April 23, 1998

In Reply Refer to: 2200.1

Elizabeth Holmes Gaar
National Marine Fisheries Service
Asst. Regional Administrator for Habitat Conservation
525 NE Oregon Street
Portland, Oregon 97232-2737

Re: Northeast Oregon Assembled Land Exchange (NOALE) ESA Conferencing

Dear Ms. Gaar:

Thank you for your February 17, 1998 comment letter on the NOALE Draft Environmental Impact Statement. We look forward to acquiring the lands identified in NOALE, and the important blocks of steelhead and trout habitat on the North and South Forks John Day River.

Per my staff biologists' telephone conversation with Mr. Scott Carlon of your office on April 17, 1998, this letter officially serves as conferencing on the NOALE for Mid Columbia steelhead trout, a proposed "Threatened" species under the Endangered Species Act. We understand that your agency does not normally conference on federal projects that may affect a proposed listed species, due to your high workload and staff limitations. However, Bureau of Land Management (BLM) policy directs that our agency manage proposed listed species with the same level of protection provided for Threatened/Endangered species, except that formal consultations are not required.

In phase 1 of the preferred alternative, approximately 50,000 acres of public lands are considered suitable for disposal in Grant, Wheeler, Morrow and Umatilla Counties. In return, 47,400 acres have been identified for acquisition. All phase 1 lands lie within the John Day and Umatilla River Basins. With acquisition lands are 59.4 miles of fish habitat (53.9 miles anadromous spawning and/or rearing), and within potential disposal lands are 8.5 miles of fish habitat (5.15 anadromous) on 27 parcels. This will create 50.9 miles net gain of fish habitat (48.75 anadromous) under BLM management in the John Day Basin, primarily within the North and South Fork drainages of the John Day River.

The BLM positions that this land exchange proposal will provide significant benefits for anadromous and resident salmonids. Stream and riparian habitat acquired through the exchange would allow BLM to implement appropriate management practices to improve and enhance anadromous fish habitat. Riparian conditions are expected to improve significantly when more conservative grazing strategies are implemented from

the current management. Timber management actions would follow PACFISH guidelines and eventually directives from the Interior Columbia Basin Ecosystem Management Project.

BLM fisheries staff believe that this project may affect, but not jeopardize the Middle Columbia steelhead trout, and expect the species to benefit from additional habitat under federal management. As discussed with Scott Carlon, any land transactions proposed in the NOALE that are not completed before National Marine Fisheries Service (NMFS) makes a final ruling on the proposed "Threatened" Mid Columbia steelhead trout in February of 1999, will then require consultation with NMFS.

Thank you again for reviewing the NOALE project and your assistance in Section 7 requirements of the ESA. If you have any questions regarding this project or need additional information, please contact Gary Torretta, Fisheries Biologist at (541) 416-6763.

Sincerely,

Harry R. Cosgriffe
Area Manager
Central Oregon Resource Area, Prineville District BLM

Northeast Oregon Assembled Land Exchange Biological Assessment

Section 7 Consultation For
Bureau of Land Management
Lands in
Central and Northeastern Oregon

January 1998

Submitted To:
U.S Fish and Wildlife Service
Bend, Oregon

Prepared By:
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Table D-1: Potential Disposal Lands Containing Commercial Timber, and Proximity to Salmonid Fish Habitat (Bull Trout, Steelhead/Redband Trout).

Attachment D-1: Harvest Plan for Parcel #G163, and map of parcel.

Attachments Previously Submitted to USFWS:

- The Northeast Oregon Assembled Land Exchange (NOALE) EIS
- Maps 1-6
- ODFW Bull Trout Distribution Maps (John Day, Umatilla Basins)

Listed Species Within the Analysis Area

Appendix B; Attachment 1 includes the species list provided by the USFWS (1-7-97-SP-156) on March 6, 1997, and Table B-1. Special Status Wildlife Species by Major Land Types for the Northeast Oregon Assembled Land Exchange.

The U.S. Fish and Wildlife Service on June 10, 1997 proposed that the Columbia River bull trout population segment be listed as threatened under the Federal Endangered Species Act (ESA). The northern bald eagle (*Haliaeetus leucocephalus*) also occurs in the project area. It was reclassified in Oregon and Washington under the Endangered Species Act (ESA) as threatened in 1978.

Federal agencies including the Bureau of Land Management (BLM) are required to comply with the ESA Section 7(a)2 - to insure that Federal actions are not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of critical habitat of such species. Within the scope of this Biological Assessment the BLM will ensure compliance with the ESA for the discretionary action of completing a proposed land exchange.

Project Description

Introduction

The purpose of this analysis is to address facilitation of multiple land exchanges by identifying a pool of public lands for potential disposal (exchange), discussing potential acquisition areas, and analyzing how this proposal may affect bull trout (*Salvelinus confluentus*) and bald eagles (*Haliaeetus leucocephalus*) and their habitats. Normally more BLM-administered lands are identified for exchange analysis than is necessary to equal the value of potential acquisition lands. This provides a buffer to still accomplish an exchange when certain tracts are found to contain significant resource values (cultural, paleontological, Threatened and Endangered Species, etc.).

Land tenure adjustments in northeast and central Oregon have been discussed for many years. The need to improve management efficiency through consolidating BLM's land ownership patterns was identified in the John Day Resource Management Plan (RMP) of 1984, its Record of Decision (ROD) of 1985, and a subsequent RMP Amendment in 1994. Exchanges analyzed in the Northeast Oregon Land Exchange (NOALE) would implement most land tenure adjustments discussed in the John Day, Two River, and Baker RMPs.

BLM-managed lands on the Prineville and Vale Districts are scattered across many counties, with little continuity, with some exceptions. Small scattered tracts are difficult and inefficient to manage and typically have more instances of trespass violations.

Little staff time and resources are allocated to these tracts, because higher priority is set on large land blocks where management plans can be more effectively implemented. The public would benefit substantially by repositioning the land values from scattered tracts into large blocks of acquisition lands that contain significant fishery, wildlife, recreational, forestry, and cultural resources.

Description of Proposed Action

In 1993 the BLM received a land exchange proposal from Clearwater Land Exchange (CLE), Inc. of Orofino, Idaho. Clearwater Land Exchange is a company that acts as an exchange facilitator specializing in government-private land exchanges in Idaho, Montana, Oregon and Washington. The NOALE can be characterized as a "pooled" transaction in which the parties are willing to change the position of their land holdings but the desired end result can not usually be accomplished using traditional on-on-one land exchanges. As facilitator, CLE assembles a pool of property from private landowners willing to sell or exchange lands to the BLM. CLE exchanges this assembled pool of property with the BLM on a value-for value basis and then transfers lands acquired from the BLM back to private owners, generally being adjoining landowners. The parties involved in this exchange proposal include BLM, Pioneer Resources, the JV Ranch, and dozens of other private landowners/ranches who own lands adjacent to scattered government lands considered for disposal.

