside the normal fish counting period, will be collected during the winter of 2004-2005. Winter bull trout counts will begin on November 16, 2004 and will continue until April 31, 2005. After the winter bull trout counts have been compiled and examined by all interested entities, the District and the USFWS will determine whether or not winter bull trout counts should be collected during future years.

Brood stock traps located in the fish ladder at Wells Dam will not be operated when water temperatures within the ladder exceed 69 °F. Operation of the fish ladder traps will be limited to a maximum of 16-hours per day for no more than three days per week. The ladder traps will be manned to ensure that bull trout are safely returned to the fish ladder upstream of the trap. Should a bull trout be mistakenly anesthetized, the fish will be allowed to recover, transported to a quiet location upstream of the dam and released.

Brood stock traps operated in the Methow Basin will be checked at least once per day during trapping operations. Bull trout collected in the tributary brood collection traps will be safely removed from the traps and released a sufficient

distance upstream of the trap to ensure that the released bull trout do not become stranded on the dam, weir or on the trap intake screens.

Hatchery evaluation activities may result in the harassment of migratory bull trout during spawning ground and snorkel surveys. During these surveys, spawning bull trout will be avoided whenever possible. Whenever observed, the location of spawning bull trout will be shared with USFWS and US Forest Service bull trout biologists.

Juvenile spring chinook and steelhead smolt trapping activities on the Methow, Twisp and Chewuch rivers may result in the inadvertent collection of juvenile and adult bull trout. To reduce capture and handling stress, the traps will be checked and cleaned at least twice per day. Upon encountering a bull trout in one of the juvenile traps, each bull trout will be anesthetized, measured, weighed, PIT-tagged and, after recovering from the affects of the anesthetic, released downstream of the trapping facility. The information collected on each incidentally captured bull trout will be provided to the USFWS for use in monitoring bull trout populations in the Upper Columbia River.

All Tributary Conservation Plan and Hatchery Compensation Plan projects that have the potential to disturb bull trout or proposed bull trout critical habitat will be required to go through a separate ESA Section 7(a)(2) consultation prior to initiation of the project.

Compliance with Recovery or Management Plans

The bull trout recovery plan is presently in draft form. Based upon the drafts reviewed to date, the Wells HCP, along with the proposed impact minimization measures, is consistent with the draft bull trout recovery plan (USFWS, 2002b).

Effects on Proposed Designation of Critical Habitat

On November 29, 2002 (USDI, 2002), the USFWS published a proposed rule to designate critical habitat for the Klamath River and Columbia River Distinct Population Segments. Critical habitat for this Distinct Population Segment is proposed for 18,175 miles of streams and 498,780 acres of lakes and reservoirs in Washington, Idaho, Oregon and Montana combined. Draft recovery plans are completed for 22 recovery units within the Columbia River Distinct Population Segment and are currently available for public comment (USFWS, 2002b).

Continued operation of the Wells Project, implementation of the Tributary Conservation Plan, implementation of the hatchery compensation plan and continued implementation of the predator harassment and control programs, as envisioned by the Wells HCP Agreement and including the impact minimization

measured described in this document, will not result in the destruction or adverse modification of proposed bull trout critical habitat.

Determination of Effects

May affect –likely to adversely affect Columbia River bull trout . Will not result in the destruction or adverse modification of proposed critical habitat for Columbia River bull trout.

5.5 Bald Eagle (*Haliaeetus leucocephalus*) Threatened Lower 48 States

Geographic Boundaries

The bald eagle is found throughout North America. It breeds primarily in Alaska, Canada, the Pacific Northwest states, the Rocky Mountain states, the Great Lake states, and Chesapeake Bay (USFWS, 1986). Bald eagles winter throughout much of the breeding range, but are most heavily concentrated from southern Alaska and southern Canada southward.

In Washington State, bald eagles are most common along saltwater, lakes, and rivers in the western portion of the state and along the Columbia River east of the Cascade Mountains (Stinson et.al, 2001). Resident breeding eagles are found throughout the state near large bodies of water. Most nesting habitat in Washington is located in the San Juan Islands and on the Olympic Peninsula coastline (Stinson et.al, 2001).

Presence in Action Area

Bald eagles winter in large number on the Wells Reservoir. Mid-winter bald eagle counts on Wells Reservoir from 1997 to 2003 have ranged from 6 to 68 adults and sub-adults combined. These wintering eagles nest in Alaska and northwestern Canada (Stinson et.al, 2001). American coots and various waterfowl provide over 85% of the winter diet of bald eagles on the Wells Reservoir (Fielder, 1982). The bald eagles also feed on resident fish during the winter. Bald eagles utilize the cottonwood and ponderosa pine trees and perch poles on the reservoir as hunting and resting perches. There are 3 communal night roosts in the vicinity of the Wells Reservoir, one near Wells Dam and two near Bridgeport Bar.

Bald eagles also winter on the Methow and Okanogan rivers. Taylor (1989) reports bald eagle mid-winter counts range from 4-7 and 2-16 eagles on the Methow and Okanogan rivers respectively between 1982 and 1989. Bald eagle winter use of both the Methow and Okanogan rivers is limited by winter icing of rivers. Hard winters force bald eagles to leave the Methow and Okanogan rivers and winter on the larger Columbia River reservoirs. Bald eagles wintering on the

Methow and Okanogan rivers utilize resident fish and winter killed livestock and deer for food. Wintering eagles do not utilize adult salmon carcasses as a food source since these eagles arrive in numbers in November when spawned out carcasses are no longer available.

There are two confirmed bald eagle nesting territories in the vicinity of the Wells Reservoir. One nest is near Wells Dam in Okanogan County and the other is located near Bridgeport Bar in Douglas County. The nesting territory closest to Wells Dam fledged 2 young during the summer of 1998 (Pers. Comm. Mark Quinn, WDFW). There are 5 bald eagle nesting territories near the Okanogan River (Smith et al, 1997) and 1 active nesting territory on the Methow River (Okanogan National Forest, 2002).

Fish in shallow water are easy prey for adult eagles and make up a large percentage of their seasonal diet (Stalmaster, 1987). Casual observations of eagles on the Wells Reservoir during summer show that resident fish may make up a large portion of their diet. Eagles probably also feed on larger salmon and steelhead smolts when available. Eagles are not seen hunting waterfowl during the spring through fall period since waterfowl numbers are greatly reduced. Bald eagles nesting in the Methow and Okanogan river valleys are probably living mostly on resident fish and trout caught at local lakes and in August through October eagles may supplement their diet by feeding on salmonid carcasses.

Analysis of Effects

The Wells HCP Agreement requires Douglas PUD to meet performance standards for the operation of the fish ladders for adult salmon passage and juvenile salmonid bypass facilities. Douglas PUD is also required to meet Washington State water quality standards for water released at the dam. The HCP also has standards for turbine and spillway operations. Normal operation of Wells Dam will not have an affect on either resident or wintering bald eagles.

Occasionally the Wells Reservoir is drawn down 8' to 10' for maintenance work on the reservoir or work at Chief Joseph Dam. These draw downs expose pond weed beds that feed wintering waterfowl. An extended reservoir drawdown in summer and fall will kill the exposed pond weed. Numbers of waterfowl utilizing the Wells Reservoir can be reduced when the reservoir has been drawn down for extended periods resulting in desiccation of the pond weed beds. Without large numbers of waterfowl the eagles will winter somewhere other than the Wells Reservoir.

Predator control provisions of the Wells HCP includes long line fishing for northern pikeminnow in the Wells Reservoir and tailrace and avian hazing and lethal removal at the Wells Hatchery and Wells tailrace. The pikeminnow long

line fishing program does not and in the future will not affect bald eagles. Long lines are fished in water deeper than a bald eagle can successfully fish so eagles cannot become entangled in the fishing lines.

The avian hazing and lethal removal program is conducted by the US Department of Agriculture, Animal Damage Control (ADC) program. The ADC employees use various aerial firecrackers, propane cannons and shotgun blasts to haze seagulls, terns and double-crested cormorants and to lethally remove problem seagulls and double-crested cormorants. These measures are conducted in an effort to prevent predation of salmon and steelhead smolts in the Wells Hatchery rearing ponds and in the Wells Dam tailrace. The only eagles in the Wells Dam area during April thru June are adults nesting approximately one mile upstream at the Azwell roost site. Since the hatchery and tailrace are lower in elevation than the dam, the sounds emanating from the hazing and removal activities are muffled upstream of the project. The sound of firecrackers and shotguns are also not expected to bother the nesting eagles.

The hazing program also uses a web of high tension wire over the tailrace and over the hatchery rearing ponds to discourage avian predators from consuming large numbers of juvenile anadromous salmonids. The wires prevent predation by causing the birds to avoid the wires when trying to hunt in the tailrace or hatchery rearing ponds. Adult bald eagles are excellent fliers and can easily avoid the wires located over the hatchery and tailrace areas. Young of the year eagles may have a harder time avoiding the wires since they are learning to fly and hunt. There are few large salmonid smolts migrating downstream of the dam and no large fish in the rearing ponds to attract yearling bald eagles in July and August to try to hunt hatchery fish located in the Wells Hatchery rearing ponds.

Existing hatchery operations are also covered in greater detail in section 8 of the Wells HCP Agreement. The Wells HCP covers the operation of the Wells and Methow hatcheries, acclimation ponds on the Twisp and Chewuch rivers and the fish traps on the Methow, Chewuch and Twisp rivers and fish traps in the Wells Dam fish ladders. It is unlikely that the operation of the hatcheries, fish traps or acclimation ponds would have any affect on bald eagles.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat

preservation projects will have a benefit to bald eagles. Habitat restoration projects will require a period of construction that may disturb bald eagles using the surrounding area. In the long run, these projects will have a positive benefit for eagles if additional shoreline riparian habitat is created by the project.

Resident bald eagles in the Methow and Okanogan rivers will benefit from implementation of the Tributary Conservation Plan. An increase in the number of spawned out salmon carcasses (resulting from supplementation) and an increase in the abundance of prey items (resulting from predator removal, tributary habitat protection and hatchery enhancement) should provide a net benefit to ESA listed bull trout.

