Biological Assessment of the Effects on Endangered, Threatened, or Proposed Wildlife, Fish, and Plant Species

for the

Touchet River Consolidation Project

U.S. Fish and Wildlife Service Lower Snake River Compensation Plan
And Washington State Department of Fisheries

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Introduction

The Dayton Intake Dam is located on the Touchet River in Dayton, Washington in the foothills of the Blue Mountains. The Touchet River is a major tributary of the Walla Walla River and supports populations of fishes listed under the Endangered Species Act of 1973, as amended (Act). The project is in a reach of the Touchet River that is identified as a "Priority Area" in both the Walla Walla Sub Basin Plan and The Snake River Salmon Recovery Plan. In general, the proposed project would create fish passage for all species and life stages of fish at the Dayton Acclimation Facility's dam and consolidate three diversions, improving overall stream habitat conditions. This document evaluates the effects of the proposed project on species listed under the Act. It has been concluded that the proposed project may affect but is not likely to adversely affect Ute ladies' –tresses (*Spiranthes diluvialis*) and is likely to adversely affect Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*) and its designated critical habitat.

Project Area Description

The Dayton intake dam is located on the Touchet River about ¾ miles upstream from Highway 12 in Dayton, Washington. The proposed pipeline will run from the dam to approximately 300 feet below the Highway 12 Bridge (Figure 1). The legal location of the intake dam is Township 10N, Range 39E, Sections 29 & 30 at Latitude N46.31149 and Longitude W117.97260. The fishway will open habitat in 75 miles of stream for juvenile steelhead, migrating bull trout, and other native species.

Purpose and Need

The intake dam was built in the early 1980s to supply water for an acclimation pond for mitigation under the Lower Snake River Compensation Plan (mitigation for the four lower Snake River Dams). The intake for the acclimation pond diverts water from March through April each year. When it was built the dam was constructed to allow for adult steelhead migration, but other salmonids and life history stages were not considered. Of course, at the time of construction neither bull trout nor Mid Columbia Basin Steelhead were listed under the Act. Consequently, the intake dam creates a fish passage barrier to juvenile salmonids including steelhead and smaller migrating bull trout, as well as other native species like mountain whitefish and bridgelip suckers. The screens at the current intake do not meet screening guidelines and need to be updated to provide better protection for fish.

Within one mile downstream of the Dayton Intake Dam there are two irrigation ditches that use annual push-up dike berms to deliver water to their intakes (Figure 2). These berms are typically built between May and June every year and have negative impacts on the stream habitat and salmonids listed under the Act. Irrigators divert water from the river between May and November each year. The push-up berms have negative effects on listed fish present in the Touchet River, since migratory and over-wintering bull trout and spawning and rearing steelhead are believed to be present during the seasonal construction of the push up berms.

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Figure 1. Map of the project area, the large yellow circle at river mile 54 is the location of the intake dam and all of the in-stream work for the project. The red line shows the pipeline alignment and the smaller yellow circle represents the pipeline terminus.

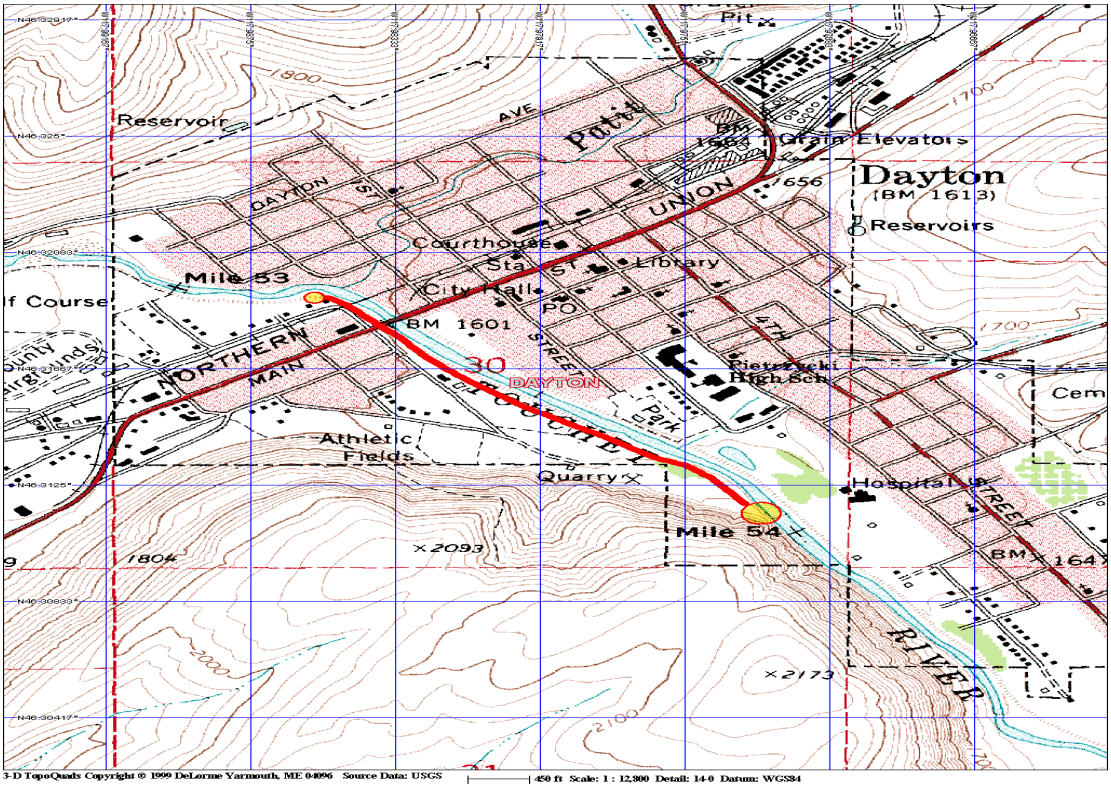

Figure 2. A photograph of a push-up berm in the Touchet River, just downstream of the Dayton Acclimation Pond Dam.

Berming practices continue, regardless of the negative effects to fish, because the water diversions are located within a flood control channel through the city of Dayton. Building hard structures to deliver water within the flood control area could have liability issues. The Washington Department of Fish and Wildlife (Department) has been working with irrigators to find a solution to eliminate the use of push-up berms, and the proposed action results from this work.

Another problem created by the push up berms, is that they loosen naturally armored stream substrate, which gets washed downstream and deposits near the Highway 12 Bridge in Dayton. Because of this cobble deposition, the City of Dayton is left with maintenance responsibilities for the removal of the built-up cobbles. Furthermore, this in-water bridge maintenance work causes additional impacts to fish and stream habitat.

Project Objective Overview

The proposed project is designed to utilize the formal intake dam to divert water for all three diversions (the acclimation pond and two irrigation diversions). Traveling belt fish screens will be installed to assure that fish do not get entrained in the diversion system. The belt screens meet all current Federal and State fish screening criteria. The water will be diverted into pipes that will convey the irrigation water to the original Points of Diversion (POD) for the irrigators. The irrigators will then pipe their allotted water from the original POD to the last user, ultimately resulting in a "closed" irrigation system. A closed system is the most efficient way to irrigate because the water will stay in the river when irrigators are not using it. In addition to the elimination of effects from annual push-up berm construction, the use of a closed irrigation system will help improve flows and water temperatures in the Touchet River. See Table 1 for flow information.

Table 1. Flow information for relevant diversions for the Touchet River Consolidation proposal.

Diversion	Dates	Flow (cubic feet per second)
Hearn Ditch	September 15 – April 1	0.820
	April 1 – September 15	0.547
West End Ditch	September 15 – April 1	4.774
	April 1 – September 15	3.181
Acclimation Pond	January 1 – May 15	6.000
Combined (Proposed action)	January 1 – April 1	11.594
	April 1 – May 15	9.728
	May 15 – September 15	3.728
	September 15 – January 1	5.594

The proposal includes installation of a pool and chute fishway where the current intake structure is located. The fishway will be attached to the dam at the same point as the current intake structure. A pool and chute fishway is ideal for streams with highly

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variable flow regimes, such as the Touchet River. The fishway design also includes a holding area with increased capacity and a trap that will improve salmon recovery monitoring in the Touchet River.

The proposed consolidation project will have positive effects, in both the near and long-term, on aquatic life and their habitat by eliminating the need for in-stream activities associated with the existing diversions. The fishway will provide improved fish passage for juvenile Mid-Columbia Basin steelhead, bull trout, mountain whitefish, bridgelip suckers, and other native species. The capacity for movement and migration of all native species will promote a healthy stream environment. Benefits for this project include; more efficient irrigation, increased in-stream flow, improved fish passage, improved habitat conditions, efficient fish screens, an updated fish monitoring facility, better flood control, and reduced impacts on steelhead and bull trout listed under the Act in the Touchet River.