The Draft NOALE Environmental Impact Statement (EIS) has been distributed for a 60 day public comment review which started on October 31, 1997. Depending upon comment responses, the Final EIS and ROD could be issued by spring of 1998.

The Biological Assessment analyzes effects of exchanging Phase 1 lands only. Future transactions will require separate NEPA documents and Section 7 ESA consutations if any effects to bull trout are anticipated. Phase 1 of this proposal would dispose approximately 50,000 acres of BLM-managed lands within six Hydrological Units located in central and northeastern Oregon (Upper John Day, Middle Fork John Day, North Fork John Day, Lower John Day, Umatilla, and Beaver/South Fork Crooked). It is likely that some disposal tracts will be dropped from the exchange proposal as a result of public comments recieved, but this is not expected to change this BA's Determination of Effects. Approximately 47,500 acres of private lands could be acquired within two Hydrological Units. BLM disposal parcels range from 2 - 2,500 acres in size, and acquisition parcels range from 80 - 20,000 acres in size. BLM parcels are generally small and widely dispersed throughout the analysis area, while acquisition parcels are larger contiguous blocks of land.

Management of Lands to be Acquired

Land acquired by the BLM through exchange may be managed under existing plans, or new management direction may need to be developed to adequately conserve wildlife and fish habitats. The BLM is mandated to apply multiple use management to public lands, and consider and allow all uses if consistent with the objectives of the governing land use plan (See NOALE EIS, p. 11). However, to protect resources and habitats the BLM is also mandated to follow other land use guidelines like PacFish, and ICBEMP (when completed). These plans provide overall guidance on how public lands will be managed. Specifically, any new projects (grazing allotments, timber harvesting, recreational developments, etc.) that are proposed on the newly acquired lands must first meet NEPA and ESA Section 7 requirements before implementation can occur.

Bull Trout Analysis

The BLM has determined that approximately 9,636 acres of disposal lands included in Phase 1 (119 parcels) are within the range of bull trout distributions in the John Day and Umatilla River Subbasins. Bull trout analysis discussions will only consider those exchange parcels that are within the range of bull trout habitat (migratory, historic, or spawning/rearing). About 2,859 acres are commercial forestlands (Appendix D, Table D-1), and 6,777 acres are rangeland/grasslands, rocky scablands or cliffs. About 0.6 miles of historic bull trout habitat on the Middle Fork John Day River (2 partially forested parcels) would be disposed. An additional 1.8 miles of perennial and 14.6 miles of non-perennial streams are within disposal tracts that drain into bull habitat (primarily historic and migrating bull trout habitat). Three parcels (G162, 163, and UM39), totalling 400 acres, drain into spawning/rearing bull trout habitat. Disposal parcels within the analysis area (bull trout habitat) lie within four Hydrological Units:

-North Fork John Day #17070202
-Middle Fork John Day #17070203
-Upper John Day #17070201
-Umatilla #17070103

Acquistion Lands

Acquisition lands within the range of bull trout distribution in the John Day River Subbasin total about 47,300 acres within the North Fork John Day Hydrologic Unit, and 200 acres within the Upper John Day Hydrologic Unit. About 12.3 miles of migratory bull trout habitat can be acquired on the North Fork John Day River between Wall Creek and Camas Creek (RM 22.6-56.8). An additional 52.3 miles of perennial and 70.8 miles of non-perennial streams that drain into migratory bull trout can be acquired. For more detailed descriptions and conditions of the acquisition lands, refer to the NOALE EIS, Chapter 3, pages 37-49, and Chapter 4, pages 119-124 (Phase 1 discussions.

Mitigation Measures and Monitoring

The long term effects of this proposal are anticipated to benefit bull trout and salmonid fisheries habitat in general, particularly in the North Fork John Day River Hydrologic Unit. The most efficient manner in which BLM can improve habitat conditions for bull trout, and subsequently facilitate recovery of the species, is to acquire bull trout habitat from willing landowners. Because direct federal acquisition of private lands often is not agreeable with local governments, and funds usually are not available for this method either, exchange of lands is the most prudent option to acquire contiguous blocks of land with important resource values, including habitat for Threatened and Endangered Species.

Realistically, the North Fork John Day bull trout sub-population has the best potential for recovery and expansion of its current range. Large acquisitions of uplands and riparian habitats, within current migrating bull trout habitat, into federal management (below and adjacent to National Forest lands) can start riparian recovery processes through protection of stream corridors. Acquiring bull trout habitat on the main stem John Day River below the Malheur National Forest boundary, however, is not a realistic goal given the current land ownership and development status. Potential for land acquisitions on the Middle Fork is somewhat better, but habitat conditions on the Middle Fork main stem are severely degraded, thus limiting chances for any appreciable restoration of habitat to the high standards required by the bull trout.

Monitoring of riparian habitats on acquired lands has already been initiated in 1996 with riparian photo points on the North Fork and tributaries. This method is simple and repeatable, and effective in monitoring changing habitat condition trends. Five year intervals are a standard protocol for repeating photo studies. Range/riparian condition studies will monitor grazing use on acquisition lands, and help determine if upland and riparian habitats are improving or not.

Description of Project Area

Only Phase 1 lands that drain into occupied and historic bull trout habitat in the John Day and Umatilla basins are analyzed in this discussion. Phase 1 lands down stream of bull trout habitat (occupied, historic, migratory) in the two basins are shown on project maps but will not effect bull trout. The range of bull trout in the two basins is demarcated on the project maps and matches Bull Trout Distribution maps acquired from ODFW for the John Day and Umatilla basins. Exchange lands within the range and influence of bull trout habitat include potential disposal (BLM) and acquisition (private) tracts in the North Fork John Day subbasin above Wall Creek, the Middle Fork John Day subbasin, the Upper John Day subbasin above the City of John Day, and the Umatilla basin (See Project Maps). Refer to the NOALE EIS Chapter 3, Affected Environment (John Day and Umatilla Basins Sections) for general information on

vegetation, soils, geology, geography, hydrology, and wildlife/fisheries habitat within each basin.

Because of the scattered positions and small size of BLM disposal tracts within the analysis area, it would not be meaningful to conduct watershed analyses for management of these lands. The BLM does not manage any large contiguous blocks of land within the range of bull trout habitat in the two basins. The largest parcel that BLM manages within the range of bull trout is about 1,900 acres on the North Fork John Day River above Wall Creek. BLM is retaining this parcel. The BLM is a minority land manager in both basins, managing about 7 percent of the John Day Basin and about 1 percent of the Umatilla Basin.