Impact Minimization Measures

Stop avian predator hazing when a bald eagle is observed in the vicinity of the Wells Hatchery or Wells tailrace.

Develop a plan to capture any eagle that is injured by the high tension wires installed in the Wells Dam tailrace or over the Wells and Methow hatchery rearing ponds. Transport any injured eagle to a licensed raptor rehabilitation facility.

Contact USFWS, WDFW and U. S. Forest Service to determine if there are any bald eagle nesting territories or bald eagle night roosts within one mile of any proposed habitat restoration project. Through the permitting process, determine the appropriate time to construct the habitat restoration project. Hold the contractor responsible for complying with all permit requirements pertaining to bald eagle activity in the area.

Compliance with Recovery or Management Plans

Bald eagles are protected under federal and Washington State law. Eagles are protected by the ESA, Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Eagles are also protected by the Washington State RCW 77.12.655 which sets out habitat buffer zones for bald eagles and WAC 232-12-292, the Bald Eagle Habitat Protection Rule.

The *Recovery Plan for the Pacific Bald Eagle* sets out goals for occupied nesting territories in the Methow and Okanogan rivers and Wells Reservoir (USFWS, 1986). The plan calls for 1 occupied nesting territory on Wells Reservoir, 1 occupied nesting territory on the Methow River and 2 occupied nesting territories on the Okanogan River.

Determination of Effects

May affect – not likely to adversely affect bald eagles.

5.6 Lynx (*Lynx canadensis*) Threatened – Chelan and Okanogan Counties

Geographic Boundaries

Lynx inhabit boreal forests and wet bogs from the arctic tree line of Alaska and northern Canada, south to the northern United States border. Lynx are found from Newfoundland west to Alaska and British Columbia (Stinson, 2001). Lynx are found in the northern United States where the boreal forest extends south of the border. Lynx are found in northern New England, the Great Lake States, the Rocky Mountains south to Utah and in the mountains of eastern Washington (Stinson, 2001).

Lynx are presently found in high-elevation forests of Chelan, Okanogan, Ferry, Stevens and Pend Oreille counties (Stinson, 2001). Lynx may be extirpated from the southern Cascades (Stinson, 2001). Transient lynx may occasionally be found west of the Cascade crest, probably during years of low prey availability east of the Cascades.

The largest number of lynx in Washington State are found in the Okanogan Lynx Management Zone (LMZ) (Stinson, 2001). The Okanogan LMZ includes the Okanogan and Wenatchee National Forest, part of the Mt. Baker-Snoqualmie National Forest, part of the Pasayten, Glacier Peak and Lake Chelan Sawtooth Wilderness areas, Loomis State forest and parts of the Lake Chelan National Recreation Area and National Park. The LMZ also encompasses some private land.

Lynx were considered a predatory animal and hunted for a \$5 bounty in Washington State before 1947 (Stinson, 2001). Lynx were trapped or hunted for fur until 1991. The USFWS declared the lynx a threatened species in 1993. Fragmented boreal forest habitat, forest management, low snowshoe hare numbers and human exploitation of the lynx all contributed to the decline of lynx in Washington State. It is estimated that there are fewer than 100 lynx in Washington State.

In the Cascade Mountains, lynx live in the lodgepole pine (*Pinus contorta*) and Engelmann spruce-subalpine fir (*Picea engelmanni-Abies lasiocarpa*) forests of the high mountains (Stinson, 2001). Older, mature forests with downed trees and windfalls provide cover for denning sites, escape, and protection from severe weather. Lynx use the more heavily timbered north facing slopes between 1,400 and 2,150 meters in elevation during summer months. In the winter, lynx move below 1,520 meters in elevation and use flatter areas (Stinson, 2001).

Lynx feed primarily on snowshoe hare (*Lepus americanus*). Lynx also will eat mice, red squirrels (*Tamiasciurus hudsonicus*), voles, and birds when snowshoe hare are not available. Recently burned lodgepole pine forest provides the best habitat for snowshoe hares in the Okanogan National Forest (Stinson, 2001).

Female lynx produce 2 to 5 young per year born in late May through June (Stinson, 2001). Young lynx stay with their mother for 10 to 11 months and disperse in the spring. Male and female lynx maintain solitary lives though their territories may overlap (Stinson, 2001).

Presence in Action Area

The Wells Project (reservoir and dam), Wells Hatchery, Columbia River and the Methow Spring Chinook Hatchery are outside the Okanogan LMZ. The Twisp and Chewuch river spring chinook acclimation ponds and fish traps are on private property on the boundary of the Okanogan LMZ. The Tributary Conservation Plan will provide money for preservation and habitat restoration projects on the Methow and Okanogan rivers that may be within the boundaries of the Okanogan LMZ.

Analysis of Effects

Operation of the Wells Dam fish ladders and juvenile bypass system, turbines and spillways will not have an affect on lynx. Operation of the Wells Hatchery and the predator control provisions of the Wells HCP Agreement will also not affect lynx. Operation of the Methow Spring Chinook Hatchery, acclimation ponds, and fish traps will also have no effect on lynx.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various state and federal fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat preservation projects will be in riparian areas along streams and will not impact and probably will not benefit lynx. Habitat restoration projects may also be in riparian areas. Restoration projects constructed in the winter could possibly disturb lynx if the cats journey to lower elevations looking for food. Lynx are sensitive to the compaction of snow by snow mobiles and other snow vehicles that allow coyotes and other predators access to lynx habitat (Stinson, 2001). Any road building activities required to construct habitat restoration projects should be restored or blocked to prevent snow mobile use. In the long run, the habitat restoration projects funded through the Tributary Conservation Plan will have no impact on lynx.

Impact Minimization Measures

Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to lynx using the Methow or Okanogan river valley during late winter and early spring.

Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction in riparian areas should be done during the winter when lynx may migrate to lower elevations.

In-stream work may be allowed during any time of year provided that no confirmed lynx sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a lynx is sighted or if evidence of recent lynx activity has been found within one mile of the site. All evidence of lynx activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the lynx has not been seen and no new evidence of lynx activity has been found for 2 consecutive days.

Individuals planning the habitat restoration project will be required to contact the USFWS to determine if lynx habitat is in the area of the project and to determine whether a lynx has been observed in the immediate vicinity of the proposed project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

Compliance with Recovery or Management Plans

Lynx are protected by the ESA and the Washington State Endangered Species Act. The WDFW developed the Washington State Plan for Lynx Recovery in 2001. All habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and all applicable state and federal regulatory agencies before a project will be implemented. All activities covered by the Wells HCP Agreement are compatible with the Washington State Plan for Lynx Recovery.

Determination of Effects

No effect to lynx.

5.7 Gray Wolf - (*Canis lupus*) Threatened - Chelan and Okanogan Counties

Geographic Boundaries

The gray wolf originally occupied most of the continent from the Arctic to the mountains of Mexico. The gray wolf was not found on the coastal plains of southeast United States and Mexico (Paradiso and Nowak, 1982). Wolves were well distributed throughout Washington State before European settlers arrived. Evidence of wolves can be found in the cultural and archeological record of local Native Americans (Palmquist, 2002).

Hunting wolves for fur during the 1800s and a bounty on wolves in the early 1900s extirpated wolves from Washington State (Palmquist, 2002). Wolf control in southern British Columbia has eased over the past few decades. The population in British Columbia in the Cascades just north of the border is increasing (National Park Service, 1998a). Since 1984 wolves have been seen roaming in the vicinity of Ross Lake and the Skagit Valley Recreation area in British Columbia (National Park Service, 1998a). In 1990, adult wolves with pups were seen near Hozomeen on Ross Lake. Since 1990, biologists have seen 3 separate groups of adults and pups in the North Cascades (National Park Service, 1998a). Since the 1990s, reliable sightings of single wolves have been made at McAlester Pass, Pasayten Wilderness and the Twisp River in the Okanogan National Forest, in the Glacier Peak and Alpine Lakes wildernesses (National Park Service, 1998a; Gaines et al, 2000).

Wolves live in family groups or packs. Wolf packs can contain 2 to 12 or more related individual wolves. Usually only the Alpha male and female wolves in the pack mate and have puppies. Wolves mate in February or March and give birth to puppies 63 days later. Puppies are raised by all the pack members.

Wolves in the North Cascades most likely eat large mammals such as elk (*Cervus elaphus*), deer (*Odocoileus hemionus*), beaver (*Castor canadensis*) and marmot (*Marmota* spp.) and small mammals such as voles (*Microtis* spp.). Wolves hunt prey that is easy and safe to kill including sick, weak, injured and very young and very old animals. Wolves will possibly follow the deer migration to lower elevations during the winter.

Presence in Action Area

Wolves are not present in the lower elevations near the Wells Dam, Wells Hatchery or the Columbia River. Wolves may occasionally be present in the mountains of the Okanogan National Forest near the Methow Spring Chinook

Hatchery, acclimation ponds and spring chinook traps on the Methow, Chewuch and Twisp rivers.

Analysis of Effects

Operation of Wells Dam fish ladders and juvenile salmonid bypass system, turbines and spillways will not have an affect on gray wolves. Operation of the Wells Hatchery and the predator control provisions of the HCP will also not affect gray wolves. Operation of the Methow Spring Chinook Hatchery, acclimation ponds, and fish traps will also have no effect on gray wolves.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various state and federal fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat preservation projects will be in riparian areas along streams and will not impact and probably will not benefit gray wolves. Habitat restoration projects will also be in riparian areas. Restoration projects constructed in the winter could possibly disturb gray wolves if they journey to lower elevations looking for food. Any road building activities required to construct habitat restoration projects should be restored. In the long run, these projects will have no net impact on gray wolves.

Impact Minimization Measures

Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to gray wolves that may be using the Methow or Okanogan river valley during the winter.

Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction activities in the riparian areas of the Twisp, Upper Methow and Chewuch rivers should be done during the winter when gray wolves are present in the vicinity of the proposed riparian restoration project. In-stream work may be allowed during any time of year provided that no confirmed gray wolf sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a wolf is sighted or if evidence of recent wolf activity has been found within one mile of the site. All evidence of wolf activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the wolf has not been seen and no new evidence of wolf activity has been found for 2 consecutive days.

Individuals planning the habitat restoration project will be required to contact the USFWS to determine if gray wolf habitat is in the area of the project and to determine whether gray wolves have been sighted in the vicinity of the project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

Compliance with Recovery or Management Plans

There is no recovery or management plan for gray wolf recovery in Washington State. Gray wolves are listed as threatened under provisions of the ESA and listed as endangered under provisions of the Washington State Endangered Species Act. All habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and state and federal regulatory staff before a project is implemented. All activities covered by the Wells HCP Agreement are compatible with the gray wolves living in the North Cascade Mountains.

Determination of Effects

No effect to gray wolves.

5.8 Grizzly Bear - *Ursus arctos horribilis* Threatened - Chelan and Okanogan Counties

Geographic Boundaries

The historic range of grizzly bears once covered over a third of what is now the continental United States. It is listed as threatened in the lower 48 states, where it survives only in parts of the Rocky Mountains and northern Cascades. The Recovery Plan focuses on the six remaining areas in Idaho, Montana, Washington, and Wyoming that have habitat suitable for self-sustaining grizzly populations; only five of these are currently inhabited by grizzlies. Grizzly bear recovery areas include: Yellowstone, Northern Rocky Mountains, Selkirk Mountains, Cabinet-Yaak Mountains, Bitterroot Mountains, and North Cascade Mountains. No evidence of grizzly bears has been found in the Bitterroot Mountains but the USFWS plans to reintroduce grizzlies into that ecosystem.

The North Cascade Grizzly Bear Recovery Area (North Cascade recovery area) includes all of the North Cascade National Park, and most of the Mount Baker-Snoqualmie and all of the Wenatchee and Okanogan National forests. The recovery area extends roughly from Interstate Highway 90 to the Canadian Border. The North Cascade recovery area is adjacent to the grizzly bear recovery area in British Columbia (North Cascades Grizzly Bear Recovery Team, 2001).

Grizzly bears once occurred throughout the North Cascade recovery area. The decline of the grizzly bear population in the North Cascade recovery area was

likely caused by intensive hunting during the fur trade in the 1800s and rapid human settlement of the area in the late 1800s (Servheen, 1997). Grizzly bears were killed indiscriminately during the early 1900s to avoid potential human – grizzly bear conflicts. The grizzly bear population in the North Cascade recovery area never recovered from the indiscriminate hunting.

The USFWS estimates that 5-20 grizzly bears still roam the North Cascade recovery area. There have been 21 confirmed observations of grizzly bears or grizzly bear sign between 1983 thru 1991 (Servheen, 1997). A grizzly bear, probably from Canada, was sighted near Chesaw east of the North Cascade recovery area on May 14, 2003 (WDFW, 2003). The British Columbia Ministry of Water, Land and Air Protection estimates that less than 25 grizzly bears occupy the North Cascade Population Unit north of the border (North Cascades Grizzly Bear Recovery Team, 2001). USFWS estimates that 200 – 400 grizzly bears could be supported by the North Cascades recovery area. The British Columbia Ministry of Water, Land and Air Protection estimates that 150 grizzly bears could be supported by the North Cascade Population Unit.

Grizzly bears are omnivores with a typical diet of less than 10% fish or meat. Most of the meat consumed by grizzlies is carrion from winter killed deer and elk found on winter range. Grizzly bears may also kill big game and occasionally livestock (Craighead and Mitchell, 1982). More than 100 plants in the North Cascades Ecosystem have been identified as grizzly bear foods. Grizzly bears visit wetlands in the spring for succulent plants that are easy to digest and high in nutrients. Summer foods include thistle, cow parsnip, mushrooms, roots, spawning fish, wild berries, and insects. These foods are found in avalanche shoots and at high elevations. Fall foods include berries, plants, and ants (Grizzly Bear Outreach Project, 2002).

Grizzly bears have a low reproductive rate. A female grizzly does not have her first litter until she is five to seven years old, and she breeds at three to four year intervals. Grizzly bears mate from mid-May to mid-July. Young grizzlies are born in a winter den, usually during January and February. The common litter size is two, but it can range from one to four. The young grow rapidly, and leave the den with the mother in April or May. Usually they remain with the mother until June of their third year. The female grizzly bear will not mate until her young are raised (Craighead and Mitchell, 1982).

After the breeding season grizzlies grow fatter on the abundant summer foods, which help it to survive the winter in its den. Grizzly bear dens are usually above 5000 feet msl. The females usually den first, entering around mid-November, depending on the weather and their condition. The males are likely to stay outside the den until late November or early December and emerge from

it as early as March. The females, especially those with offspring, tend to stay in the dens until the young are fairly well grown in late April or early May (Craighead and Mitchell, 1982).

Presence in Action Area

The Wells Project, Wells Hatchery, and Columbia and Okanogan rivers are not within the boundaries of the North Cascades Grizzly Bear Recovery area. The Methow River Spring Chinook Hatchery, spring chinook traps and acclimation ponds are outside the Okanogan Forest Service boundary and North Cascade Grizzly Bear Recovery Area. The Tributary Conservation Plan will provide money for preservation and habitat restoration projects on the Methow and Okanogan rivers. Projects funded on the Methow River may be within the boundaries of the North Cascade Grizzly Bear Recovery Area.

Analysis of Effects

Normal operation of Wells Dam fish ladders and juvenile bypass, turbines and spillways will not have an affect on grizzly bears. Operation of the Wells Hatchery and the predator control provisions of the HCP will also not have an affect on grizzly bears.

Operation of the Methow River Spring Chinook Hatchery, spring chinook traps and acclimation ponds will have no effect on grizzly bears. Normal sanitary activities require hatchery personnel to bury any large loss of fish at the hatchery. Non-bear proof garbage cans and dumpsters are used for household trash at the Methow Hatchery. Other fish rearing activates at the Methow River Spring Chinook Hatchery, spring Chinook traps and acclimation ponds will not affect grizzly bears.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Coordinating Committee. The committee, made up of various fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat preservation projects will not impact and probably will not benefit grizzly bears. Habitat restoration projects will require a period of construction that could possibly disturb grizzly bears if the bears journey to lower elevations during the spring looking for food. Grizzly bears are sensitive to roads and can be displaced up to 500 meters by any road (Grizzly Bear Outreach Project, 2002). Any road building activities required to construct habitat restoration projects could impact grizzly bears if the road blocks access to habitat. In the long run, these projects will have no net impact to grizzly bears.

Impact Minimization Measures

To minimize any human – grizzly bear conflict at the Methow River Spring Chinook Hatchery, spring chinook traps and acclimation pond's should a confirmed grizzly bear sighting take place within one mile of the Methow hatchery or acclimation ponds, then the existing sanitary practices at those facilities should be examined and changes made where needed. Changes in sanitary practices may include, but are not limited to, purchasing bear proof trash receptacles, cleaning up spilled fish food, hauling dead fish to the appropriate garbage transfer stations and not feeding pets outside at employee housing.

Any road built to facilitate a habitat restoration project should be obliterated after the project is completed to minimize potential impacts to grizzly bears using the Methow River drainage during the spring.

Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. Riparian and in-stream restoration work may be allowed during any time of year provided that a grizzly bear has not been sighted within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a grizzly is sighted or if evidence of recent grizzly bear activity has been found within one mile of the site. All evidence of grizzly bear activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the grizzly bear has not been seen and no new evidence of grizzly bear activity has been found for 2 consecutive days.

Individuals planning the habitat restoration project will be required to contact the USFWS to determine if grizzly bear habitat is in the area of the project and to determine whether a grizzly bear has been sighted in the vicinity of the project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

Compliance with Recovery or Management Plans

Grizzly bears are protected by the ESA and the Washington State Endangered Species Act. The USFWS developed the North Cascades Ecosystem Recovery Plan in 1997 as a supplement to the 1993 Grizzly Bear Recovery Plan. All habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and applicable state and federal regulatory agencies before each project is implemented. All activities covered by the Wells HCP Agreement are compatible with the Grizzly Bear Recovery Plan.

Determination of Effects

May effect – not likely to adversely affect grizzly bears.

5.9 Marbled Murrelet (*Brachyramphus marmoratus marmoratus*) Threatened – Chelan County

Geographic Boundaries

The marbled murrelet is a small seabird. The species range in North America extends from the outer Aleutian Islands across southern Alaska to central California. Currently, marbled murrelets are only found in limited numbers during breeding season in the Puget Sound and the northern part of the outer coast of Washington. The southern portion of the coast still provides sparse nesting habitat. Historically, this species inhabited most of the coastal regions of Washington. Marbled murrelets have been observed nesting in Chelan County near the Cascade Mountain crest in the North Cascades National Park (National Park Service, 1998b).

Marble murrelets only come on dry land during the breeding season. Breeding begins in mid-April and may extend as late as September. Marbled murrelets will fly 70 km from salt water to find suitable nesting habitat (Burger, 2002). Marbled murrelets nest at the crown of tall trees in old-growth forests. Tall Douglas fir (*Pseudotsuga menziesii*), Sitka spruce (*Picea sitchensis*), Western hemlock (*Tsuga heterophylla*) and larch (*Larix spp.*) are used by marbled murrelet for nesting sites.

Marbled murrelet feed on small schooling fish including Pacific Sand lance (*Ammodytes hexapterus*), Northern anchovy (*Mallotus villosus*), Pacific herring (*Clupea harengus*) and immature Pacific salmon (*Onchorhynchus spp.*). Murrelets also feed on squid (*Loligo spp.*) and large pelagic crustaceans including amphipods, mysids and euphausiids (Burger, 2002). Prey items are usually carried to the nest one fish at a time.