Proposed Action

The objectives of the proposed action are:

- Provide safe fish passage for native resident and anadromous fish species at all life stages and under highly variable flow regimes.
- Reduce negative impacts to stream habitat and species listed under the Act, especially during spawning and rearing in the Touchet River.
- Install fish screens compliant with the Act to eliminate adverse effects associated with poorly screened surface water diversions.
- Improve irrigation efficiencies to provide increased stream flows and better water quality.

The proposed action includes equipment mobilization to the project area; construction of a temporary river access ramp; excavation of the temporary diversion channel and diversion of the Touchet River; fish removal and relocation; demolition of the existing concrete intake structure; installation of temporary dam support structures; construction of the pool and chute fishway, intake, and fish screens; removal of the temporary diversion structure and restoration of the original stream channel; removal of the stream access ramp and restoration; installation of the pipeline; and rehabilitation of the entire site, including revegetation. All these activities are described in detail below.

Project construction would begin in July of 2006, with in-stream work occurring between July 15 September 30, 2006.

Access to the Project Site

No new roads will be constructed to access the Dam and Intake facility. All construction traffic will use existing State and County-owned roads. The gravel access road that runs from the Snake River Lab to the intake facility will be modified to allow tanker trucks to turn around.

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Equipment Staging and Refueling

The action will require mobilization/demobilization of necessary heavy equipment to implement the project. Hand tools and heavy equipment such as dump trucks, loaders, track mounted excavators, concrete forming, pouring, and pumping equipment, and submersible pumps will be used for construction. Large track equipment will be used to excavate the temporary by-pass channel and in stream work to prepare the site for the intake and fishway construction. Refueling will take place at a designated site located away from the river in an area where spills could be easily contained. The contractor will be required to prepare a Spill Response Plan and Spill Prevention Control/Countermeasures Plan for petroleum products and other hazardous material.

No fuel storage alternatives exist outside of RCAs, therefore, petroleum product storage will be located inside of the streamside Riparian Conservation Area (RCA), in the parking lot of the acclimation pond facility. This area is currently considered a disturbed parking area. Storage containers with capacities of more than 200 gallons will be maintained in a leak proof condition and located within dikes, berms, or embankments lined with impervious material, and sufficient in size to contain 125 percent of the volume stored at the site. Refueling sites for ground-based equipment will also be within streamside RCAs at the same location as the fuel storage site. There is enough space to accommodate both fuel storage and a refueling area, and both will have an approved spill containment plan.

Vegetation and Ground Clearing

Only a small amount of riparian vegetation will be disturbed as a result of this project. The intake and fishway will be located within the footprint of the existing intake structure. All areas disturbed by the project will be replanted with native plants and grasses. The project area will follow established BMPs for erosion control (straw bales, silt fences, grass seeding). The Department will monitor the erosion control efforts during construction and provide monitoring and maintenance of the site reclamation.

Stream Access Ramp Installation

Site access will be limited to two stream access ramps. One access upstream of the dam and one downstream of the dam will be constructed to minimize the impacts to the stream and riparian habitat during construction of the temporary channel bypass, intake, and fishway. The ramps will be built using natural materials (e.g. basalt), purchased from a local distributor, and will be removed during reclamation of the project area. There is very little existing riparian vegetation in the areas designated for access; those areas will be planted heavily with native woody vegetation during the reclamation of the site.

Temporary Diversion Channel Construction and Fish Removal

Construction of the temporary diversion channel, which will be within the existing channel, will be accessed via the temporary access ramps described above. The temporary channel will be created to divert water towards the right bank so that in-stream work for the project can be done “in the dry” (dry as possible). The temporary diversion

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channel will be approximately 180 feet long and roughly 30 feet wide. The channel will be lined with eco-blocks with a heavy plastic liner lain over the eco-blocks. Stream cobble would then be pushed up unto the plastic and eco-block, creating a lined berm. The entire temporary channel will be constructed before water is diverted into it.

Approximately one day before the completion of the diversion channel and the water diversion (this will be during low water in August), all fish will be removed from the portion of the exiting channel, which is to be dewatered. First, 80 percent of the river water would be reduced immediately to cause the fish to flee downstream. This technique should encourage volitional movement of the fish, and personnel will then work on clearing the area of remaining fish from the stream reach. Fine mesh blocknets will be placed in the channel upstream and downstream of the project area, and angling and seining will be conducted in the remaining pools or standing water. Electro-shocking will be used as the last option to capture any remaining fish. Captured fish will be relocated upstream of the project reach. The blocknets will remain in position until the channel is diverted. Upon completion of the in-stream work (approximately five weeks), the stream will be diverted back into the original channel. Surveys of remaining water in the temporary channel will be conducted, and fish observed will be relocated into the new channel, if they can be captured by one of the methods above. A pool area will be constructed near the downstream end of the bypass channel to aid in both sediment retention and fish holding during dewatering. This may theoretically improve the capture rate, reducing stranding of fish in the large substrate within the bypass channel. This technique will also be used for clearing the temporary channel.

After all fish are removed from the channel, a cobble berm will be constructed at the downstream end of the construction area to isolate the construction area from the stream flow and to eliminate the possibility of fish moving upstream into the work area. Using berms to isolate the construction area from the stream will also help to reduce sedimentation from the project area getting into the river. A pump with an approved fish screen will be used to remove water from the pool and work site, as the pool water is pumped away additional fish removal will occur until all fish and water have been removed from the construction site.

Demolition of existing concrete intake

All demolition work will be completed in “the dry” within the construction area and following BMPs to reduce dust and debris from entering the water. All debris from the demolition will be removed and disposed of at an approved off site location.

The sequencing of the project after bypass construction and fish removal will generally follow: Prior to demolition of the existing intake structure, supports for the dam will be installed to secure the dam from shifting. After demolition, the dam will be inspected to determine what, if any, rehabilitation work will be required for the dam. The Pool and Chute Fishway, intake, and other concrete work will be formed and poured and the dam attached to the new structure. All concrete mixing will occur off-site and concrete pouring and curing will occur in the dry within the coffered construction area. The fish screens, trash racks, pipeline, etc. will be installed after the concrete has cured.

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Any water accumulating in the construction site will be pumped through the Snake River Lab acclimation pond to capture sediment and allow for clean water to be returned to the river. The contractor will provide an approved demolition plan. Included will be a detailed description of the demolition and removal of the existing concrete structure.

Pipeline

The pipeline will be constructed above and outside of the Ordinary High Water Line of the Touchet River. The pipeline will be buried on the outside edge of the existing dike road and therefore is not expected to negatively effect riparian or stream habitat. Construction of the pipeline will have no effect on species listed under the Act.

Reclamation

Reclamation of the entire construction site will occur immediately after construction is completed. The construction area within the stream channel will be restored and the temporary bypass channel will be removed below the dam. The construction area upstream of the dam will be restored and the bypass will be partially removed to redirect the stream flow into the original channel. Next, the remaining sections of the temporary channel will be removed and the area will be restored to pre-project conditions. Access ramps will be removed and disturbed areas will be treated to minimize/eliminate any short-term erosion. The project area will be replanted with appropriate native vegetation in the fall 2006 and Spring 2007 to optimize plant survival rates.

Monitoring

The Department staff will monitor the project closely during construction to ensure the best sequencing and practices are used to minimize disturbance to the environment. The Department's Engineers will inspect the project as it is constructed and after each phase of the project is completed. Final monitoring reports will be sent to the Service, NOAA, and Bonneville Power Administration.

Conservation Measures

The following conservation measures will be a requirement for the proposed project.

1. The work window will be July 15 through September 30, 2006 to reduce the potential impact on all fish species.

2. Best management practices (BMPs) will be incorporated to reduce the potential impacts of staging, onshore construction, and in-stream construction activities.

3. Work will take place in the dry or quasi-dry. In-stream work will be done during low flow periods. Appropriate construction timing restrictions will be in place.

4. During all phases of construction of the project, fish passage conditions through the project area shall be maintained, so as not to disrupt fish movement.

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5. Disturbed areas will be revegetated with native plants and grasses.

6. Delivery of sediment created by construction will be minimized by BMPs and removable sediment traps (e.g., Sedimat™) will be used to trap fines. Sedimentation due to riparian disturbances will be controlled through the use of revegetation, erosion matting, and mulch. Native seedlings and plants will be used exclusively for revegetation of disturbed areas.