Most stream segments on disposal tracts are short reaches (0.2 miles on average), poor to good in condition, and not practical to manage. Because little management ephasis is directed to these scattered, small parcels, the likelihood that riparian conditions will improve appreciably on them is slim. By blocking land ownership and increasing contiguous stream miles into federal ownership, BLM can more easily implement management strategies that facilitate cold-water fish habitat improvement on an watershed scale.

General Habitat Conditions (All Hydrologic Units)

Salmonid habitat has decreased in both quantity and quality in the analysis area in recent history due to increased human activities and some natural events. Land uses such as timber harvesting, road construction, livestock grazing, dredge and placer mining (North and Middle Forks, and Upper Mainstem John Day watersheds), agriculture practices (irrigation water diversions, and encroachment on riparian zones), and stream channelization have impacted salmonid habitat in the John Day and Umatilla hydrologic units. Natural events such as insect infestations and epidemics, large catastrophic forest fires, and basin wide and localized flooding have further contributed to the degradation of riparian and instream habitats. It is difficult to estimate how land management practices may have exacerbated the severity and intensity of natural events impacting riparian habitat conditions.

Disposal tracts in the analysis area are normally grazed every year. Most of these tracts are permitted for grazing from April 1 to November 1 each year. Actual use varies within this permitted time period. A small percentage of disposal parcels contain perennial water and associated riparian habitat. Livestock normally concentrate use along stream corridors where water, forage, and shade are initially abundant. Overgrazing riparian areas has suppressed streamside vegetation vigor and woody plant recovery processes, compacted soils, accelerated erosion and breakdown of streambanks, and impacted water quality. Not all tracts with riparian habitat are overgrazed each year.

John Day Basin

Historical descriptions of the John Day basin indicate that the John Day River was once a relatively stable river with good summer streamflows, water quality, and heavy riparian cover. Early writings of Peter Skene Ogden, a fur trader who traveled through the John Day Basin in 1825 and 1829, describes an abundance of beaver and diverse riparian vegetation. The North Fork streams were well wooded with aspen, poplar and willow; had good streamflows; and had good channel structure. The party was unable to ford horses through the John Day River in July near the present town of Prairie City (John Day River Subbasin Report, 1990).

Following the discovery of gold in the upper basin in the late 1800's, placer mining operations left many streams channelized with little or no shade, high sediment loads, and diverted flows. Dredge mining overturned larger stream channels, changing their natural courses, silted gravels, and destroyed stream cover.

The harvest of pine forests from the upper watershed then began to supply lumber to the growing communities. Early forest practices included removing timber from and building roads on steep slopes and streambanks. Heavy grazing pressure from sheep and cattle foraged perennial grass and shrub cover, converting large areas to weeds and forbs. As grass rangelands declined in the basin, and wildfire suppression increased, the expansion of juniper and sage distribution began.

More recently, livestock overgrazing, surface water irrigation diversions, stream channelization, timber harvesting, and road building activities caused further fish habitat degradation by damaging or suppressing riparian vegetation and destabilizing streambanks and watersheds (John Day River Subbasin Report, 1990). Riparian habitat degradation is the most serious habitat problem in the John Day basin with approximately 660 miles degraded stream miles identified (entire basin). According to the Oregon Water Resources Department (1986), land uses in the last 125 years may have had a significant impact on the basin's capacity to retain water and release it later in the season.

Timber harvesting on public and private lands in the analysis area has impacted riparian habitats. Removal of timber and disturbance or elimination of non-merchantable trees or shrubs along streams have reduced shading and contributed to instability of streambanks. Timber harvest along streams has limited the recruitment source of instream and off-channel structure of large wood. Instream large wood provides rearing habitat for juvenile salmonids and streambank stability, and creates habitat complexity.

Approximately 60,000 acres of agriculture lands are irrigated in the John Day Basin, primarily to grow grass and alfalfa. The primary source of irrigation waters comes from diverting instream surface flows. Irrigated lands in the basin are concentrated primarily along the Upper John Day valley from Picture Gorge to the headwaters above Prairie City. Irrigated pastures in the North Fork drainage are primarily located downstream of Monument, Oregon. Irrigated acres in the Middle Fork drainage are scattered along the upper river valleys and meadows, and near Long Creek, Oregon. Within the analysis area are approximately 20,000 acres of irrigated pastures, mainly above John Day along the main stem and tributaries.

Irrigation withdrawals in some stream segments limit production of salmonids in the basin. Fish habitat problems associated with surface water diversions (reduced available and suitable habitat, unsuitable water temperatures, and dewatering of stream channels) are compounded during drought years when stream flows fall below normal (John Day River Subbasin Report, 1990). Low streamflows mainly affect the rearing and instream movement of juvenile and resident adult salmonids. Adequate streamflows generally exist for adult passage to spawning grounds, and minimum streamflows are met on most years (John Day River Subbasin Report, 1990).

High streamflows in the winter and spring are a major sources of streambank erosion, which generally degrade or eliminate fish habitat (John Day River Subbasin Report, 1990). By summer, flows are low, and irrigation diversions may dewater streams on dry years. Summer flows that are minimized from irrigation diversions are subject to excessive heating, limiting water quality and habitat suitability for coldwater fishes (John Day River Subbasin Report, 1990).

The basin's ability to naturally repair damaged habitats is slow in the John Day's semiarid environment, and some areas are adversely affected by activities that ceased long ago. In other cases, poor land management practices still continue presently, particularly on private lands. Certain areas of the basin have experienced improvements in riparian habitat quality in the last 20 years (Upper mainstem, South Fork John Day). Recent dredge tailings reclamation work on Umatilla National Forest has started restoration processes on nine miles of the North Fork John Day River. This stream segment is habitat for bull trout, chinook salmon, and steelhead trout.

The North Fork John Day drainage contains the largest stronghold population segment and the majority of suitable habitat for bull trout in the John Day Basin (Unterwegner, 1997). Bull trout habitat in the North Fork has the most protection within designated wilderness (North Fork John Day Wilderness). The North Fork drainage has the best chemical, physical, and biological water quality in the basin and produces over 60 percent of the annual basin discharge (Oregon Water Res. Dept. 1986).

Umatilla Basin

Riparian vegetation on many reaches of the mainstem Umatilla and tributary streams is in poor condition. Approximately 70 percent of 422 miles of streams in the basin inventoried by the Oregon Department of Fish and Wildlife (ODFW) could benefit from riparian improvements. Headwater areas are generally well shaded by a conifer canopy. On the mainstem Umatilla between the forks (RM 90) and Meacham Creek (RM 79), a mixture of deciduous and conifer trees provide moderate amounts of shading. Below Meacham Creek, the river channel widens and deciduous trees, shrubs, and grasses provide little shading (Umatilla River Subbasin Report, 1990).