Low fecundity is a threat to marbled murrelet survival. Female marbled murrelets lay and incubate a single egg each year (Burger, 2002). Some females may re-nest if they lose the first chick. The sex ratio of chicks surviving to reach the ocean can be as high as 8 males to 1 female chick.

Other threats to the murrelet include the loss of nesting sites as old-growth forest habitat is harvested, and the loss of birds to oil spills or from drowning in commercial gillnets. Young murrelets also face the risk of predation by other birds including Stellar's jays (*Cyanocitta stelleri*), common ravens (*Corvus corax*), crows (*Corvus spp.*), and gray jays (*Perisoreus canadensis*).

Presence in Action Area

The marbled murrelets nesting in Chelan County are located near the crest of the Cascade Mountains on land owned by the North Cascades National Park. Marbled murrelets are not known to occur within the Wells Dam HCP action areas including the Passage Survival Plan, Tributary Conservation Plan, Hatchery Compensation Plan and Water Quality sub-action areas. As a result, operation of the Wells Project, Wells and Methow hatcheries, acclimation ponds, fish traps, avian hazing and northern pikeminnow control will not occur in the vicinity of the marbled murrelet nesting habitat in Chelan County.

In addition, conservation easements or habitat restoration projects, on the Methow or Okanogan rivers, funded under the Tributary Conservation Plan will not disturb, protect or restore marbled murrelet nesting habitat.

Analysis of Effects

No activities covered under the Wells HCP Agreement will impact marbled murrelets. No impact minimization measures are necessary to protect marbled murrelets.

Impact Minimization Measures

No measures are needed to minimize impacts since no actions under the Wells HCP Agreement will have an impact on the marbled murrelet or marbled murrelet nesting habitat.

Compliance with Recovery or Management Plans

All actions under the Wells HCP comply with the USFWS's marbled murrelet recovery plan and the Northwest Forest Plan. The Well HCP also complies with the Washington Forest Practices Act and ESA.

Determination of Effects

No effect to marbled murrelets.

5.10 Ute ladies'-tresses (*Spiranthes diluvialis*) Threatened - Chelan, Douglas and Okanogan Counties

Geographic Boundaries

Ute ladies'-tresses is known to occur within eight Western states. It occurred in eastern Nevada (historically) and occurs in Utah, Colorado, Idaho, Nebraska, Wyoming, Montana, and Washington (USFWS, 1992a). In Washington State it occurs in Okanogan County at Wannacut Lake (WA Natural Heritage Program, 1999, WA Natural Heritage Program Website, 2003) and along the Columbia River in the northeastern corner of Chelan County (Beck, 2003, Calypso Consulting, 2002).

Presence in Action Area

Ute ladies'-tresses occurs in three locations along the shoreline of the Rocky Reach Reservoir in Chelan County, between RM 505 and RM 510. These sites are on stabilized gravel bars that are moist throughout the growing season and inundated early in the growing season. (WA Natural Heritage Program Website, 2003). One of these populations is on lands owned by Chelan PUD, one is on land owned by the Washington Department of Transportation land, and one population is located on private land. Individuals of these populations grow directly along the shoreline within the high-water inundation zone. Ute ladies'-tresses is endemic to mesic or wet meadows and riparian/wetland habitats near springs, seeps, lakes, and perennial streams. It occurs where the over-story vegetation is relatively open and not dense or overgrown (WA Natural Heritage Program, 1999, WA Natural Heritage Program Website, 2003).

All three populations in Chelan County are downstream of the Wells Project and outside the Passage Survival Plan, Tributary Conservation Plan and Hatchery Compensation Plan sub-action areas. Ute ladies'-tresses are located within the Wells Water Quality sub-action area.

The Ute ladies'-tresses located at Wannacut Lake is outside all four Wells HCP sub-action areas.

Analysis of Effects

Operation of the Wells Project has little potential to affect the three populations of Ute ladies'-tresses along the Chelan County shoreline of the Columbia River. All three sites are along the shoreline of the Rock Reach Pool where reservoir elevations are largely controlled by operations of Rocky Reach Dam. The Wells Project is a run of the river dam with little storage capacity. Water released at upstream dams cannot be stored and within hours must be passed through Wells Dam. A long duration of high water levels could negatively affect plant emergence or flowering and population survival. A reduction in water levels or lack of early spring flooding could cause conditions that are too dry for population survival. Ute ladies'-tresses occur in three populations along Rocky Reach Reservoir where pre-impoundment habitat conditions (based upon pre-project aerial photos) seem unsuitable for this species. Those populations seem to have established themselves and survived under current project operating conditions. A variance in those operating conditions could have negative effects on one or more of the three populations of this plant.

Implementation of the Wells HCP including the operation of the Wells Hatchery and Methow River Spring Chinook Hatchery, associated acclimation ponds, and fish traps will not occur within the vicinity of or affect the three Ute ladies'-

tresses populations located along the Rocky Reach Reservoir or at Wannacut Lake. The piscivorous bird hazing program and the northern pikeminnow control programs do not benefit or negatively impact Ute ladies'-tresses populations because these actions do not influence habitat along the Columbia River in the vicinity of the Ute ladies'-tresses populations. Actions funded under the Tributary Conservation Plan will not benefit or negatively impact the Ute ladies'-tresses populations because those populations do not occur upstream of Wells Dam or in the tributaries covered by the Wells Tributary Conservation Plan.

Impact Minimization Measures

No mitigating measures are needed to minimize impacts to Ute ladies'-tresses from the actions listed in the Wells Project HCP.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. All habitat restoration projects will be required to do a rare plant survey before construction is permitted. Habitat restoration projects and plans to purchase conservation easements or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various fisheries agencies and the tribes, will decide if the projects meet criteria for funding. Habitat restoration projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Copies of the rare plant surveys will be provided for review along with all other permit application data.

Compliance with Recovery or Management Plans

Ute ladies'-tresses is listed as Endangered by the state of Washington and is listed as Threatened by the USFWS (WA Natural Heritage Program Website, 2003). There is no federal recovery or management plan for Ute ladies'-tresses. Several threats and management concerns that are associated with Ute ladies'-tresses include watershed and stream alterations that degrade natural stream stability and diversity, conversion of riparian/floodplain land to agricultural uses, and competition from and chemical control of noxious weeds (WA Natural Heritage Program, 1999). Pollinators and pollen-producing plants must be maintained in the vicinity of Ute ladies'-tresses populations to preserve this orchid (WA Natural Heritage Program, 1999). The HCP for the Wells Project, associated hatcheries, acclimation ponds, and fish traps, predator control program and Tributary Conservation Plan are not in conflict with the management plans and concerns for Ute ladies'-tresses.

Determination of Effects

No effect to Ute ladies'-tresses.

5.11 Northern Spotted Owl - (*Strix occidentalis caurina*) Threatened - Chelan and Okanogan Counties

Geographic Boundaries

The Northern spotted owl is found in old growth forests and occasionally in younger conifer forests of the Cascade, Sierra Nevada and coastal mountains of British Columbia, Washington, Oregon, and Northern California. The range of the spotted owl habitat on the Okanogan National Forest has been described as being in old growth and late successional reserve conifer forests west of the Methow and Chewuch river basins, north of Crater and Gold creeks, and below 5,000 feet elevation (Bob Nanny, Pers. Comm.).

Northern spotted owls generally have large home ranges and use large tracts of land containing significant acreage of older forests (Thomas, et al., 1990). Spotted owl nesting and roosting habitat typically include a moderate to high canopy closure of 60 to 80 percent. Multi-layered trees with various deformities provide nesting cavities for spotted owl (Thomas, et al. 1990). Spotted owls use a wider variety of forest types for hunting, including more open and fragmented habitat (Thomas, et al., 1990).

Although spotted owls hunt a wide variety of prey including small mammals, and particularly nocturnal arboreal or semi-arboreal species. Major prey species include: northern flying (*Glaucomys sabrius*) squirrels, dusky-footed or bushy-tailed woodrats (*Neotoma fuscipes* and *Neotoma cinerea*), and various lagomorphs (hares and rabbits) (Thomas, et al., 1990). Additionally, geomyids (pocket gophers), red tree voles (*Arborimus longicaudus*), and deer mice (*Peromyscus maniculatus*) are regionally important (Thomas, et al. 1990). Flying squirrels are especially important prey in mesic forests of the Western Hemlock/Douglas-Fir zones. Woodrats are important prey in the drier conifer forests east of the Cascades (Thomas, et al., 1990).

Male and female spotted owls begin forming pairs in February or March and eggs are laid in March or April. The female incubates the eggs for 30 days. After hatching, it takes the young birds 34-36 days to fledge.

Presence in Action Area

The Wells Project and Wells Hatchery are not within known Northern spotted owl habitat. The avian hazing and Northern pikeminnow control projects are conducted on the Columbia River and are also not within known Northern spotted owl habitat.

Northern spotted owls nest in small numbers in the Okanogan National Forest (Bob Nanny, Pers. Comm.). The Methow Spring Chinook Hatchery is not located within the boundary of the Okanogan National Forest or near known spotted owl habitat. The acclimation pond and fish trap on the Chewuch River are approximately 16 air kilometers from the nearest spotted owl nest which is located in the Lost River drainage (Bob Nanny, Pers. Comm.). The acclimation pond and fish trap on the Twisp River are approximately 9 air kilometers from the nearest spotted owl nest near War Creek, a tributary of the Twisp River (Bob Nanny, Pers. Comm.). The Tributary Conservation Plan will provide money for preservation and habitat restoration projects on the Methow River that may be within the boundaries of the Northern spotted owl habitat.

Analysis of Effects

Operation of the Wells Project fish ladders and juvenile bypass system, turbines and spillways will not have an affect on the Northern spotted owl. Wells Hatchery operation and the predator control provisions of the HCP will not have an affect on the Northern spotted owl. Operation of the Methow Spring Chinook Hatchery, acclimation ponds, and fish traps will also have no effect on the Northern spotted owl.