7. Any water seepage into the construction area during excavation will be collected in catchments and pumped to a dry downstream location that is not directly connected to the flowing channel.

8. A qualified fish biologist shall monitor construction activities during implementation of the project. This individual shall be present during any activities that may affect listed fishes. For example, during fish removal or salvage this individual would be responsible to oversee those activities. In addition, the Department district fish manager will be consulted and included in fish removal plan. Any fish captured as a result would be released immediately into nearby suitable habitat, which would minimize possible predation. Capture and transportation of fish shall follow commonly accepted techniques for salmonid field sampling. If electro-fishing is used, NOAA guidelines shall be followed. All methods used for capture, handling, or retention of fish shall be done at times that would avoid temperature related stress to the fish.

9. Sedimentation and erosion controls (i.e., sediment trapping fabric, hay bales, silt fence, de-watering, etc.) must be implemented on all project sites where restoration activities are implemented, materials or equipment is staged or stockpiled, or fill is placed, to minimize the release of fines into the aquatic environment.

10. Every effort will be made to minimize or eliminate the use of heavy machinery when possible. Machinery shall be refueled away from the stream and outside of riparian areas. A spill prevention and response plan shall be in place for all projects that require machinery.

11. All equipment shall be free of petroleum based or other hazardous fluids, noxious weeds, and/or debris before entering the stream channel.

12. The Department and individuals authorized to work under this consultation will ensure that these conditions are strictly adhered to: any non-compliance with these terms and conditions or any accidental injury or killing of listed species will be reported to the Department, the Service and NOAA within two working days of occurrence.

13. After the temporary diversion channel construction is complete, water would be pumped into the channel to wash fines into a sump at the downstream end. This cleaning process will continue until a clean water sample is collected, eliminating any introduction of sediment during the initial use of the diversion channel.

14. Following this washing procedure, 80 percent of the river water would be reduced immediately to cause the fish to flee downstream. This technique should encourage

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volitional movement of the fish, and personnel will then work on clearing the area of remaining fish from the stream reach. This technique will be used for clearing the temporary channel too.

15. Where ever possible, existing roadways or travel paths for access to project sites will be used.

16. Use of heavy equipment in or adjacent to streambeds and stream banks, and ingress/egress points will be minimized to reduce sedimentation rates, channel instability, and aquatic habitat impacts. Vehicles and machinery must cross streams at right angles to the main channel whenever possible. Ingress/egress points will be minimized. Heavy equipment will be cleaned (e.g., power washed, steamed, etc.) prior to use below the ordinary high water mark. Machinery will be inspected for leaks of hydraulic fluid or fuel after cleaning and prior to entering sensitive areas.

17. Streams, riparian zones, and wetlands must not be used as equipment staging or refueling areas. Equipment must be stored, serviced, and fueled away from aquatic habitats or other sensitive areas.

18. In the riparian area, entry and disturbance by equipment will be minimized. Undisturbed vegetated buffer zones must be retained along stream channels to reduce sedimentation rates, channel instability, and aquatic habitat improvements. Cable systems will be used, where appropriate, to eliminate or reduce the need for ground-based equipment.

19. Native vegetation must be planted on disturbed sites (including project site, disposal and staging areas, and access roads), when necessary to reduce soil erosion, establish cover, provide shade, and prevent non-native plant colonization.

20. Excavated materials removed during the completion of a restoration activity must be salvaged and/or disposed of properly and/or stabilized to eliminate future environmental problems.

21. Structures containing concrete or wood preservatives must be cured or dried before they are placed in streams, riparian zones, or wetlands. Creosote treated wood will not be used. Wet concrete or runoff from cleaning tools that have wet concrete slurry or lye dust must never enter aquatic habitats. Runoff control measures must be employed, such as hay bales and silt fences, until the risk of aquatic contamination has ended.

22. Soil and/or slope disturbances along stream channels should be eliminated or reduced wherever possible. Undisturbed vegetated buffer zones will be retained along stream channels to the greatest extent possible to reduce sedimentation rates, channel instability, and aquatic habitat impacts.

23. Traveling Belt Fish Screens designed for the project will be consistent with National Marine Fisheries Service's Juvenile Fish Screen Criteria.

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24. Pre-construction surveys for Ute ladies' –tresses will be conducted throughout the action area, even though the site does not meet all of the criteria for species presence. In the unlikely event that the plant is located, the population would be isolated from all construction disturbance.

Species Considered and Evaluated

The potential effects of this action on all threatened, endangered, and proposed wildlife, fish, and plant species currently documented on the Upper Columbia River Fish and Wildlife Service's web site for Columbia County have been evaluated, but only those species expected to be affected by the proposed action are discussed below.

The Service's species list discloses that the following listed species occur or may occur in Columbia County: bald eagle (*Haliaeetus leucocephalus*), gray wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), Ute ladies' –tresses (*Spiranthes diluvialis*), Washington ground squirrel (*Spermophilus washingtoni*), yellow-billed cuckoo (*Coccyzus americanus*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*) and its designated critical habitat. No effect determinations were made for the bald eagle, Canada lynx, and gray wolf, and these determinations are documented in the Project file. This document discloses the analysis completed for the remaining species, expected to be affected by the proposed action.

Environmental Baseline for Evaluated Species

Ute ladies' –tresses

Background

Ute ladies' –tresses was listed as threatened under the Act in 1992. At that time, the species was known from fewer than 6,000 individuals. Since that time, surveys have uncovered many new populations and current estimates suggest that there may be over 80,000 individuals. The plant is a perennial herb with erect, glandular-pubescent stems 12 to 60 centimeters tall arising from tuberous roots. The inflorescence is a long spike of small white flowers, arranged in a gradual spiral.

Ute ladies'-tresses is known to occur in moist meadows associated with perennial stream terraces, floodplains, oxbows, seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. The species is known to occur between elevations of 720 to 7,000 feet.

Baseline

Ute ladies' –tresses ranges from southwestern Montana to north central Washington and in the south from central Colorado to southeastern Nevada. The closest known population to the proposed project site is in central Washington, near the town of Chelan. The next closest known occurrence is in Okanogan, Washington. It is unknown whether the species is present in Columbia County, but it is considered within the range of

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suitable habitat for the plant. The action area for the proposed project is disturbed riparian habitat, adjacent to a quarry, athletic field, parking lot, and several roads (Figure 1). Since the habitat is much more disturbed than that of any known populations of Ute ladies' –tresses and the site is disturbed, it is unlikely, but still possible, that the plant is present.

Chinook Salmon, **Steelhead Trout**, **and Bull Trout**

Background

Chinook salmon, steelhead trout, and bull trout, and their designated critical habitat all occur within the proposed project area. Historically, the Walla Walla basin was home to significant runs of both spring chinook and summer steelhead (Mendel et. al. 1999). Fall Chinook and Coho are also currently present in very low densities. Until recently, salmon have been absent from the basin since approximately the 1920's due to irrigation dams, extensive water withdrawals and habitat degradation (Mendel 1999). A salmon reintroduction project was initiated by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) in August, 2000. Four hundred sexually mature adult spring chinook (Carson hatchery stock) were released in Mill Creek (Oregon reach) and the South Fork Walla Walla River in an attempt to initiate natural reproduction (Kuttel 2001).

Watershed Description

The Washington State portion of the Walla Walla watershed is comprised of four sub-basins, including the Upper Touchet, Lower Touchet, Lower Walla Walla, and Upper Mill Creek sub-basins. The proposed project is located within the Touchet sub-basins in the State of Washington.

The Walla Walla River Basin is located in southeast Washington, and is bounded by the Columbia River (west), Eureka Flat (north), the Blue Mountains (east), and the Horse Heaven Hills (southwest) (Kuttel 2001). This watershed drains a 1,758 square mile radius, 73 percent of which is located within Washington State (Confederated Tribes of the Umatilla Indian Reservation et al. 1990). Elevations in the watershed vary between 300 feet in the lowlands near the mouth of the Walla Walla River up to 6,000 feet in the Blue Mountains (Saul et al. 2000).

The total population of the Walla Walla River Basin was estimated at 59,244 in a U.S. Census Bureau survey of 2000. The basin is divided into distinct land uses: the dominant land use (58 percent of the basin) is agriculture; 25 percent of the basin is forest land and 17 percent is rangeland; as much as 90 percent is privately-owned land, while the Federal Government owns 9 percent and the states of Washington and Oregon own the remaining one percent (USCOE 1997).