Riparian conditions are generally good in the high elevation headwaters, and provide excellent fish habitat. Livestock grazing, road and railroad construction, and to a lesser extent forestry practices and other activities have extensively degraded mid-elevation stream reaches. Fish production in many mid-elevation stream reaches is limited by high summer water temperatures, low or intermittent summer flows, lack of instream habitat diversity, and unstable stream channels. Low elevation riparian areas are generally in comparatively poor condition, primarily impacted from extensive and intensive agriculture practices (Umatilla River Subbasin Report, 1990). The Umatilla Basin produces large amounts of sediment, mostly from agriculture lands. Peak sedimentation occurs during freeze and thaw periods accompanied by rainstorms or rapid snowmelt.

Irrigation is the principal water use competing with fish production in the basin. A network
of tributary and mainstem Umatilla River irrigation diversions block an/or impede juvenile and adult salmonid migrants during periods of low streamflow. The lower 32 miles of the mainstem Umatilla River are frequently dewatered during the irrigation season, blocking emigrant juvenile fish and late arriving adults in the spring, and early arriving adults in the fall. Irrigation is the largest use of surface and groundwater in the basin. Many streams are over appropriated, and cumulative water rights and irrigation demands commonly exceed available streamflow (Umatilla River Subbasin Report, 1990).

Umatilla River headwaters generally are cool, clear, low in pollutants, and high in dissolved oxygen. High levels of suspended solids and fecal coliform are present in the lower 57 miles of the river. City of Pendleton effluent discharge periodically exceeds water quality standards. Feedlots, irrigation return flows, and other sources of nutrients and bacteria exceed water quality standards in summer months when pollutants are concentrated in low streamflows. Summer water temperatures in the lower reaches chronically exceed 70 F (Umatilla River Subbasin Report, 1990).

Description and Distribution of Species

Inventories and Surveys

Until recently little specific information on the status or biology of bull trout in Oregon was available. During the past decade there has been a concerted effort to find out more about the bull trout. Since 1990, ODFW, Forest Service (FS), and BLM stream survey crews have been documenting bull trout distribution and relative abundance. Bull trout distributions discussed in this analysis are referenced from the latest information from ODFW, BLM, and Forest Service fisheries biologists.

Life History of Bull Trout

Bull trout typically have more specific habitat requirements than other salmonids. Because of their specific requirements, bull trout are more sensitive to changes in habitat and less able to persist and thrive when habitat conditions are altered or degraded (Rothschild and DiNardo, 1987). Channel and hydrologic stability, substrate, cover, temperature, and the presence of migration corridors consistently appear to influence bull trout distribution or abundance (Ziller, 1992).

Adults usually spawn from August through November in the coldest headwater tributaries of a river system, and require water temperatures <10C for spawning, incubation, and rearing (Weaver and White 1985). Although migratory bull trout (fluvial or adfluvial) may use much of a river basin through their life cycle, rearing and resident fish often live only in smaller watersheds or their tributaries (second-fourth order streams) (Ziller, 1992).

Juvenile bull trout closely associate with stream channel substrates, often using interstitial spaces for cover (Fraley and Shepard 1989). A close association with channel substrates appears more important for bull trout than for other species. This specific rearing habitat requirement suggests that highly variable stream flows, bed movements, and channel instability will influence the survival of young bull trout, especially since embryos and alevins incubate in substrate during winter and spring (Rieman and McIntyre 1993).

Increases in fine sediments to streams reduce pool depths, alter substrate composition, reduce interstitial space, and cause channels to braid. These changes degrade fish habitat and reduce rearing bull trout survival and abundance (Reiman and McIntyre 1993). Bull trout usually associate with complex forms of cover and with pools. Juveniles live close to instream wood, substrate, or undercut banks and in pocket pools formed by boulders. Young-of-the-year fish use side channels, stream margins, and other low velocity areas. Older and larger fish use pools and areas with large or complex instream wood and undercut banks (Reiman and McIntyre 1993). Instream wood correlated significantly with bull trout densities in streams sampled in the Bitteroot National Forest (Reiman and McIntyre 1993).

Migratory corridors connect safe wintering areas to summering or foraging areas. Movement is important to the persistence and interactions of local populations within the metapopulation. Open corridors among populations are required to ensure gene flow, refounding of locally extinct populations, and enhancement of locally weak populations. Migratory populations of fish are likely to stray more between streams than resident populations, increasing the potential for such dispersal (Reiman and McIntyre 1993).

Water temperature is the most critical factor that influences bull trout distributions, but critical thresholds however, are poorly defined. Water temperatures in excess of 15C are thought to limit bull trout distribution (Fraley and Shepard 1989). It is not known whether the influence of water temperature is consistent throughout the life cycle or whether a particular stage is especially sensitive. Increasing water temperatures increase the risks of habitat invasion by other species that may displace bull trout.

Bull trout have very low levels of variation within populations (John Day, Umatilla, Grande Ronde Basins, etc) but are highly differentiated between populations (Spruell and Allendorf 1997). The John Day and Grande Ronde bull trout populations tend to be similar genetically, however a unique allele frequency was found in seven of ten John Day populations which was not present in any of the 11 Grande Ronde populations (Spruell and Allendorf 1997).

Bull Trout Distribution in the North Fork, Middle Fork, and Upper Mainstem John Day Hydrologic Units

Bull trout are indigenous to the John Day River Basin and historically had a wider distribution within the Basin than at present. Modern land-use practices in the John Day Basin have altered aquatic habitats where salmonid fishes live, including the bull trout. The current distribution of bull trout is clearly fragmented (Howell and Buchanan 1992). Bull trout in the John Day Basin are considered as one metapopulation, even though the sub-populations within the main stem, North and Middle Fork subbasins probably have no genetic interchange presently (Unterwegner, personal comm. 1997).

Presently bull trout distributions in the John Day Basin are isolated to small headwater streams within the Upper Mainstem, the Middle Fork, and the North Fork. In the Upper Mainstem suitable spawning habitat exists in the Upper Mainstem from Reynolds Creek to headwaters, and in Indian, Reynolds, Deardorff, Rail, Call, and Roberts Creeks. (Claire and Gray, 1993). Migratory bull trout habitat extends down the Main Stem to the town of John Day (See Map).

Current spawning and rearing habitat in the Middle Fork is limited to Clear Creek (above Hwy 26), Big Creek, and Granite Boulder Creek. Full historic distribution and abundance is unknown, but local longtime residents report having caught bull trout in Indian, Butte, Vinegar Davis, and Big Boulder Creeks, and in Mainstem Middle Fork from Big Creek to Phipps Meadow (Claire and Gray, 1993). Howell and Buchanan (1992) state that the Upper Middle Fork bull trout population segment is likely extinct. Migratory bull trout likely use the upper Middle Fork (from Big Creek to headwaters) seasonally. Historic habitat extends down the Middle Fork to about River Mile (RM) 18 (See Map).