The Tributary Conservation Plan will provide money to fund third party conservation efforts in the Methow and Okanogan river basins. Habitat restoration projects and plans to purchase a conservation easement or land in fee will be submitted to the Tributary Conservation Plan Committee. The committee, made up of various state and federal fisheries agencies and the tribes, including the USFWS, will decide if the projects meet criteria for funding. Projects will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat preservation projects will be in riparian areas along streams and will not impact and probably will not benefit the Northern spotted owl. Habitat restoration projects will also be in riparian areas. Stream restoration projects constructed in spotted owl habitat will be constructed outside of the nesting season for the owls. Contractors working on stream restoration projects will be required to follow all permit requirements.

Impact Minimization Measures

All stream habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and state and federal regulatory staff before a project is implemented. Contactors planning a stream habitat restoration project will be required to contact the USFWS and the U. S. Forest Service to determine if spotted owls are nesting in the area of the project. Contractors working on stream restoration projects will be required to follow all permit requirements.

Any road built to facilitate stream habitat restoration will be revegetated after the restoration work is completed.

Compliance with Recovery or Management Plans

Northern spotted owls are protected by the ESA and the Washington State Endangered Species Act.

All activities covered by the Wells Project HCP are compatible with the US Forest Service and US Bureau of Land Management guidelines for management of Northern spotted owl habitat in late-successional and old-growth forests (US Forest Service and US Bureau of Land Management, 1994).

Effects on Designated Critical Habitat

Critical habitat identifies specific areas essential to the conservation of a species. The physical and biological habitat features that support nesting, roosting, foraging, and dispersal are essential to the conservation of the northern spotted owl (USFWS, 1992b).

The Service designated 53 units totaling 2.2 million acres in Washington as critical habitat for Northern spotted owls, some of which are included with the Wenatchee, Entiat, and Methow river drainages (Bill Gaines, USFS biologist, Wenatchee, pers. comm.).

The operation of the Wells Project, hatcheries, acclimation ponds, the avian hazing and northern pikeminnow control programs, and the Methow River broodstock collection facilities will not occur in the vicinity of Northern spotted owl critical habitat and will have no effect on that habitat. The Methow Basin smolt trap(s) and acclimation facilities also do occur in proximity to parcels designated as Northern spotted owl critical habitat and will not affect that habitat. USFS maps of Northern spotted owl activity centers and personal communication with Bill Gaines indicate that these fish facilities are more than one mile from the Northern spotted owl critical habitat parcels.

Habitat restoration projects that may be funded by tributary improvement funds could potentially be planned along waters within Northern spotted owl critical habitat. The individuals planning the habitat restoration projects will be required to contact the USFWS to determine if Northern spotted owl critical habitat occurs in the vicinity of the planned project and if necessary seek guidance from the USFWS to avoid or lessen project impacts on that critical habitat. Contractors will be required to adhere to all state and federal permit requirements for each habitat restoration project.

Determination of Effects

No effect to spotted owls and will not result in the destruction or adverse modification of critical habitat for Northern spotted owls.

6. ANALYSIS OF EFFECTS TO CANDIDATE SPECIES

6.1 Yellow-billed Cuckoo - *Coccyzus americanus*

Candidate Species Chelan and Okanogan Counties

Geographic Boundaries

Yellow-billed cuckoos occur in all of the eastern, southeastern and mid-western United States and the southern regions of Quebec and Ontario. The yellow-billed cuckoo is rapidly approaching extinction in the western states. It was last known to breed in British Columbia in the 1920s, in Washington State in the 1930s and in Oregon in the 1940s (Center for Biological Diversity, 1998). The yellow-billed cuckoo has also been extirpated from Idaho, Nevada and Utah (Center for Biological Diversity, 1998).

In the Pacific Northwest, the species was formerly fairly common locally in willow bottoms along the Willamette and Columbia rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington (USFWS, 2001a). The yellow-billed cuckoo was rare east of the Cascade Mountains in Oregon and Washington (USFWS, 2001a).

Presence in Action Area

Yellow-billed cuckoos arrive at their breeding territories in early to mid-June and begin nesting in late June to early July. In the western United States yellow-billed cuckoos nest in large riparian cottonwood/willow forests with dense under story (Center for Biological Diversity, 1998). Suitable riparian habitat used for nesting is greater than 20 ha with a minimum width of 100-200 m (Center for Biological Diversity, 1998). Up to 5 large eggs are laid. The total length of incubation and rearing to fledging of young yellow-billed cuckoo combined is 17-18 days. Brown-headed cowbird frequently parasitizes the nests of yellow-billed cuckoo. The yellow-billed cuckoo is likely absent from Washington because it has retreated from the periphery of its former range, but lack of stop-over habitat in California may prevent cuckoos from migrating further north (Center for Biological Diversity, 1998).

The yellow-billed cuckoo is not found in any of the four Wells Project HCP sub-action areas. Suitable nesting habitat is not available on the Wells Reservoir and is limited on the Methow and Okanogan rivers. In recent years, 1999 - 2003, two yellow-billed cuckoos were observed in western Washington and a single yellow-billed cuckoo was seen east of the Cascade Mountains in 1992 (Center for Biological Diversity, 1998).

Analysis of Effects

Operation of the Wells Project, Wells and Methow hatcheries, acclimation ponds, and fish traps will not occur in the vicinity of the yellow-billed cuckoos or yellow-billed cuckoo habitat. As a result, the proposed actions will not benefit or negatively impact the survival of yellow-billed cuckoos. Specifically, the avian hazing program and northern pikeminnow control program will not benefit or negatively impact yellow-billed cuckoos. Conservation easements or habitat restoration projects funded under the Tributary Conservation Plan could preserve or restore yellow-billed cuckoo nesting habitat if the project results in a large stand of riparian forest.

Impact Minimization Measures

No measures are needed to minimize impacts to yellow-billed cuckoo from the actions proposed in the Wells HCP.

Compliance with Recovery or Management Plans

The yellow-billed cuckoo is a candidate species on the federal Endangered Species listing rules. No critical habitat or recovery plan exists. Projects funded by the conservation fund will have to be reviewed by state and federal agencies to receive permits for construction projects. Habitat preservation projects may protect suitable yellow-billed cuckoo habitat.

Determination of Effects

No effect to yellow-billed cuckoos.

6.2 Western Sage Grouse - *Centrocercus urophasianus phaios*) Candidate Species - Douglas, Grant and Okanogan Counties

Geographic Boundaries

Western sage grouse historically were distributed from southern British Columbia south through central and eastern Washington State and southeastern Oregon. In California and Nevada, the sage grouse are an intermediate form between western sage grouse and eastern sage grouse (*C. u. urophasisnus*) (USFWS, 2003a). Their historic range followed the distribution of sagebrush in the climax sagebrush and prairie ecosystems (Hays et al, 1998). Populations of western sage grouse have declined from the historic range to present numbers due to degradation and loss of sagebrush habitat.

Historically, in Washington State, western sage grouse ranged from the southeastern Columbia River north to Oroville west to the Yakima River and east to the Spokane River (Hays et al, 1998). By the early 1900s, sage grouse had been extirpated from Spokane, Columbia and Walla Walla counties (Hays et al, 1998).

At present, two sage grouse populations remain: the largest population is found in Douglas and northern Grant counties, and the smaller population occurs in Yakima and southern Kittitas counties. These populations are small and isolated, occurring in partially intact areas of sagebrush habitat (Hays et al, 1998).

Presence in Action Area

Sage grouse breed in open areas called leks. Leks are usually located in wheat fields and on ridge tops. Females nest on the ground in habitat dominated by grass/forbs cover and thick over story of shrubs, usually sagebrush (*Foster Creek Conservation District, 2001*). Nesting habitat includes remnant unconverted shrub-steppe habitat, conservation reserve program fields dominated by wheat grass, or range land that is currently grazed. Nesting vegetation must provide both vertical and horizontal visual protections from potential nest predators (*Foster Creek Conservation District, 2001*). Sage grouse migrate 16 to 64 kilometers to wintering areas in October and November and return to breeding areas in April and May (*Foster Creek Conservation District, 2001*).

Sage grouse in Washington State reproduce slowly. Mortality is high in the summer. Survival from egg to adult is very low with less than one replacement produced per female per year (*Foster Creek Conservation District, 2001*).

Flowers and leaves of various plants, including sagebrush, along with insects make up a large portion of the sage grouse diet during the spring, summer and early fall. Sagebrush leaves are the only food item eaten by sage grouse during the winter.

Sage grouse are presently found scattered throughout central Douglas County from the Waterville Plateau north to the Del Rio and east to the land above Grand Coulee and lower Grand Coulee. Sage grouse are found as far south as the Beezely Hills in northern Grant County.

Sage grouse are not found in any of the four Wells HPA sub-action areas. Sage grouse are no longer found in the portions of Chelan, Douglas and Okanogan counties that abut the Wells Reservoir and the Methow and Okanogan rivers. Habitat loss caused by agricultural development and home building has extirpated sage grouse from the Wells HCP sub-action areas.

Oliver and Barnett (1966) conducted a pre-construction study of the Wells Project reservoir area and determined the damage resulting from inundation of lands and facility construction. The study emphasis was game species, including sage grouse. Oliver and Barnett (1966) did not report sage grouse in the study area. Oliver and Barnett concluded the construction of the Wells Project did not have an impact on sage grouse since the birds were not found in the in the area prior

to construction of the dam and inundation of the Columbia River upstream of the dam.

Analysis of Effects

Operation of the Wells Project, Wells and Methow hatcheries, acclimation ponds, fish traps, avian hazing and northern pikeminnow control will not occur in the vicinity of the western sage grouse or western sage grouse habitat. Conservation easements or habitat restoration projects funded under the Tributary Conservation Plan will not protect or restore western sage grouse nesting habitat on the mainstem Columbia River or in the Methow or Okanogan rivers.

Impact Minimization Measures

No activities proposed in the Wells HCP Agreement will impact Western sage grouse. No impact minimization measures are necessary to protect Western sage grouse.