Shaped by the ice age floods over 12,000 years ago, the Walla Walla River Basin contains large quantities of gravel and fine sediment, deposited when flood waters formed huge lakes at Wallula Gap on the Columbia River. The basalt aquifer underlying

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the basin contains a substantial amount of groundwater, which is recharged by precipitation in the Blue Mountains (Kuttel 2001).

Historically, the lowlands of the Walla Walla basin were dominated by shrubs, herbaceous plants, and grasses. Lowland trees, found primarily in riparian areas, included deciduous species such as cottonwood, willow, birch and alder. The forests of the Blue Mountains experienced periodic fires set by native tribes (Saul et al. 2000) or ignited by lightning strikes, resulting in low density stands of mature coniferous forests (Kuttel 2001).

Historically, the Walla Walla Basin produced substantial runs of spring chinook and summer steelhead (Mendel et. al. 1998).

Summer Steelhead and Chinook Salmon

The only naturally occurring populations of anadromous fish currently present in the Walla Walla subbasin are summer steelhead (James et al. 2001). The species is included in the Middle Columbia River Evolutionary Significant Unit (ESU), making it a distinct population under the Act (Busby et al. 1996). This population of fish was listed as threatened on March 25, 1999 (NMFS 1999a).

Summer steelhead (also includes resident rainbow/redband trout) are found throughout the subbasin in the mainstem Walla Walla River, Mill Creek, Yellowhawk Creek, Dry Creek, Mud Creek (Dry Creek tributary), Cottonwood Creek, Pine Creek, and presumed to be present in Mud Creek (Walla Walla tributary), Cold Creek, Doan Creek, Garrison Creek, Stone Creek, Caldwell Creek, Reser Creek, and Russell Creek (Kuttel 2001). The native steelhead run in the Walla Walla River is currently in a depressed state due largely to inadequate conditions (poor screens, low flows, etc.) for downstream migration (James 1998).

Found historically throughout the Walla Walla River Basin, summer steelhead have been less adversely affected by altered hydrology, disturbed riparian habitat, high water temperatures, loss of in-stream substrate, and barriers to passage than spring chinook. A reason for this is that spring chinook and summer steelhead display temporally different upstream migration. For example, spring chinook entered the river during the worst conditions possible for migration: the irrigation season. In contrast, steelhead begin entering the Walla Walla system as early as September, but will hold for long periods of time until conditions are favorable for migration, if necessary (Bjornn and D.W.Reiser 1991). By November flows have increased substantially, barriers are passable, and water temperatures have declined (Fulton 1970; Saul et al. 2000).

Steelhead may spawn as early as January or February and continue through early June, with the peak of natural spawning in April and early May. Incubation of embryos and residence of sac-fry in the substrate may extend through June or July prior to emergence (James et al. 2001). Although accurate historic estimates of steelhead migration numbers in the Walla Walla River Basin are lacking, it is believed that the run size was between 4,000 and 5,000 fish (Kuttel 2001).

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Walla Walla steelhead typically return to the Oregon portion of the subbasin after two years of ocean residence, unlike other Columbia and Snake River populations. The return of repeat spawners in the mid-Columbia is not common, but in the Walla Walla, represent a significant portion of the return (3.5 to 9.1 percent). Some biologists theorize that a high proportion of repeat spawners may never return to saltwater, but rather stay and recondition in the Walla Walla subbasin (James et al. 2001).

Currently, the Department plants marked hatchery steelhead in the Touchet River at Dayton and the Walla Walla River below Mill Creek to provide sportfishing opportunities (Saul et al. 2000). Until recently, hatchery fish captured at the Nursery Bridge weir are presumed to be strays from the Touchet and Walla Walla River plants and were killed to protect the genetically wild steelhead spawning in the North and South Forks of the Walla Walla River (USCOE 1997). Today, all fish are allowed to pass regardless of their origin.

Steelhead select different micro habitats according to their size and the season. In the summer, steelhead greater than one year old prefer fast, shallow water with relatively large substrate (e.g., cobbles and boulders), but those less than one year old generally prefer slow shallow water with some form of cover close by. Overhead cover may not be necessary if other micro habitat components are available. In the fall and winter, steelhead will relocate as water temperatures drop. Both juveniles and adults use slower and deeper water than in the summer. Cover appears to be more important in the winter than in the summer, as steelhead seek out boulders, rubble, and logjams. Age zero fish are most often found in and under rubble and cobble, in areas of low temperatures and substantial interstitial space (Department 1998). The lower portions of the Walla Walla and Touchet Rivers are migration corridors for steelhead.

Essential Fish Habitat

The fish species of concern under the MSA that could be affected by this project are chinook and coho salmon. EFH for the Pacific coast salmon fishery is defined as those waters and substrate necessary for salmon production needed to support a long-term sustainable salmon fishery and salmon contributions to a healthy ecosystem. Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California. Exceptions are made for those areas upstream of certain impassable man-made barriers and longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years). Wild Spring Chinook and Coho salmon have been extinct in the Walla Walla basin for over 50 years. However, stray fish do occur, and efforts are being made by the CTUIR to restore Spring Chinook to the Walla Walla Basin since 2000.

Bull Trout

Chapter 10 in the Draft Bull Trout Recovery Plan identifies the Touchet River as part of the Umatilla-Walla Walla Recovery Unit and the Walla Walla Core Area (Figure 3), which is comprised of three local populations of bull trout. The Touchet River and its tributaries are identified as a local population. According to the Service's draft recovery

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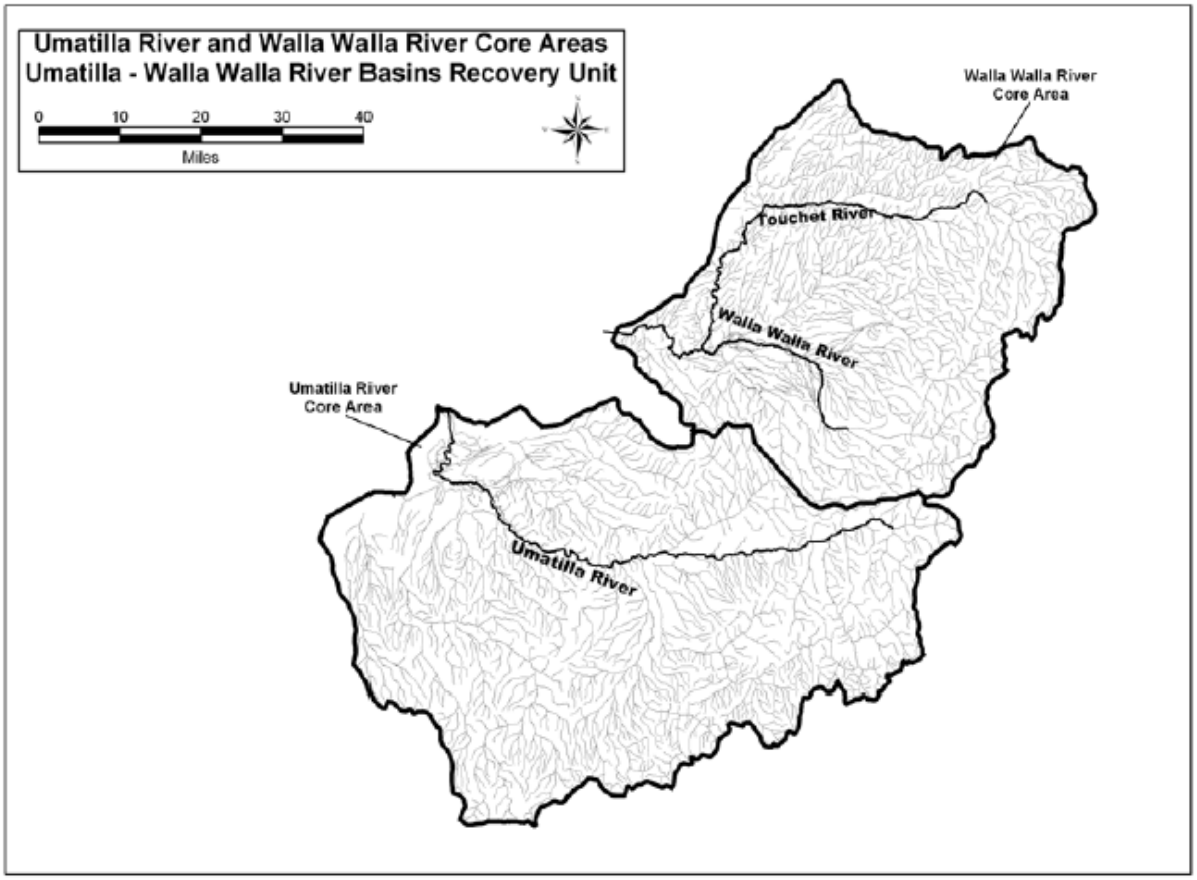
plan (2002), there is a lack of abundance data for bull trout local populations in the Walla Walla Core Area.