The North Fork John Day River currently supports spawning and rearing habitat in Clear, Crane, Desolation, S. Fk. Desolation, Big, Baldy, S. Fk. Trail and Winom Creeks, and in the N. Fork John Day above Gutridge. Migrating bull trout habitat extends downstream on the North Fork John Day to Wall Creek RM 22.5 (See Map). Historic habitat included Granite Creek, N. Fk. Desolation Creek and Meadow Brook Creek. The upper North Fork contains the most bull trout habitat in the Basin (Claire and Gray, 1993).

Bull trout distributions within the Basin have been affected by an array of human caused factors. These factors are the primary reasons for the decline of local populations (Claire and Gray, 1993; Ratliffe and Howell, 1992).

Habitat Degradation

-Water temperature impacts (elevated temperatures). This is very problematic in the Middle Fork drainage where certain thermal barriers are limiting suitable spawning and rearing habitat.
-Riparian habitat loss
-Loss of instream structure and complexity
-Loss of instream large wood and potential future large wood
-Increased sediment delivery to bull trout habitats
-Food supply (reduction in anadromous fish populations)

Passage Barriers

-Natural barriers. Falls on Granite Boulder Creek (Middle Fork). Falls on S. Fk. Desolation, E. Meadowbrook, and Big Creeks (North Fork)
-Irrigation Diversions

Overharvest/Poaching

-Bull trout are aggressive by nature and readily take lures or bait, making them very susceptible to angling. Legal harvest has been higher in the North Fork drainage than the Middle Fork or Upper Mainstem. In 1993 ODFW prohibited angling harvest of bull trout in the John Day Basin

Hybridization with Brook Trout and Inter Species Competition

- Both bull and brook trout are found in certain overlapping habitats in the Upper Mainstem and North Fork. Hybrids have been found and potential for more hybridization exists.

Climate Change

-Oregon is near the southern fringe of bull trout distribution. Only an isolated population in the upper Jarbridge River in Nevada occurs further south (Ratliff and Howell 1992). Bull trout may be a remnant of preglacial cold water fish fauna (McPhail and Lindsey 1986), and reductions of bull trout in the southern edges of its range has been caused at least in part by the loss of cold water habitat following the retreat of glaciers and snowfields since the late Pleistocene (Cavender 1978). This situation has been aggravated by human-caused habitat alterations.

Bull Trout Distribution in the Umatilla Hydrologic Unit

Bull trout are indigenous to the Umatilla River Basin and historically had a wider distribution within the Basin than at present. Modern land-use practices in the Basin have altered aquatic habitats where salmonid fishes live, including the bull trout. The current distribution of bull trout is fragmented (Howell and Buchanan 1992).

Presently bull trout spawning and rearing habitats are isolated to the upper headwaters of the Umatilla River. This includes the main stem from Saddle Hollow to the Umatilla Forks, the North Fork Umatilla, Coyote Creek, Woodward Creek, the South Fork Umatilla, Thomas Creek, and Shimmiehorn Creek. Fragmented habitat exists in the North Fork Meacham Creek and Ryan Creek. Migrating bull trout habitat (seasonal) exists in the Umatilla River from Saddle Hollow down to the City of Pendleton, Meacham and North Fork Meacham Creeks, Buck and Spring Creeks. Historic habitat included upper Meacham Creek and the Umatilla River from Pendleton to the river's mouth (see Umatilla Basin Bull Trout Distribution Map).

Bull trout habitat in the North Fork Umatilla drainage is almost entirely within designated Wilderness (North Fork Umatilla Wilderness). This population has a low risk of extinction (Ratliff and Howell 1992). The South Fork Umatilla population (and mainstem below the Umatilla Forks) lies within watersheds with moderate forest management activities. Its status is "Of Special Concern" by Ratliff and Howell (1992).

Analyses of Parcels by Hydrologic Unit

Hydrologic Unit: North Fork John Day #17070202

Disposal Lands (Currently BLM)

BLM Disposal Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
G5	120/59	0.0	0.0	0.3	NLAA	Upland forested bench. Tract is 1.3 miles from migrating bull trout habitat. No potential habitat.
UM4 UM6 UM49-52 UM55 UM57-58 UM59A UM60 UM80	880/478	0.0	0.3	0.7	NLAA	Upland forested benches. Tracts over 5 miles from migrating bull trout habitat. 0.3 miles of fish habitat on one parcel (UM 80). Tracts have gentle slopes. Logging on tracts very unlikely to cause sediment delivery to bull trout habitat. Minimal effect to downstream water temperatures anticipated with only shor segements of perennial water within tracts.
UM7 UM61 UM70	160/108	0.0	0.05	0.1	NLAA	Steep uplands on UM7 and UM61. Very steep uplands adjacent to Camas Creek on UM70. High slope next to Camas Cr. is bare soil, rock. Tracts are >5 miles to migrating bull trou habitat.
G6	40/0	0.0	0.0	0.0	NLAA	Upland rangeland tract.
Totals	**1,200/645**	**0.0**	**0.35**	**1.1**		

Note 1: **NE** = No Effect; **LAA** = Likely to Adversely Affect; **NLAA** = Not Likely to Adversely Affect
* Fish bearing and non fish bearing streams
**Non fish bearing

Acquisition Lands in North Fork John Day HUC (Currently Private)

Acquisition Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
Acq. Area #1: N. Fork John Day River and uplands from Camas to Graves Creeks.	25,940/ 7,620	12.0	42.8	33.6	NLAA	12.0 miles of migrating bull trout habitat on the North Fork John Day River. Additional 19.8 miles of anadromous salmonid habitat in Stony, Potamus, Little Potamus, Graves, Mallory, Deerhorn, and Jericho Creeks. Forest lands along river corridor, tributaries, and forested/rangeland uplands. See Map.
Acq. Area #2: JV Ranch and tracts in upper Little Wall Creek drainage.	20,360/ 1,160	0.0	18.3	36.2	NLAA	17.7 miles of fish bearing tributaries (Wall, Little Wall, Cabin, and Ditch Creek drainages) that drain into bull trout migrating habitat on the North Fork John Day River. Mostly rangeland habitat/uplands. See Map.
Acq. Area #3: Lower Wall Creek	840/50	0.0	2.5	1.3	NLAA	2.5 miles of anadromous fish habitat on Wall Creek. Drains into bull trout migrating habitat on the N. Fork John Day River.
Acq. Area #4: North Fork John Day River. Deer Creek Ranch.	160/35	0.3	0.3	0.7	NLAA	0.3 miles of bull trout migrating habitat on the N. Fork John Day River. Private inholding within large block of BLM-managed lands.
Totals	**47,400/ 8,865**	**12.3**	**63.6**	**71.8**		