Compliance with Recovery or Management Plans

No federal recovery plan has been written or critical habitat designated because western sage grouse is still considered a candidate species under the federal ESA. WDFW has developed a Washington State recovery plan for western sage grouse. Two recovery areas are designated in the recovery plan. One recovery area is in the Del Rio area adjacent to the Chief Joseph Reservoir (Hays et al, 1998). The second area is in the southwestern part of Douglas County. Neither the Wells Project reservoir and tailrace or the Methow and Okanogan rivers abut the two western sage grouse recovery areas designated by WDFW.

Determination of Effects

No effect to western sage grouse.

6.3 Washington Ground Squirrel (*Spermophilus washingtoni*) Candidate Species - Douglas and Grant Counties

Geographic Boundaries

The Washington ground squirrel inhabits the sagebrush and grassland regions of the Oregon and Washington Columbia Plateau. Their range is restricted to the sandy soil regions of the Columbia Basin south and east of the Columbia River and in northeastern Oregon between the John Day River and the Blue Mountains.

Historically there were 56 sites with Washington ground squirrel colonies in the Columbia Basin (Betts, 1990). Betts (1999) surveyed known Washington ground squirrel colony sites in 1998 and found only 37 sites occupied. Data collected in 1999 thru 2001 indicates a significant decline in Washington ground squirrels at

the Columbia National Wildlife Refuge and the Seep Lakes Wildlife Area (Foster Creek Conservation District, 2001).

In the late 1980s only one colony of Washington ground squirrels was known to exist on Badger Mountain in Douglas County (Foster Creek Conservation District, 2001). In the 1990s a second colony was found near Jamison Lake. There was a range fire at Jamison Lake colony site in 1999. Ground squirrel numbers have increased since the fire (Foster Creek Conservation District, 2001). An additional colony was found on Badger Mountain in 2001 (Foster Creek Conservation District, 2001).

Biologists from the US Bureau of Land Management surveyed 25,881 hectares of BLM land in 2002 and found 83 colonies of Washington ground squirrels in central Washington. Colonies found by the BLM study were small and individual burrows were widely dispersed (John Musser, Pers. Comm.)

Washington ground squirrels inhabit arid, open shrub steppe and grasslands. Colonies may also be found in ravines and on hillsides. Colonies tend to be located in areas of deep, silty soils with low percentages of clay. Tilling or other mechanical turning of the soil destroys the food source for Washington ground squirrels and makes the soil unusable as a burrow site (Foster Creek Conservation District, 2001).

The Washington ground squirrel spends most of its life under ground in its burrow. Adults emerge from their burrows between January and early March each year depending on weather and elevation. Males emerge before the females. Females have one litter a year and usually produce 8 young. Young of the year are born early in the season and emerge in mid-march (Foster Creek Conservation District, 2001). Washington ground squirrels feed on succulent grass and forbs, roots, seeds and insects. As the grass dries out in late May or June, depending on elevation, the ground squirrels will enter their burrows and hibernate for 7 to 8 months (*Foster Creek Conservation District, 2001*).

Washington ground squirrels are susceptible to a number of predators. Badgers, coyotes, weasels and raptors all prey on the squirrels. The ground squirrel colonies are carriers of and susceptible to a bacterial infection of *Yersinia pestis* bacterium commonly called sylvatic plague.

Presence in Action Area

Washington ground squirrels in Douglas County are located on the Waterville Plateau and on Badger Mountain. Operation of the Wells Project, Wells and Methow hatcheries, acclimation ponds, fish traps, avian hazing and northern pikeminnow control will not occur in the vicinity of the Washington ground squirrels or Washington ground squirrel habitat. Conservation easements or habitat restoration projects funded under the Tributary Conservation Plan will not protect or restore Washington ground squirrel habitat on the Columbia, Methow or Okanogan rivers.

Analysis of Effects

No activities covered under the Wells HCP will impact Washington ground squirrels. No impact minimization measures are necessary to protect Washington ground squirrels or ground squirrel habitat.

Impact Minimization Measures

No measures are needed to minimize impacts to Washington ground squirrels since actions proposed for implementation under Wells HCP will have no impact on Washington ground squirrels.

Compliance with Recovery or Management Plans

No federal recovery plan has been written or critical habitat has been designated since the Washington ground squirrel is still a candidate species under the federal ESA. WDFW has listed the Washington ground squirrel as a candidate species under the Washington State ESA. No recovery plan for Washington ground squirrel has been written by WDFW.

Determination of Effects

No effect to Washington ground squirrels.

7. SUMMARY OF EFFECT DETERMINATIONS

Endangered Species Act - Threatened and Endangered Species

1. Pygmy Rabbit (*Brachylagus idahoensis*) - No Effect.
 - No suggested impact minimization measures recommended for pygmy rabbits.
2. Showy stickseed (*Hackelia venusta*) - No Effect.
 - No measures are needed to minimize impacts to showy stickseed from the actions listed in the Wells HCP Agreement.
3. Wenatchee Mountains checker-mallow (*Sidalcea oregana*) - No Effect and will not result in the destruction or adverse modification of critical habitat for the Wenatchee mountains checker-mallow.
 - Conduct rare plant surveys at proposed stream habitat restoration sites to determine if Wenatchee Mountains checker-mallow is present on the site.
4. Columbia River Bull Trout - May Affect - likely to adversely affect Columbia River bull trout. Will not result in the destruction or adverse modification of proposed critical habitat for Columbia River bull trout.
 - Bull trout stranded during fish ladder and turbine maintenance will be collected, counted and returned to the river immediately upstream of the project. All observations of bull trout recovered during these operation will be reported to the USFWS.
 - Information on the number of bull trout passing through the fish ladders at Wells Dam, outside the normal fish counting period, will be collected during the winter of 2004-2005. Winter bull trout counts will begin on November 16, 2004 and will continue until April 31, 2005. After the winter bull trout counts have been compiled and examined by all interested entities, the District and the USFWS will determine whether or not winter bull trout counts should be collected during future years.
 - Broodstock traps located in the fish ladder at Wells Dam will not be operated when water temperatures within the ladder exceed 69 °F. Operation of the fish ladder traps will be limited to a maximum of 16-hours per day for no more than three days per week. The ladder traps will be manned to ensure that bull trout are safely returned to the fish

ladder upstream of the trap. Should a bull trout be mistakenly anesthetized, the fish will be allowed to recover, transported to a quiet location upstream of the dam and released.

- Broodstock traps operated in the Methow Basin will be checked at least once per day during trapping operations. Bull trout collected in the tributary brood collection traps will be safely removed from the traps and released a sufficient distance upstream of the trap to ensure that the released bull trout do not become stranded on the dam, weir or on the trap intake screens.
- Hatchery evaluation activities may result in the harassment of migratory bull trout during spawning ground and snorkel surveys. During these surveys, spawning bull trout will be avoided whenever possible. Whenever observed, the location of spawning bull trout will be shared with USFWS and US Forest Service bull trout biologists.
- Juvenile spring chinook and steelhead smolt trapping activities on the Methow, Twisp and Chewuch rivers may result in the inadvertent collection of juvenile and adult bull trout. To reduce capture and handling stress, the traps will be checked and cleaned at least twice per day. Upon encountering a bull trout in one of the juvenile traps, each bull trout will be anesthetized, measured, weighed, PIT-tagged and, after recovering from the affects of the anesthetic, released downstream of the trapping facility. The information collected on each incidentally captured bull trout will be provided to the USFWS for use in monitoring bull trout populations in the Upper Columbia River.
- All Tributary Conservation Plan and Hatchery Compensation Plan projects that have the potential to disturb bull trout or proposed bull trout critical habitat will be required to go through a separate ESA Section 7(a)(2) consultation prior to initiation of the project.

5. Bald Eagle (*Haliaeetus leucocephalus*) - May Affect – Not likely to Adversely Affect.

- Stop avian predator hazing when a bald eagle is observed in the vicinity of the Wells Hatchery and Wells tailrace.
- Develop a plan to capture any eagle that is injured by the high tension wires installed in the Wells tailrace and over the Wells Hatchery rearing ponds. Transport any injured eagle to a licensed raptor rehabilitation facility.

- Contact USFWS, WDFW and US Forest Service to determine if there are any bald eagle nesting territories or bald eagle night roosts within one mile of any proposed habitat restoration project. Through the permitting process, determine the appropriate time to construct the habitat restoration project. Hold the contractor responsible for complying with all permit requirements pertaining to bald eagle activity in the area.

6. Lynx (*Lynx canadensis*) – No Effect.

- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to lynx using the Methow or Okanogan river valley during the spring.
- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction activities in the riparian areas of the Twisp, Upper Methow and Chewuch rivers should be done during the winter when lynx may migrate to lower elevations.
- In-stream work may be allowed during any time of year provided that no confirmed lynx sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a lynx is sighted or if evidence of recent lynx activity has been found within one mile of the site. All evidence of lynx activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the lynx has not been seen and no new evidence of lynx activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if lynx habitat is in the area of the project and to determine whether a lynx has been observed in the immediate vicinity of the proposed project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

7. Gray Wolf – (*Canis lupus*) – No Effect.

- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to gray wolves that may be using the Methow or Okanogan river valley during the winter.

- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. No construction in riparian areas should be done during the winter when gray wolves may migrate to lower elevations.
- In-stream work may be allowed during any time of year provided that no confirmed gray wolf sightings have taken place within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a wolf is sighted or if evidence of recent wolf activity has been found within one mile of the site. All evidence of wolf activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the wolf has not been seen and no new evidence of wolf activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if gray wolf habitat is in the area of the project and to determine whether a gray wolf has been observed in the immediate vicinity of the proposed project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

8. Grizzly Bear - *Ursus arctos horribilis* - May Affect - Not Likely to Adversely Affect.

- To minimize any human - grizzly bear conflict at the Methow River Spring Chinook Hatchery, spring chinook traps and acclimation ponds, should a confirmed grizzly bear sighting take place within one mile of the Methow hatchery or acclimation ponds, then the existing sanitary practices at those facilities should be examined and changes made where needed. Changes in sanitary practices may include, but are not limited to, purchasing bear proof trash receptacles, cleaning up spilled fish food, hauling dead fish to the appropriate garbage transfer stations and not feeding pets outside at employee housing.
- Any road built to facilitate a habitat restoration project should be restored after the project is completed to minimize potential impacts to grizzly bears using the Methow River Basin during the spring.