Population abundance could not be evaluated relative to the risk of inbreeding depression. Abundance estimates for the Walla Walla Core Area were conservatively estimated by doubling the number of redds counted in 1999 (767) and 2000 (670) and taking the average of both years for an estimate of 1,437 individuals.

Figure 3. Umatilla-Walla Walla Recovery Unit.



The current known spawning distribution in the Touchet drainage occurs in the North Fork Touchet River from Bluewood Creek to Spangler Creek, in Spangler Creek, and in the Wolf Fork Touchet River from Whitney Creek to 2.4 kilometers (1.5 miles) upstream of the Forest Service boundary (about 5.5 miles or 8.8 kilometers). A new bull trout population was identified in the Burnt Fork of the South Fork Touchet River in 2000 as evidenced by the presence of three age classes and four redds (*in litt.* Service 2002). Fish were classified as "resident" based on fish sizes, but in June of 2001, 25 migratory bull trout radio-tagged in Dayton moved into the Burnt Fork of the South Fork Touchet. Therefore, there is apparently a migratory component to the South Fork Touchet population. Subadult rearing also occurs in Lewis Creek (North Fork Touchet), Robinson Fork (Wolf Fork Touchet) and in the Griffen Fork (South Fork Touchet). During surveys in 1998, fry were observed in the North Fork Touchet River and again in mid-September of 2000. However, in August 2000 there were no fry detected in the same North Fork

sites. The indication is that eggs or fry may be in the gravel year around. Hatching may be delayed by very cold water, or there may be a late spawning component to the population.

Adult bull trout were captured annually in the fish trap at Dayton and the site of the proposed action: 18 in 1999, and 28 in 2000 (in litt. Service 2002). Fluvial bull trout are presumed to overwinter in the mainstem, although their abundance, distribution and use patterns in the mainstem and tributaries have not been determined. Bull trout are currently being radio-tagged in the mainstem Walla Walla and Touchet Rivers in a cooperative effort between Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and Confederated Tribes of the Umatilla Indian Reservation.

Martin et al. (1992) measured juvenile densities in Mill Creek and Wolf Fork Touchet River by electroshocking. Their results showed juvenile densities of 5.2 fish per 100 square meters (119.6 square yards) in Mill Creek and 1.9 fish per 100 square meters (119.6 square yards) in Wolf Fork
Touchet River.

Bull Trout Critical Habitat

Both the Touchet River and the Walla Walla River are designated as critical habitat for bull trout (Figure 4). The Touchet River from its confluence with Coppei Creek at river kilometer 69.2 (river mile 43.0) upstream 21.1 kilometer (13.1mile) to the confluence with the North and South Forks of the Touchet. This reach provides foraging and overwintering habitat for fluvial bull trout that spawn upstream.

Watershed Condition Indicators (WCI's)

Water Quality

Temperature

Most watershed reports describe high seasonal water temperatures as a problem in the Walla Walla sub-basin, with nine segments on Washington State's 303(d) Clean Water Act list (1998) (James et al. 2001). Naturally low summer stream flows, magnified by withdrawals for irrigation and the degradation of riparian zones, have resulted in maximum water temperatures, often exceeding 24°C (75°F) for extended periods (generally June through September) (Kuttel 2001). These temperatures are considered high for salmonids and are suspected to be the cause of thermal barriers in the lower Touchet and the Washington portion of the Walla Walla River (Mendel et al. 1999). One thermal barrier identified in the lower Walla Walla River from the Touchet River confluence and downstream, can keep returning steelhead from moving up river in September. Upper basin reaches such as North Fork Touchet and Wolf Fork Touchet Rivers maintain temperatures suitable to salmonids even during late summer and would be considered functional or at risk, but for the overall watershed this indicator is not properly functioning.

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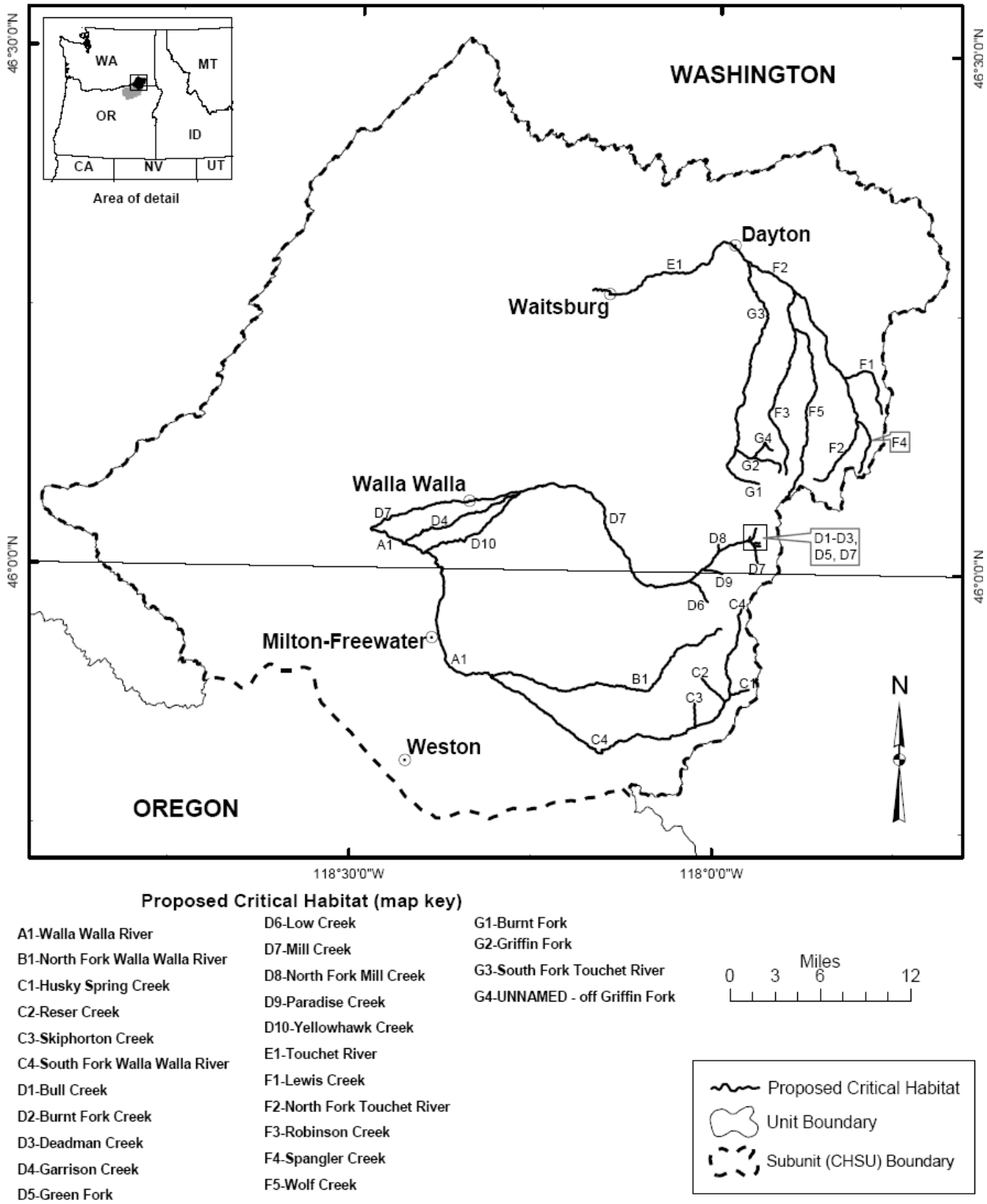
Figure 4. Bull trout critical habitat for the Walla Walla Critical Habitat Subunit.



Sediment

Fine sediment inputs from sheet and rill erosion of cropland are a serious problem throughout the Lower Walla Walla Sub-basin. As of 1984, 73,800 tons per year of fine sediment were delivered from cropland to streams in the Walla Walla Basin (not including Dry Creek and Touchet River inputs). For comparison, forest lands delivered 613 tons per year. In 1981 53 percent of nonirrigated cropland in the Walla Walla Basin had an erosion rate greater than five tons per acre per year (the maximum soil erosion rate allowable to maintain sustainable agricultural production) (USDA et al.1984). Although upper basin stream reaches have significantly lower levels of fines, they are still considered at risk. Therefore, this indicator is not properly functioning.