Note 1: **NE** = No Effect; **LAA** = Likely to Adversely Affect; **NLAA** = Not Likely to Adversely Affect
* Fish bearing and non fish bearing
**Non fish bearing

Hydrologic Unit Summary

Land Exchange Tracts	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
Net Change in Hydrological Unit	+41,860/ +6,974	+12.3	+63.25	+70.7		

Hydrologic Unit: Middle Fork John Day #17070203

Disposal Lands (Currently BLM)

BLM Disposal Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
G1-4	160/145	0.0	0.0	0.4	NLAA	Small forested upland benches, over 5 miles from migrating bull trout in the N. Fork John Day River. No potential habitat.
G22-26	1,400/120	0.0	0.4	2.1	NLAA	Moderately large upland tracts, with small amounts of timber (mainly in draws). Tracts are 3.0 to over 5 miles from

						migrating bull trout habitat in the N. Fork John Day River.
G28	320/40	0.0	0.1	0.0	NLAA	Tract is >5 miles to migrating bull trout habitat on the N. Fork John Day River. Tract has steep slopes with small amounts of timber in draws.
G32-33 G35 G38B G45-47 G704	308/235	0.0	0.0	0.0	NLAA	Small forested tracts on moderately steep slopes, 0.3 to 4.5 miles from migrating bull trout habitat on the North Fork John Day River. No potential habitat
G34	80/20	0.4 (Historic)	0.4	0.2	NLAA	Tract varies from steep to nearly flat along the Middle Fork. 0.4 miles of historic bull trout habitat. Small pockets of timber, little commercial timber adjacent to River. See Map#4
G43B	40/10	0.2 (Historic)	0.2	0.2	NLAA	Tract has steep slopes with non-perennial drainage bisecting it. Small pockets of timber in the draw and along the Middle Fork John Day River. 0.2 miles historic bull trout habitat. See Map #5
G102 G104A G104B G104D	240/199	0.0	0.0	0.4	NLAA	Small upland forested parcels, moderate to steep slopes. Over 5 miles from migrating bull trout habitat on the N. Fork John Day River.
G21 G27B G29-30 G36-37 G38A G39 G41 G43-44 G48-49 G103 G104C G703-704	800/0	0.0	0.0	1.3	NLAA	Rangeland parcels 40-80 acres in size. No perennial waters. Tracts are 0.1 to over 5 miles to historic bull trout habitat on the Middle Fork and 2.5 to over 5 miles from migratory bull trout habitat on the North Fork John Day River. Grazing occur annually. Improving conditions on these tracts not likely to advance recovery of species.
Totals	**3,308/769**	**0.6 (Historic)**	**1.1**	**4.6**		

Note 1: **NE** = No Effect; **LAA** = Likely to Adversely Affect; **NLAA** = Not Likely to Adversely Affect
* Fish bearing and non fish bearing streams
**Non fish bearing

Acquisition Lands in Middle Fork John Day HUC (Currently Private)

BLM Acquisition Parcel #	**Total Acres/ Timber Acres**	**Current Bull Trout Habitat (Miles)**	**Perennial Streams* (Miles)**	**Non-Perennial Streams** * (Miles)**	**NE, LAA, NLAA,** Note 1	**Rationale**
No Acquisition lands in this Hydrologic Unit						
Totals						

Hydrologic Unit Summary

Land Exchange Tracts	**Total Acres/ Timber Acres**	**Current Bull Trout Habitat (Miles)**	**Perennial Streams* (Miles)**	**Non-Perennial Streams** * (Miles)**	**NE, LAA, NLAA,** Note 1	**Rationale**
Net Change in Hydrological Unit	-3,308/769	-0.6 (Historic)	-1.1	-4.6		

Hydrologic Unit: Upper John Day #17070201

Disposal Lands (Currently BLM)

BLM Disposal Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
G213-219 G426	1108/377	0.0	0.4	1.9	NLAA.	Moderate to steeply sloped forested tracts, 2.5 to over 5 miles from migrating bull trout habitat in the John Day River. Isolated sighting of bull trout (pre--1990) reported in Pine Creek. Portions of parcels G216-218 (280 acres) drain into Pine Creek. 0.2 miles potential bull trout habitat in Pine Creek (G218). Parcel 218 only has 7 acres of timber, which is on upper slopes away from Pine Creek. No defined channels draining into Pine Cr from G216-218. No defined channels drain into W. Fk Little Indian Cr from G219. McKinney Cr. (non-perennial stream in G219) is largely diverted for irrigation dwnstrm of G219.
G158-160 G161A,B,C	520/470	0.0	02	1.5	NLAA	Upland forested parcels, with gentle to moderately steep slopes. Tracts over 5 miles to migrating bull trout habitat in the John Day River.
G162	80/60	0.0	0.0	0.0	NLAA	Upland forested bench that drops off steeply. Reynolds Creek, 0.2 miles downslope, has spawning, rearing bull trout habitat. The entire parcel has been previouslly clearcut, leaving only a scattering of merchantable trees near the ridgeline and seedlings elsewhere. Existing roads at the top of parcel and within it would provide reasonable access to yard out timber in 40-60 years. No connectivity to occupied bull trout habitat. See Map #6
G163	160/108	0.0	0.0	0.05	NLAA	Ridgetop forested parcel that drops steeply off into a non-

						perennial tributary of Reynolds Creek, 0.7 riverine miles down, contains bull trout spawning and rearing habitat. Parcel contains 1.6 MMBF of timber. Timber would be skyline yarded. With minimal new road near ridgeline, and seasonal restrictions on harvest timing (midwinter over snow or late summer), downstream affects from surface erosion and sedimentation to Reynolds Creek would be immeasurable See Map #6
G156-157	280/121	0.0	0.0	1.5	NLAA	Forested tracts with moderate to steep slopes. Over 5 miles to migrating bull trout habitat in the John Day River
G155 G164-167 G168A,B G279 G281-283 G298	1,090/0	0.0	0.3	2.85	NLAA	Rangeland parcels. A cluster of springs are located on a steep hillside in parcel 168B. 0.3 miles of Grub Creek (anadromous habitat flows through parcel G167. Improving conditions on thes tracts not likely to advance recovery of species.
Totals	**3,238/1,136**	**0.0**	**0.9**	**7.8**		

Note 1: **NE** = No Effect; **LAA** = Likely to Adversely Affect; **NLAA** = Not Likely to Adversely Affect
* Fish bearing and non fish bearing streams
**Non fish bearing