- Habitat restoration projects will restore riparian habitat or rebuild in-stream habitat. Riparian and in-stream restoration work may be allowed during any time of year provided that a grizzly bear has not been sighted within 10 miles of the proposed construction site within the past 30-days. The contractor will be required to stop construction if a grizzly is sighted or if evidence of recent grizzly bear activity has been found within one mile of the site. All evidence of grizzly bear activity must be confirmed by a state or federal wildlife biologist. The contractor will be allowed to resume construction if the grizzly bear has not been seen and no new evidence of grizzly bear activity has been found for 2 consecutive days.
- Individuals planning the habitat restoration project will be required to contact the USFWS to determine if grizzly bear habitat is in the area of the project and to determine whether a grizzly bear has been sighted in the vicinity of the project within the last 30-days. They will also be required to follow all state and federal permit requirements for the habitat restoration project.

9. Marbled Murrelet (*Brachyramphus marmoratus marmoratus*) – No Effect.

- No measures are needed to minimize impacts because none of the actions proposed under Wells HCP Agreement will have an impact on the marbled murrelets or marbled murrelet nesting habitat.

10. Ute ladies'-tresses (*Spiranthes diluvialis*) – No Effect.

- Conduct rare plant surveys at proposed stream habitat restoration sites to determine if Ute ladies'-tresses is present on the site.

11. Northern Spotted Owl – (*Strix occidentalis caurina*) – No Effect and will not result in the destruction or adverse modification of critical habitat for Northern spotted owl.

- All stream habitat restoration projects proposed will be reviewed by the state and federal members of the HCP Tributary Conservation Plan Committee and state and federal regulatory staff before a project is implemented. Contactors planning a stream habitat restoration project will be required to contact the USFWS and the US Forest Service to determine if spotted owls are nesting in the area of the project. Contractors working on stream restoration projects will be required to follow all state and federal permit requirements.

- Any road built to facilitate stream habitat restoration will be obliterated and re-vegetated after the restoration work is completed.

Endangered Species Act - Candidate Species

1. Yellow-billed Cuckoo – (*Coccyzus americanus*) – No Effect.

- No measures are needed to minimize impacts to yellow-billed cuckoo from the actions proposed in the Wells HCP.

2. Western Sage Grouse – (*Centrocercus urophasianus phaios*) – No Effect.

- No measures are needed to minimize impacts to Western sage grouse from the actions proposed in the Wells HCP.

3. Washington ground squirrel (*Spermophilus washingtoni*) – No Effect.

- No measures are needed to minimize impacts to Washington ground squirrel from the actions proposed in the Wells HCP.

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9. APPEDICES

APPENDIX A

Wells Hydroelectric Project, Adult Fish Passage Plan.

Adult Passage Plan

Adult passage at Wells Dam was addressed under the project's FERC license (Project No. 2149). Minor modifications to the FERC fish passage conditions were made during negotiations of the Settlement Agreement. Fishway operations are coordinated with the Fish Passage Center. Changes in operating criteria require unanimous support of the Coordinating Committee including approval by NMFS Hydro Program.

Wells Dam was constructed with two fish ladders. Since 1967, an average of 50,000 adult salmon and steelhead have ascended Wells Dam on their way to spawning grounds above the dam.

The two fish ladders at Wells Dam are conventional staircase type fish ladders with 73 pools. The ladders are located at the east and west ends of the dam. The lower 56 pools discharge a constant 48 cfs of water. At each pool, the water drops approximately one foot until this water reaches the tailwater level in the collection gallery. Supplemental water can be added at each inundated pool at the upper end of the collection gallery. The upper pools in the adult fishway, pools 73 - 56, discharge water from one pool to another through fishway weirs. Each weir in the upper portion of the adult fishways contains two orifice openings. These orifices are located one foot from the base of the weir. This design provides a sanctuary pool between each of the upper fishway weirs. From pool 56 downstream to the collection gallery, each fishway weir is designed to operate with 48 cfs of water. The water passes from one weir to the next via a seven foot wide overflow section between pools and through two 18 inch by 15 inch submerged orifices.

To accommodate 10 feet of reservoir drawdown, the drop between the upper 17 pools varies from one foot at full reservoir to six inches during a 10 foot reservoir drawdown. The flow through the upper 17 ladder pools consequently varies from 44 cfs at full reservoir to about 31 cfs at maximum reservoir drawdown. To increase the flow to the 48 cfs required in the lower ladder pools, supplementary water is introduced into Pool No. 56 through a pipeline from the reservoir.

Pool No. 64 of both fishway ladders contains facilities for counting fish. The main features of the counting facility include a counting room, an observation window into the fish ladder, a telescoping gate to guide the fish closer to the observation window, a light panel and a bypass gate to control the flow and velocity past the observation window. Video records of fish passage

are collected 24-hours per day starting on May 1 and continue through November 15. The videos are then reviewed and counts of fish by species by ladder are made available on a daily basis through coordination with the Army Corps of Engineers adult fish counting program.

At Pool No. 40, each of the two fish ladders has provisions for sorting and trapping various species of fish. The west ladder sorting facility allows for selected fish to travel through a flume to a holding pond at the Wells Hatchery. The east ladder sorting facility allows for fish to travel to a holding container where they are anesthetized, netted and placed in transportation containers to be moved across the dam to appropriate hatchery facilities. The fisheries agencies and tribes currently develop species-specific broodstock collection protocols at the beginning of each season. Broodstock presently collected at Wells Dam includes spring and summer chinook and summer steelhead. Broodstock collection protocols are developed by the WDFW and are annually submitted to the Wells Coordinating Committee and NMFS Hydro Program for annual approval prior to trapping at the dam. In addition to broodstock collection, the adult fish traps are occasionally used to collect information from CWT tagged steelhead, collect sockeye scales for stock identification and age analysis and collect adult bull trout, chinook, sockeye and steelhead for radio-tagging.

The 2000-2002 Wells Biological Opinion (Section 10.1.4, page 45) requires that the operation of the Wells ladder traps for the collection of broodstock or other fisheries assessment be limited to a maximum of 16-hours per day for three days per week or as approved by NMFS Hydro Program, Portland, Oregon. The Wells Biological Opinion (Section 10.1.4, page 45) requires that adult trapping facilities be manned whenever the trap is in operation and that the collection of adults from the fishway traps be discontinued whenever river water temperature exceed $69 F^{\circ}$. Specific operating criteria for the fish ladder traps can be found below (See: Adult Trap Operating Criteria).

At the bottom of the fish ladder, projecting downstream from the line of the hydrocombine is the portion of the endwall structure that incorporates the functions of fish attraction and collection. Two turbine pumps on each ladder deliver 800 to 2500 cfs (depending upon tailwater elevation) of fish attraction flow to the water supply chamber located immediately adjacent to the collection gallery. Supply chamber water flows into the upper sections of the collection gallery where it is used to maintain an attraction velocity of 2 feet per second; and also into the main collection gallery at the foot of the ladder through diffusion gratings. The total fishway flow from the turbine pump(s) and the 48 cfs coming down the ladder from the forebay is discharged into the tailrace through two fish entrances. Fishway entrances are operated according to hydraulic conditions as specified in the Wells settlement agreement. The

specific operating conditions of the ladder are described below (See: Adult Fishway Operating Criteria). Modification to the ladder operating criteria can only take place following approval by the Wells Coordinating Committee.

To reduce the total project passage times of adult fish, the main fishway entrances will be operated at an 8-foot opening. To reduce the incidence of fish falling out of the collection gallery, the side gates to the collection gallery will remain closed during normal fishway operations.

Since July 1970, the ladders have been operated with a 1.5 foot differential maintained by constantly adjusting the output of the fish pumps. Under normal conditions, the fish pumps operate automatically to maintain a pre-set differential level between the water supply chamber and the main collection chamber.

Fishways are inspected daily to ensure that debris accumulations are removed, that the automated fishway instruments are calibrated properly and to ensure that lights in the fishway are maintained.

Adult Fish Ladder Operating Criteria

Water Depth Criteria

The water depth over the weirs of the adult fish ladder will be 1.0 to 1.2 feet.

Entrance Criteria

1. Head: 1.5 feet
2. Gate Settings: Main Wing Gate open 8 feet,
Side Wing Gate closed,
Side Gate Attraction Jets closed.

Staff Gauge and Water Level Indicator Criteria

Staff guage and water level indicators are located and maintained upstream and downstream of the Main Wing Gates and adult fishway exit trashracks. These guages should be clearly visible from a convenient location and they should be clean and readable at all water levels. Manual staff guage readings should be checked each day to ensure that consistent readings are being displayed within the control room.

Trashrack Criteria

Visible buildups of debris will be cleaned immediately from picketed leads near counting stations, and from trashracks at adult fishway exits. The staff gauges located immediately upstream and downstream of the adult fishway exit trashracks should be monitored for water surface differential, which may indicate a buildup of debris on the submerged trashracks. The trashracks will be cleaned immediately if the differential reading is greater than 1.0 foot.

Modification of Adult Passage Facilities

If adult passage studies identify biologically significant delay and/or mortality, the operating criteria described above may be changed or modified following approval of the Coordinating Committee. If changes in the operating criteria do not alleviate the problems, then structural modifications to the adult passage facilities may be required. Provided that any disagreements over the appropriateness of facility modifications of \$325,000.00 or less (1988 dollars) may be taken through dispute resolution and any disagreement over the appropriateness of facility modifications of more than \$325,000.00 (1988 dollars) is resolved under the FERC Rules of Practice and Procedure.

Adult Trap Operating Criteria

Startup: The adult fish traps are located on each fish ladder at Pool 40. The traps are operated by placing a barrier fence across the entire width of Pool 40. Once the barrier fence is in place, the steep-pass denil, upwelling enclosure and sorting chute jets are turned on.