Chemical Contamination and Nutrients

The Walla Walla River has been listed on the 1998 303(d) list for eight pesticide violations on two segments of the lower Walla Walla mainstem below the confluence with the Touchet River. Violations include heptachlor epoxide, chlordane, dieldrin, DDE, DDT, hexachlorobenzene, and PCB-1260 (James et al. 2001). In 1998, segments of the Walla Walla and Touchet Rivers were also listed on the 303(d) list for fecal coliform. The change from rural to urban areas, especially near the city of Walla Walla, has contributed to elevated pH levels, excessive levels of fecal coliform bacteria, and high concentrations of pesticides and nutrients (James et al. 2001). Discharges of heavily chlorinated water into Mill Creek were documented between 1999 and 2001, and may have occurred in the spring during the steelhead spawning season. This indicator is not properly functioning.

Habitat Access

Physical Barriers

The U.S. Army Corps of Engineers (1997) identified 61 structures in the Walla Walla sub-basin that create some level of impediment for fish passage. Many more exist in smaller tributaries or were not identified in the report. These structures are primarily associated with water diversions. Diversion dams can prevent or delay migration of adult fish and unscreened diversion canals can entrain juvenile fish into off- channel areas (James et al. 2001). This indicator is not properly functioning.

Habitat Elements

Substrate Embeddness

Most of the Walla Walla watershed includes streams supporting gravel with heavy siltation (embeddedness greater than 30 percent). Many streams in the Walla Walla Basin are intensively managed for irrigation water flows by eliminating peak flows that would normally act to break up substrate paving (Kuttel 2001). Gravels and cobbles in these “controlled” streams are highly cemented by fine sediment. Agriculture, livestock ranching, and timber harvest are some of the other contributing factors that create high sedimentation throughout the watershed. This indicator is not properly functioning.

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Large Woody Debris

Large woody debris (LWD) is lacking throughout the Washington portion of the Walla Walla basin and the Touchet sub-basin. Recruit LWD is scarce because much of the basin has very little tree riparia. Riparian trees have been removed or reduced for agriculture, road construction, power lines, and other rural and urban development. Rivers and streams in the basin have changed channels during flood events and moved from an area with riparian trees into an area without riparian trees, thus eliminating shade and potential LWD recruitment from those sections. Other factors contributing to this lack of LWD include channelization, diking, and removal of LWD from stream channels to speed passage of flood waters. This indicator is not properly functioning.

Pool Frequency

Kuttel (2001) reported that the pool frequency indicator is not properly functioning or is at risk for most of the Walla Walla Basin. The lack of pools is caused by channel disturbances including removal of large woody debris and in-stream work performed following flood events, as well as channel constrictions that minimize stream sinuosity (Kuttel 2001). Throughout the watershed, this indicator is not properly functioning.

Pool Quality

Pool quality ratings, reported by Kuttel (2001), throughout the watershed were generally not functioning or at risk. Most of the pools are one foot or less in depth and have little or no overhanging or in-stream cover. This indicator is not properly functioning.

Off-Channel Habitat

Kuttel (2001) reported that off-channel habitat is lacking because of incised stream channels, channelization, conversion of flood plains to cropland and other flood plain development, and destruction of riparian vegetation. However, few quantified data on off-channel habitat are available. This indicator is not properly functioning.

Channel Conditions and Dynamics

Width/Depth Ratio

Inadequate data is available for the entire watershed regarding this indicator. According to Kuttel (2001), the headwaters of the Wolf Fork of the Touchet River is the only stream section properly functioning in the basin. All other stream reaches are not properly functioning or have data gaps. This indicator is not properly functioning.

Streambank Condition

Conflicting information from Kuttel (2001) reports that some surveys show streambanks as stable, and this may be due to artificial processes, such as diking. In general, streambanks are considered very unstable. For example, streambanks on Yellowhawk

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Creek have been identified as very unstable, with only 14 percent of banks assessed found to be stable (Tice and Reckendorf 2000). Unstable banks are attributed to urban development and deterioration of riparian zones. Streambank condition throughout the Walla Walla Basin is generally fair to poor; this indicator is not properly functioning.

Floodplain Connectivity

Many dikes and roads within the watershed restrict channel migration and limit floodplain connectivity. Off-channel habitat is very limited on Yellowhawk Creek and is worse or non-existent in other areas. Overall, urbanization has eliminated a great deal of flood plain connectivity. In some areas, severe channel incision has created steep banks and eliminated access to the majority of the historic flood plain. This indicator is not properly functioning.

Flow/Hydrology

Change in Peak/Base Flows

Currently, most of the streams and rivers in the Walla Walla sub-basin have existing irrigation diversions (James et al. 2001). In the past, the entire flow of the Walla Walla River was redirected into the Little Walla Walla River system, at Nursery Bridge in Milton-Freewater, Oregon. A similar diversion took place at Burlingame Dam, just downstream of the mouth of Yellowhawk Creek. Base flows were changed during the 2000 irrigation season, when the Service required that 13 cubic feet per second (cfs) be passed downstream at Nursery Bridge and 10 cfs be passed downstream at Burlingame Dam. Worsening the low summer flow conditions, gravel mining on either side of the Oregon-Washington state line may have lowered the river bed and thus the water table (Kuttel 2001).

Yellowhawk Creek is regulated by the irrigation district. The summer flow regime of Yellowhawk Creek has been altered by additional flow input diverted from Mill Creek. The water diverted from Mill Creek has improved habitat conditions for salmonids rearing in Yellowhawk Creek (Kuttel 2001). Both Mill Creek and the Walla Walla River are listed under Washington State's 303(d) Clean Water Act List (1998) for not meeting in-stream flow standards. Specifically, Mill Creek's hydrology reflects that the number of days of zero flow has increased much since 1952 and was at 140 zero flow days in 1992, especially from June until November. Activities in the watershed, primarily agricultural practices, have likely increased peak flows and surface runoff, and reduced flood water retention. From August to October the Touchet River, near the mouth, drops below five cfs as a result of a diversion, causing fish passage problems for adult steelhead. This indicator is not properly functioning.

Increase in Drainage Network

No data are available regarding whether drainage network density has increased with road development. Because road density will likely increase with urban development, this indicator is at risk.

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Watershed Conditions

Road Density and Location

Road density will continue to increase with urban development in the Walla Walla watershed. Many valley bottom roads exist, but road development in headwater reaches create a lot of damage, because the canyons where they are built are extremely narrow. Therefore, the roads are practically built on top of the streams, causing accelerated runoff and erosion during high water events. This indicator is at risk.

Disturbance History

Agricultural practices used within the watershed have seriously degraded salmonid habitat in many areas (Kuttel 2001). In general, fish habitat in streams within the Walla Walla watershed of southeast Washington and northeast Oregon has been severely degraded by urban and domestic development, farming, grazing, irrigation, logging, recreational activities, floods, and flood control efforts (Mendel et al 1999). Practices contributing to habitat degradation include farming to the edge of streams, cutting down riparian vegetation, filling off-channel areas, diking and channelization, allowing livestock full access to streams, conversion of native perennial vegetation to annual crops, and irrigation (Reclaimation 1997; Corps 1997; Mendel et al. 1999; Saul et al. 2000). Collectively, these practices have led to streams lacking off-channel areas, LWD, and pools. Poor riparian zone condition and stream flows reduced by irrigation combine with high summer air temperatures to increase water temperatures far above the tolerance level of salmonids during the summer months (Mendel et al.1999 and Mendel et al. 2000). Mill Creek, the Touchet River and the Walla Walla River are currently on the 303(d) list for exceeding temperature, pH, and in-stream flow criteria (WDOE 1998). This indicator is not properly functioning.

Riparian Reserves

In general, riparian zones along the Walla Walla River have been significantly altered from pre-settlement conditions. The riparian zones of the sub-basin, today, are much narrower (often one tree in width) and frequently found in a patchwork distribution. Though the extent of the riparian zone has been reduced, species composition seems close to the natural condition with the exception of the introduction of black locust trees and reed canary grass (Kuttel 2001). In general, this indicator is not properly functioning throughout the watershed.

Effects on Evaluated Species

Ute ladies' –tresses

Direct and Indirect Effects

The environmental baseline for this species described above, discusses the low probability that ute ladies' –tresses is present in the action area. Given this low probability of presence, the effects to the species from the proposed action are considered

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discountable. However, surveys will be conducted by a qualified botanist prior to project implementation. The area proposed for the pipeline is regularly disturbed by push-up berm construction (annually) and isn't suitable habitat for the plant. Should the plant be located where a stream access ramp is planned, it will be marked so that no construction activities will affect the plant population. The Service would also be contacted for reinitiation of consultation, since this would constitute new information. In summary, even if the plant is located in the action area, despite the low probability of occurrence, adverse effects would be avoided by locating the construction activities away from the locations.