Acquisition Lands in the Upper John Day HUC (Currently Private)

BLM Acquisition Parcel #	**Total Acres/ Timber Acres**	**Current Bull Trout Habitat (Miles)**	**Perennial Streams* (Miles)**	**Non-Perennial Streams** * (Miles)**	**NE, LAA, NLAA,** Note 1	**Rationale**
Acq. Area #5: Dixie Creek drainage	200/200	0.0	1.0	0.0	NLAA	0.2 miles on Comer Creek, anadromous habitat. Potential bull trou habitat 0.5 miles downstream in Dixie Creek (isolated sighting of bull trout reported in Dixie Creek prior to 1990).
Totals	**200/200**	**0.0**	**1.0**	**0.0**		

Hydrologic Unit Summary

Land Exchange Tracts	**Total Acres/ Timber Acres**	**Current Bull Trout Habitat (Miles)**	**Perennial Streams* (Miles)**	**Non-Perennial Streams** * (Miles)**	**NE, LAA, NLAA,** Note 1	**Rationale**
Net Change in Hydrological Unit	-3,028/936	0.0	+0.1	-7.8		

Hydrologic Unit: Umatilla River #17070103

Disposal Lands (Currently BLM)

BLM Disposal Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
UM62	40/37	0.0	0.0	0.3	NLAA	Upland forested tract with moderately steep slopes. 4.4 miles from historic, and over 5 miles from migrating bull trout habitat in Meacham Creek.
UM48	80/74	0.0	0.0	0.0	NLAA	Upland forested tract with moderately steep slopes. Over 5 miles from historic (probably extirpated) bull trout habitat in the Umatilla River. Birch Creek drainage.
UM9-11 UM-13 M-12,13 M15	360/198	0.0	0.05	0.1	NLAA	Small upland forested parcels on gentle slopes. Over 5 miles from historic (probably extirpated) bull trout habitat in the Umatilla River. Butter Creek drainage.
UM23-28	300/0	0.0	0.0	0.0	NLAA	Rangeland tracts. Lower Umatilla Basin near Umatilla.
M14 M24 UM17-22	680/0	0.0	0.0	0.4	NLAA	Small rangeland tracts. Butter Creek drainage. Over 5 miles from historic bull trout habitat in Umatilla River.
UM47 UM64 UM72 UM74 UM77-79	270/0	0.0	0.0	0.6	NLAA	Small rangeland tracts in Birch Creek and Mckay Creek drainages Over 5 miles from historic bull trout habitat in the Umatilla River.
UM39	160/0	0.0	0.0	0.0	NLAA	Rangeland tract 0.1 mile from spawning, rearing, and resident adult bull trout habitat on the Umatilla River. Steep basalt formation canyon slopes. Little grazing occurs, as tract is steep. Paved road between tract and the Umatilla River
Totals	**1,890/309**	**0.0**	**0.05**	**1.4**		

Note 1: **NE** = No Effect; **LAA** = Likely to Adversely Affect; **NLAA** = Not Likely to Adversely Affect
* Fish bearing and non fish bearing streams
**Non fish bearing

Acquisition Lands in the Umatilla River HUC (Currently Private)

BLM Acquisition Parcel #	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
No Acquisition lands in this Hydrologic Unit						
Totals						

Hydrologic Unit Summary

Land Exchange Tracts	Total Acres/ Timber Acres	Current Bull Trout Habitat (Miles)	Perennial Streams* (Miles)	Non-Perennial Streams** (Miles)	NE, LAA, NLAA, Note 1	Rationale
Net Change in Hydrological Unit	-1,890/309	0.0	-0.05	-1.4		

Analysis of Potential Indirect Effects of Proposal on Bull Trout

Water Temperature

Water temperatures consistently influence bull trout distribution, abundance, and spawning success. Unsuitable temperatures can lead to diseases outbreaks in migrating and spawning fish, altered timing of migration, and accelerated or retarded maturation. Most stocks of salmonids have evolved with the temperature patterns of the streams they use for rearing, migration, and spawning, and deviations from the normal pattern could adversely affect their survival (Bjornn and Reiser, 1991). Water temperatures in excess of about 15 C are thought to limit bull trout distribution, and optimum temperatures for rearing are about 7 to 8 C (Reiman and McIntyre, 1993).

Seasonal and temporal effects on water temperatures are out of human control. Stream temperatures can be altered by removal of streambank and floodplain vegetation, withdrawal and surface return of water for agriculture irrigation, and channelization

(Bjornn and Reiser, 1991). If riparian canopy cover or vegetation is removed, and the stream is exposed to direct sunlight, water temperatures can be expected to increase more in summer than before the shade was removed.

Forested BLM parcels proposed for exchange into private ownership are likely to be harvested within 10 years to the extent allowed under State Forestry Practices Act regulations. State harvest regulations require less protection of stream corridors than federal standards. Perennial streams within forested parcels could be effected by removal of trees that currently provide shade to them. Stream segments that may be impacted from riparian vegetation removal during timber harvesting are short (range from 0.05 to 0.4 miles in length, and average 0.2 miles each on eleven tracts) and usually over 5 stream miles from migrating bull trout habitat. Loss of stream shade on such small stream segments is unlikely to alter stream temperatures significantly enough to impact downstream bull trout habitat. Two partially forested parcels contain 0.4 and 0.2 miles of historic bull trout habitat on the Middle Fork John Day River. Because timber volume is low on the two parcels, harvest is unlikely. And if harvested, no measurable impact to stream temperatures is anticipated because of the low canopy densities of the pine stands next to the river.

Livestock grazing is expected to continue on most disposal parcels. Livestock grazing can effect stream temperatures through removal of riparian vegetation, particularly on very small to medium sized streams (stream orders 1-5). The ability of plants to control stream temperature varies with their morphology. Grass crowns provide modest overhanging cover but grasses generally are too short to keep most solar radiation from reaching the water, except along very small streams (orders 1 and 2). The larger the stream, the higher the streamside vegetation must be to effectively intercept the sun's rays over water. In small to medium-size streams (orders 3-5) brush is sufficient to moderate water temperature but grasses and forbs have little effect (Platts, 1991). On sixth and seventh-order streams, only trees provide effective shading, and on still larger streams, vegetation has little moderating effect on stream temperature. Perennial streams on disposal tracts are typically very small to medium sized (stream orders 1-5).

Because of the topography of disposal tracts, and far proximity to perennial water sources, it is unlikely that any tracts would be irrigated from surface flows for agricultural production when managed by private owners. Consequently, it is unlikely that any new water rights would be filed (from streams upstream of bull trout habitat) to irrigate these parcels. Water temperature changes from new irrigation withdrawals (for disposal tracts) is unlikely to impact downstream habitats.