Fish Sorting: Fish that swim up the denil eventually enter the upwell enclosure. Once inside the upwell enclosure, fish are attracted down the sorting chute by jets of water introduced into the upwell enclosure near the top of the sorting chute. As fish slide down the chute, they are identified and a decision is made to either shunt the fish back into the ladder immediately upstream of the barrier fence, or to retain the fish for broodstock or stock assessment. Excess water introduced into the fish ladder from the trap denil and upwell enclosure can, when necessary, be removed from the fish ladder through a piped diversion located downstream of the trap in Pool 40.

Fish Disposition: At the east ladder trap, fish retained for stock assessment are anesthetized, sampled and re-introduced back into the ladder via a recovery/re-introduction tank that is located upstream of the pool 40 barrier fence. Fish retained for broodstock are anesthetized, marked and placed into hatchery transport vehicles. On the west ladder trap, fish retained for broodstock and for stock assessment are passed into a holding pond at the Wells Fish Hatchery. Fish in the holding pond are sorted by WDFW personnel. Fish retained for broodstock are either retained in the hatchery holding pond or placed into transportation vehicles for distribution to other hatchery facilities. Fish retained for stock assessment purposes are placed into transport vehicles and released upstream of the dam.

Safety Measures: The steep-pass denil has been outfitted with two removable gates. The bottom gate prevents fish from moving into the upwell enclosure when the trap is unattended and the top gate prevents fish in the upwell

enclosure from moving down the steep-pass denil. The sorting chute has also been upgraded to include a gate on the upstream end. This gate prevents fish from moving down the sorting chute once sufficient numbers of fish have already been placed in the anesthetic tank. The sorting chute has been modified to include full padding and jets of water to keep it moist and cool. Temperature monitors are deployed in the ladder at pool 40 and in the anesthetic tank to ensure compliance with the Wells 2000 BiOp trapping criteria.

Shut Down - Daily: At the end of each trapping day, the barrier fence is lifted out of the ladder, the steep-pass denil is gated first at the bottom and then at the top, the water to the upwelling enclosure is left on, the sorting chute is locked in the return to ladder direction, the sorting chute water jets are left on, the anesthetic tank is drained away from the ladder and all of the fish in the recovery tank are released back into the fish ladder.

Shut Down - Annual: At the end of the trapping season, all water is turned off, all tanks should be checked for fish and then drained. The upwell enclosure water is turned off last and all remaining fish and water should be drained directly into the fish ladder through the upwell enclosure bypass pipe.

BiOp Conditions: The 2000-2002 Wells Biological Opinion (Wells 2000 BiOp) requires that the operation of the Wells ladder traps be limited to a maximum of 16-hours per day for three days per week. To ensure adherence to this trapping schedule, the District has installed remote monitors on the fishway traps. The fish ladder trap monitors notify District personnel when the trap is in operation. The location and duration of ladder trapping is recorded daily and reviewed weekly with WDFW staff. The Wells 2000 BiOp also requires that the adult trapping facilities be manned whenever the trap is in operation and that the collection of adults from the fishway traps be discontinued whenever river water temperature exceeds 69 F° . Thermographs have been installed immediately adjacent to the traps to ensure that the temperature criteria is not exceeded during adult trapping.

Annual Meeting: District and WDFW trapping personnel meet annually to review the annual brood collection goals, assessment projects, to review current ladder trapping and operating criteria and to discuss modifications to the trap.

Adult Ladder Dewatering Plan

Stage 1 (Notification): Project personnel requiring access to the submerged portions of the adult fish ladders must contact a District Fish Biologist seven days prior to initiating any temporary or extended dewatering of either of the two fishways at Wells Dam. Emergency ladder dewatering should be coordinated with District Fish Biologists to the maximum extent practical given

the extent of the emergency. Ladder dewatering to clean the visitor center and the fish counting windows is not considered an emergency. Notice is required to allow District Biologists time to ensure coordination between the scheduled dewatering event and ongoing efforts to collect broodstock for hatcheries, tag fish for stock assessment studies, coordinate fisheries passage inspections and to monitor fish behavior relative to normal project operations. In addition, due to the presence of three stocks of ESA listed fish (UCR spring chinook, UCR steelhead and Columbia River bull trout) it is important that dewatering events be coordinated with the appropriate resource agencies responsible for administering the ESA.

Stage 2 (Equipment Preparation): Once notice has been provided to all appropriate entities and resource agencies (including WFH staff), an agreed to ladder dewatering schedule and fish salvage plan should be discussed and coordinated with all affected departments. District personnel are responsible for gathering and inspecting all necessary equipment required to safely collect, hold, transfer and release adult and juvenile fish salvaged from the dewatered fishways. Equipment required for a successful salvage operation include dip nets, a block seine, waders, rain gear, ropes, two 20 foot extendable ladders, flood lights, head lamps, fish totes and fish transport vehicles. Equipment needed for salvaging fish from the dewatered ladder should be moved to the fish ladder at least one day prior to initiating Stage 5 (Exit Gate Closure).

Stage 3 (Day Prior to Dewatering): The day before a scheduled fish ladder dewatering and salvage operation, project personnel should turn off and bulk head each of the two fish pumps located within the water supply chamber. The collection gallery entrances and the ladder exit orifice gates should be operated at normal levels for the remainder of the day.

Stage 4 (Evening Prior to Dewatering): The evening prior to dewatering the fish ladder, the exit orifice gates should be partially closed to allow less than full orifice flow through each of the weirs located in the upper fishway (Weir 73 - 57). The Pool 56 supplemental water supply valve should be set to the fully open position. These settings should remain in place until Stage 7 (Fish Salvage - Upper Fishway) operations have been completed.

Stage 5 (Exit Gate Closure): On the morning of the scheduled dewatering and salvage operation, the exit orifice gates must be turned off gradually. It should require at least 2 hours to completely close off the exit orifice gates. It is important that a District Fish Biologist and appropriate WFH staff be in close proximity to the upper fishway, with equipment in place, prior to project personnel completely closing off the exit orifice gates.

Stage 6 (Supplemental Water): Once the exit orifice gates are closed, it is important to verify that sufficient supplemental water is being added into the middle fishway at Pool 56. If additional water is required, the control room should be contacted to ensure that the supplemental water supply system is being operated at maximum capacity. If the plant operators cannot provide additional water into Pool 56 via the supplemental water supply system, then the District Fish Biologist and the appropriate plant supervisor should discuss whether it is appropriate to move to Stage 7 (Fish Salvage – Upper Fishway). It may be more appropriate to re-open the exit orifice gate and attempt to fix the problem with the supplemental water supply system prior to proceeding to Stage 7. However, if a determination is made to continue to Stage 7 (Fish Salvage – Upper Fishway), then it is the responsibility of the operators to carefully add additional water into the ladder by opening the exit orifice gate until adequate amounts of water are flowing through the middle ladder. Adding supplemental water through the exit orifice gates should only be used as a last resort as this operation establishes a dangerous work environment for personnel attempting to salvage fish from the upper fishway.

Stage 7 (Fish Salvage – Upper Fishway): Provided that sufficient water exists in the middle fish ladder (below Pool 56), fish salvage operations should proceed as described below. Fish salvage operations should start at Pool 73 and move downstream until the upper fishway is free of fish. Fish found in each sanctuary pool will have to be collected with a dip net and transferred directly into the portable fish totes. The order of priority is to net and transfer ESA listed adults, ESA listed juveniles, anadromous adults, anadromous juveniles and then non-listed resident fish.

Once loaded with fish, the fish totes should be hoisted from the sanctuary pool and deposited into Pool 56. Fish collected from Pool 73 through Pool 57 are to be hoisted into Pool 56 where supplemental water has been added to carry fish downstream through the middle and lower fishway and into the collection gallery and tailrace. Once all fish have been salvaged from Pool 73 through 57 and all personnel have been evacuated from the fish ladder, the operators should be contacted to initiate a Stage 8 (Middle Fishway – Pulsed Flow Operation) as described below.

Stage 8 (Middle Fishway – Pulsed Flow Operation): In order to move fish from Pool 56 down to the tailrace of the project, the adult fishway should be partially re-watered and then dewatered several times. It may become necessary to pulse water from the exit orifice gates several times. Typically three pulses of water are required to flush fish out of the middle and lower ladder and into the tailrace. Pool 40 is a location where fish frequently become stranded during the pulsed flow operation. A hatchery tanker truck and appropriate fish salvage personnel should be stationed at Pool 40 should fish require transport back to the river. The order of priority for fish collection shall be to net and transfer ESA listed adults, ESA listed juveniles, anadromous adults, anadromous juveniles and then net and transfer non-listed resident fish.

Once the fishway has been cleared of fish, the fish being held in the tanker truck should be released back into the river and the exit orifice gates should be closed. Fish salvaged from the east ladder will be released upstream of the dam and fish salvaged from the west ladder will be released into the tailrace.

Stage 9 (Lower Fishway – Collection Gallery): The lower fishway and collection gallery can only be dewatered following the placement of bulkheads across the entrance gates. The floor of the collection gallery can be up to 40 feet below the surface of the tailrace. Therefore, the collection gallery must be dewatered with a sump pump. This operation can take several hours depending upon tailrace elevation and leakage into the collection gallery. Once the collection gallery is within one foot of becoming dry, fish salvage personnel should be hoisted with a crane down into the gallery. Once in the gallery, the fish totes should be filled with water and a seine net deployed upstream of the floor diffuser. Fish on top of the floor diffusers should be netted before the water levels drop to less than 6 inches. Once netted, fish should be placed into the fish totes. Depending upon the number and size of fish captured, the fish totes may need to be lifted out of the collection gallery before all of the fish have been collected. Once the crane has lifted the fish totes onto the deck of the dam, the fish should be placed into either a fish release container (300 gallon) or a hatchery transport truck.

Once the collection gallery has been cleared of stranded fish, the fish being held in the tanker truck will be released into either the forebay or tailrace of the dam.