Cumulative Effects

Cumulative effects (50CFR 402.02) are the effects of future state or private activities that are reasonably certain to occur within the action area of the Federal action subject to consultation. No known state or private projects are reasonably certain to occur in the Touchet River drainage within the action area, and, therefore, no cumulative effects to ute ladies' -tresses would result from implementation of this project.

Determination of Effects and Rationale

Effects Determination

Implementation of the proposed action may affect but is not likely to adversely affect ute ladies' -tresses.

Rationale

- The action area for the proposed project is so heavily disturbed that it is not considered suitable for the species.
- Currently, the nearest know population of the plant is in central Washington, a few hundred miles away from the proposed action area. The plant is not known to occur in Columbia County.
- Plant surveys will be conducted prior to project implementation to assure that effects to the species do not occur.

Chinook Salmon, Steelhead Trout, and Bull Trout

Direct and Indirect Effects

The environmental baseline reflected in this biological assessment shows that the Walla Walla sub-watershed is in a degraded condition. The goal of this project is to improve the quality of fish habitat and movement by improving fish passage at an existing fish trap and to consolidate three water diversions to reduce the need for in-stream work associated with those diversions (e.g. gravel push-up berms).

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Generally, potential short-term adverse effects to listed fish species include temporary, localized increases in sediment delivery to spawning and migratory habitat in the Touchet River and downstream in the Walla Walla River. This has the potential to affect prey and listed fish that are present or that move into the area of the Touchet River affected by the proposed project.[sab1] Fish handling stress and mortality during capture and relocation may also result from the action. Long-term project benefits[sab2] would substantially exceed potential short-term impacts[sab3] to fish and their spawning and migratory habitat from reduced sediment delivery, improved drainage patterns, improved fish passage, improved stable sediment and bedload transport conditions, an enhanced floodplain and riparian community in the areas of the push-up berms, [sab4]and increased water from reduced evapo-transpiration. Habitat access for bull trout migratory movements, resting/staging, and overwintering, in addition to critical spawning and early rearing habitat, is currently functioning at an undesirable level. Water quality is also functioning unacceptably in the Walla Walla sub-basin. Long-term reductions in sediment delivery, substrate fines, and improved water quality will benefit habitat of all listed fishes.
When analyzing the potential effects of the proposed project on the environmental baseline, several of the above WCIs will reflect improvements in the long-term. Fish passage barriers are expected to move toward restoration in the basin. As the need for creating in-stream push-up berms each spring diminishes, the sediment, streambank condition, and substrate WCIs will also move toward restoration.

Stream Access Ramp and Channel Diversion

Increased sediment delivery in drainages can affect aquatic resources through the sediment deposition in local and downstream habitat and increased levels of turbidity and suspended sediment in the water column. When sediment production exceeds a stream's ability to transport it, fine sediment deposits on and within stream substrates. Salmonid populations are often negatively correlated with the amount of fine sediment in stream substrate (Chapman and McLeod 1987). Spawning area quality is degraded because egg deposition and survival are reduced when sediment fills the interstitial spaces between gravels, preventing flow of oxygen and flushing of metabolic wastes. Emerging fry and aquatic insects can also be trapped and smothered by sediment deposition in the gravels. Rearing areas are diminished as sediment fills pools and other areas. Sedimentation of deep pools and coarse substrate used for rearing and over wintering limits the space available for fish. Bell (1996) cited a study in which salmonids did not move in streams where the suspended sediment concentration exceeded 4,000 milligrams/liter because of a landslide. Newly emerged fry appear to be more susceptible to even moderate levels of turbidity compared to older fish (Bell 1996).

Elevated turbidity and suspended sediment levels caused by increased sediment delivery are sometimes associated with a general reduction in fish activity, impaired feeding, reduced growth, downstream displacement, and decreased resistance to other environmental stressors. In addition, very turbid waters can exhibit increased temperatures because of the water's capacity to retain more heat. This can negatively affect those fish and invertebrate species with the most restrictive cold-water or cool-water thermal requirements. In addition, increased contaminated sediment and associated

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pollutants in the water column can pose a threat to native fishes (Thomas 1985, Hassler et al. 1986, Barrett et al. 1992, and Newcombe and Jensen 1996)

Based on the work of Newcombe and Jensen (1996) sublethal adverse effects are expected for juvenile and adult salmonids at suspended sediment concentrations as low as 55 milligrams per liter at exposure times of three hours. This level of exposure may produce short-term reductions in feeding rates and feeding success, and minor physiological stress. Compared with other salmonids, bull trout are more sensitive to sediment and require the lowest suspended sediment levels (Bash et al. 2001). It is anticipated that listed fishes present in an action area during project implementation may be adversely affected by exposure to suspended sediment concentrations exceeding 55 milligrams per liter for durations of three hours or more. The extent and magnitude of sediment effects to fish (specifically bull trout) depend on numerous factors including age of fish (eggs, larvae, and fry are generally more susceptible (Bash et al. 2001)), suspended sediment concentration, duration of exposure, stream flow, precipitation events, and the efficacy of project erosion control measures.

For the proposed Touchet River Consolidation project, possible short-term adverse effects from increased sediment on the Touchet River populations of bull trout, Chinook Salmon, Steelhead, and their habitat are likely to be considerably less than any of the examples given above because of the relatively brief and temporary duration of disturbance, the localized nature of disturbance, and the relatively minor magnitude of disturbance. The project will occur over a period of approximately 12 weeks, but in-stream work with potential to directly affect fish will occur in one pulse or a period of 10 days or less. We expect that indirect effects will occur in the Touchet throughout project implementation and are not expected to exceed one year following. The temporary diversion channel washing described above, which will occur until all fine sediments are removed, will reduce the potential for sediment introduction from the temporary diversion to an immeasurable level.

Temporary increases in sedimentation may occur in proximity to the construction site. In-stream construction activity will disturb the streambed, which may temporarily increase the amount of turbidity and sediment in the water. Excavation and the placement of structures in the stream will cause existing sediments to become suspended and mobilized, temporarily increasing downstream turbidity levels and sedimentation rates. Every effort will be made to minimize sediment fines through re-routing or pumping around affected areas, using the acclimation pond as a settling basin, and the use of sediment blankets. Disturbances to bank and riparian areas will be replanted to match the complexity and species of the indigenous ecosystem. The Department will monitor all projects permitted through the Washington State Hydraulics code. Project timing will coincide with the work window, July 15 to September 30.

Direct effects to fish are only expected for those individuals present in the project area during most project related activities or between July 15 and September 30, 2006. Generally, potential short-term adverse effects to listed fish species include temporary, localized increases in sediment delivery to spawning and migratory habitat in the Walla Walla Sub-basin. In addition, fish handling stress and mortality may occur during capture and relocation. During the implementation of the project, there is a potential for

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temporary and short-term habitat impacts. Temporary channel construction, channel reclamation, and the stream access ramp are largely within RCAs. Impacts would be minimized through appropriate BMPs, such as applying storm water controls, regular monitoring, contractor-required mitigation measures, spill prevention, containment and cleanup, erosion protection, and use of a sediment trapping fabric for sediment reduction. Adverse effects are not expected to occur beyond a temporary or short term timeframe.

Fish Removal and Relocation

A Service study (pers. comm., Chad Fealko) indicated that a total of 58 bull trout were lethally affected from a combination of block netting and electro-shocking. In this study, nets were in place for more than two weeks. Therefore, effects for the fish removal portion of the proposed Touchet River Consolidation Project will be much less that this example. In fact, mortality from the use of block nets is not expected since the nets will be in place for just a few hours, and mortality from electro-shocking will be much less since this technique will be used as a final method for fish removal after all other methods described have been attempted.

Both the seining and angling methods for fish removal are expected to result in temporary harassment and displacement effects. Fish that are not driven out of the project reach on the initial water flush or walk-through would have additional adverse effects from being chased more, angled, and netted. Netting is not expected to result in mortality, but even though fine mesh nets will be used, it could result in minor scale damage or injury (pers. comm., Michael Kellett and professional judgment). Fish could also experience adverse effects from long durations in containers and by being placed with larger, predatory fish, but these mechanisms of effect will be avoided to the extent possible. Angling is expected to have similar effects to that of the seining method and those effects described in the 4(d) rules for listed fish species. Given the short duration of fish capture activities and the low densities of fish, mortality is not expected, but fish are expected to be stressed and/or injured.

Electro-shocking to capture fish will only be used as a final step (after angling and seining) in order to remove fish from the in-stream work area. Electro-shocking can result in burns, broken backs, and mortality of individual fish. The extent of adverse impacts from electro-shocking depends on skill of the person doing the shocking, type of electro-shocker, water quality, size of fish, and other factors. Mortality is mostly expected for juvenile fish if electro-shocking is used for relocation; however, few fish are expected to be present after block-netting, seining, and angling are complete, minimizing mortality. There is potential for juvenile fish to avoid capture and get stranded in the larger diameter rip rap. Stranding of juveniles will be minimized to the extent possible by quickly flushing 80 percent of the water before fish capture, as described above. For this activity category, it is likely that adult fish will not need to be handled and removed, and only juvenile fish will be subject to electro-shocking effects. However, based on the unpredictable nature of this activity, we cannot discount the chance that adult fish may be handled. The temporary diversion channel, after weir construction is complete, will be cleared of fish in the same manner as the main channel, with similar effects expected. The initial high velocity water flush will also be employed for the diversion channel, minimizing juvenile stranding and the number of fish that need to be handled.

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All fish will be able to move through the project reach during all phases of the project. No interruptions of fish migration are expected.

During temporary road and channel construction and diversion of the Touchet River into the temporary channel and back into the main channel, the following sources of adverse effect could occur to individuals:

- The initial flush of water into the new channel is likely to release fine sediments which could impair physiology, but the channel washing described above and use of a sediment trapping fabric will minimize or eliminate this, and
- During capture and relocation of fish from the existing channel and the temporary diversion channel, individuals are likely to experience varying degrees of handling stress and mortality.

To reduce the severity of these potential sources of harm, the previously mentioned BMPs will be implemented. During capture and relocation of fish, appropriate techniques for efficient and safe fish handling will be used. The abandoned channel will immediately be surveyed for any stranded fish, and any fish encountered will be relocated. Specific plans for the relocation and rescue operations will be developed in conjunction with the Department. A Department fish biologist and/or designated fisheries representative, will be on site periodically during channel construction and constantly throughout the fish relocation and rescue operations to ensure effectiveness of these mitigation measures.

Pipeline

The installation of the pipeline to deliver water to the two private irrigators involved in this project will require some ground-disturbing activity. The pipeline will be installed above the ordinary high water mark. The proposed location of the pipeline is on the outside edge of an existing dike road, which is already disturbed. This portion of the action could affect floodplain connectivity, but these effects will be insignificant and small in scope. Because in-stream work is not proposed for the pipeline installation, direct effects to listed fish species are not expected.

Watershed Condition Indicators

For the purposes of this analysis, the temporary timeframe is defined as one to three years; short-term is defined as three to five years; and the long-term is defined as more than five years.

Water Quality

Temperatures would be maintained. Minimum vegetation removal is planned, but any that occurs is expected to have insignificant effects to stream shading at the site scale, but is not likely to affect temperatures at the entire 6th hydrologic unit scale. Temporary channel relocation actions will result in temporary changes to sediment conditions. Though temporary increases in turbidity would occur during stream relocation at the project site, because of conservation measures to be implemented (channel washing)

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increases are not expected be measurable at either the site or 6th level HU scale. Temporary or short-term effects will be mitigated with BMPs described in this document. A hydrologist, fish biologist, or watershed specialist will approve the site-specific BMPs and measures for erosion control such as silt fence (which will be cleaned prior to winter and left in place), straw bales and seeding and mulching.

Although these effects will be small in relation to the entire 6th HU, these effects are likely to persist through several runoff years in pulses until the channel stabilizes and riparian vegetation is established. Channel rehabilitation to properly functioning dimensions and riparian revegetation should improve current erosion patterns over the short term and ultimately result in a stable channel.

Habitat Access and Elements

Many of the WCIs within this category will not be affected by this action. Physical barriers will be improved in the long-term with dam repair and installation of the travel belt fish screen. For Substrate Embeddedness, see discussion above for Sediment. Tree removal is not anticipated but cannot be completely discounted. If any tree removal is required, trees will be left onsite as potential LWD recruitment. It is expected that this WCI will be insignificantly affected, negatively, and this effect will only be realized at the site scale. Pools downstream of the project reach may temporarily experience sedimentation within the temporary timeframe, when the river is flowing through the temporary channel and during the initial re-watering of the construction site. This effect will be greatly reduced by the channel washing described above, however.

Temporary adverse effects could occur within the RCA due to channel diversion from ground disturbance, erosion and turbidity, but rehabilitated habitats will be capable of supporting current population levels.

Channel Condition, Dynamics, and Flow/Hydrology

Width to Depth Ratios and Streambank Conditions would incur some temporary negative effects at the project reach scale. A change in streambed elevation will also result in localized effects. There will be a big change in the sediment at the microhabitat scale, but the pool type will be the same as the baseline conditions.

Until the stream access ramp and diversion channel are rehabilitated, streambanks could be temporarily unstable, with effects persisting several runoff years within the temporary timeframe, until the riparian vegetation becomes established. These effects will be localized and would not be realized outside of the project reach scale.

The Floodplain Connectivity WCI would incur some negative effects at the project reach scale while installing the pipes for the two irrigation diversions. These effects are expected to be temporary in nature and to occur as a result of the diversion channel construction and construction of the new irrigation diversions. This effect is not expected to be realized at the 6th HU scale.

Peak flows and Drainage Network Increase should not be affected by the channel diversion and associated construction.

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Watershed Conditions

No new roads would be constructed or obliterated with project actions. A temporary access ramp will be constructed in the RCA, but all disturbance related to this project would be rehabilitated after the project is completed.

Disturbance History, RCAs, and Disturbance Regime would not be affected as a result of this action. Channel re-routing/rehabilitation actions are concentrated within RCAs, which may experience some temporary adverse effects (persisting for several years within the temporary timeframe).

In the long-term, conditions of the above habitat indicators will be maintained due to channel rehabilitation and should maintain integration of species and habitat conditions throughout the analysis area. Small habitat improvements due to rehabilitation work and fish passage enhancement should improve integration of species and habitat conditions locally. Immediate negative effects to local individuals may occur due to capture and relocation both times when the channel is relocated. These effects would not be expected to last beyond the duration of the project (three months). After the first project year the habitat should be improved (barriers, riparian vegetation, sediment delivery), and should keep recovering as the channel stabilizes and vegetation becomes established.

The adverse habitat effects are expected to be temporary and short term. Adverse effects to individuals will be small in scope. In addition, effects are not expected to retard attainment of an anticipated restoration trend for sediment/substrate embeddedness, pool quality, disturbance history, RCAs, and disturbance regime as a result of this project.

Summary of Effects to Individual Fish Species

The significance of adverse effects to individual fish and fish habitat will vary depending on the species. Because the bull trout habitat in the action area is all migratory, effects to bull trout will be limited to those incurred by handling the few bull trout that may be present during project implementation and effects to habitat specific to migratory needs. As explained above, sediment increases at the levels expected will not have significant adverse effects on migrating bull trout because the potential for increases in total suspended solids will be eliminated through conservation measures. Juvenile steelhead trout (rearing fish and outmigrants) could also be present in the action area, but because the proposed project is outside of the steelhead spawning period, effects are expected to be similar to those described for bull trout although numbers of individuals to be handled may be greater as the project area is considered rearing habitat.

Cumulative Effects

Cumulative effects (50CFR 402.02) are the effects of future state or private activities that are reasonably certain to occur within the action area of the Federal action subject to consultation. No known state or private projects are reasonably certain to occur in the Touchet River drainage within the action area, and, therefore, no cumulative effects listed fish species would result from implementation of this project.

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Determination(s) of Effects and Rationale

Effects Determination

Implementation of the Touchet River Consolidation project is likely to adversely affect Chinook salmon, steelhead trout, bull trout, and designated critical habitat.

The project is expected to have temporary adverse effects on Essential Fish Habitat (EFH) in the Touchet River reaches included in the project area. The project will maintain existing baseline values for water quality and clean substrates over the long-term.

Rationale

- Proposed actions will maintain or improve habitat conditions over the long term, although short-term adverse effects to habitat, including temporary increases in sediment delivery and RCA disturbance, are anticipated. This would be minimized by application of BMP erosion control measures.
- There is a more than negligible chance of injury and disruptions of normal behavioral patterns occurring during fish relocation. Handling stress and/or mortality during capture and relocation into the temporary channel and stranding after channel dewatering are adverse effects that we expect may occur. Implementation of BMPs, efficient and safe fish handling techniques, intensive surveys, and subsequent relocation of stranded fish upstream, will lessen these potential effects.

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