Suspended and Deposited Sediment

It is difficult to predict how much a particular change in substrate composition will affect survival for any salmonid. Some substrates are more likely to accumulate fine

sediments (less than 6.35 millimeters) than others, and some populations probably are more sensitive to substrate composition changes than others. Land management activities that cause increases in fine sedimentation to bull trout spawning and rearing habitat will impact the current populations of the species more than when the activity only affects migratory or historic habitat. In the absence of detailed local information on population habitat dynamics, any increase in the proportion of fines in substrates should be considered a risk to productivity of an environment and to the persistence of associated bull trout populations (Reiman and McIntyre, 1993).

Perennial stream segments on forested disposal tracts are short (range from 0.05 to 0.4 miles in length, and average 0.18 miles each on nine tracts) and usually over 5 stream miles from migrating bull trout habitat. The likelihood that harvest activities on these tracts will cause measurable increases of sedimentation to downstream migratory bull trout habitat is very low. Only one forested tract (G163 which has no perennial water) with commercial timber volume lies upstream of bull trout spawning and rearing habitat. Harvest restrictions in the logging plan for this tract (late summer or over snow harvest, minimal road construction near the ridgeline) will protect against any measurable off site sediment increases being delivered to Reynolds Creek.

Livestock grazing can effect the riparian environment by changing, reducing, or eliminating vegetation, and by actually eliminating riparian habitat through channel widening, channel aggrading, or lowering of the water table (Platts, 1991). Generally, in grazed areas, stream channels contain more fine sediment, streambanks are less stable, banks are less undercut, and summer water temperatures are higher than streams in ungrazed areas (Platts, 1991). Heavy grazing along streams leaves little residual bank vegetation, which is critical for trapping sediments and spreading floodwater velocities. Livestock may trample streambanks to bare soil. This increases streambank erosion and sediment delivery to streams during high flows.

Approximately 2.4 miles of disposal perennial stream miles (in 9 parcels) within the range of bull trout drain into migratory bull trout habitat. Of the 2.4 miles, 0.6 stream miles is historic habitat on the Middle Fork John Day (G43B, G34). Historically these tracts have been used annually for livestock grazing, and this use is presumed to continue after they are exchanged. The likelihood that grazing activities on these tracts will cause measurable increases of sedimentation or water temperatures to downstream migratory bull trout habitat is very low. These tracts contain short stream segments (0.05 to 0.4 miles) which are well away (most are over 5 miles) from migratory bull trout habitat. A concentrated effort to improve conditions on these tracts is not likely to advance recovery of the species.

Cover

Bull trout usually associate with complex forms of cover and with pools, and prefer habitats that have in-channel wood, substrates with ample interstitial spaces, deep pools, or undercut banks. Land management activities (timber harvest, livestock grazing) that remove overhead cover, reduce future in-channel wood recruitment, break down stream banks, or denude streambanks of vegetation degrade habitat conditions for bull trout. The proposed action will not impact cover on any stream segment containing spawning/rearing or migrating bull trout habitat. No disposal parcels contain spawning/rearing or migratory habitat.

Cumulative Effects

Forest Health and Timber Harvesting

Forests east of the Cascade Mountains in Oregon are suffering from extensive insect and disease epidemics that are causing damage to forest resources and creating critically high fuel loading levels. Suppression of natural wildfires in forests in this century has contributed to an overall decline in forest health. Multiple pest attacks, combined with drought conditions have caused increased tree mortality. Many resource values are at risk when forest health conditions are in decline. Conditions have worsened considerably since the drought years of mid 1980's.

It is recognized that the declining forest health in the Blue Mountains is a serious problem needing prompt attention. Preventative measures (thinning, salvage operations) are needed to improve the health on federal forestlands and reduce future timber resource losses. The BLM is a minor manager of forestlands in the two basins, but is active in thinning overstocked forest stands to favor re-establishment of pine dominated/fire dependant ecosystems.

Since the early 1990's, timber sales on federal lands in eastern Oregon have declined significantly, in response to increased protection for fisheries habitats (Pacfish, Infish), old growth forest stands, and because of increased litigation by environmental protection groups. Reduction of public timber being offered on the market has reduced lumber supplies, and thus increases in the price of lumber occurred as demand remained high. Higher lumber prices has precipitated many private timberland owners to cut more of their lands to meet market demands. Generally, timber harvest on private lands results in greater environmental impacts because State Forestry regulations are much less restrictive than Federal requirements, which must comply with National Environmental Protection Act, Federal Land Policy Management Act, Endangered Species Act, Pacfish, and soon guidelines provided by the Interior Columbia Basin Ecosystem Management Project.

Increased timber harvesting on private lands has increased road densities, caused more soil exposure, and ultimately increased sedimentation to streams in all hydrologic units.

Degradation of riparian habitat has occurred on public and private lands in all hydrologic units due to timber harvest and road construction in or near riparian habitats. Increased levels of timber harvesting on private lands within the analysis area will likely continue as long as lumber prices high. Logging on private lands is primarily influenced by maximizing economic returns, and to a much lesser extent, improving forest health, and protecting and enhancing wildlife habitats.

Roads

Forest and rangeland roads can cause serious degradation of salmonid habitats in streams, and rarely can roads be built that have no negative effect on streams (Furniss et al. 1991). Roads modify natural drainage networks and accelerate erosion processes. These changes can alter physical processes in stream, leading to changes in streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition, and stability of slopes adjacent to streams (Furniss et al. 1991).

Construction of a road network can lead to greatly accelerated erosion rates in a watershed, and increased sedimentation in streams following road construction can be significant and long lasting (Furniss et al. 1991). Sediment entering streams is delivered chiefly by mass soil movements and surface erosion processes. Failure of stream crossings, diversions of streams by roads, washout of road fills, and accelerated scour at culvert outlets are also important sources of sedimentation in streams within roaded watersheds (Furniss et al. 1991).

Extensive road networks on forest and rangelands have been constructed in the analysis area in the last 120 years. Most streams on public and private lands, outside of designated Wilderness Areas, have roads adjacent to them. Often these roads were built inside the active floodplain, encroaching on the streams ability to move laterally. Further degradation occurs from hard structure bank armoring after road segments are washed out by lateral stream migrations. Riparian vegetation often is replaced by road surface or sidecast materials, which increases warming of the water and reduces potential large wood recruitment.

To minimize or prevent damage to stream habitats from road construction and maintenance, keep road disturbances as far from streams as possible, and provide buffers of relatively undisturbed land between roads and streams. Avoid midslope road locations in favor of higher, flatter areas. Ridgetop roads usually have the least effect on streams (Furniss et al. 1991).

Since the late 1980's, there has been increasing timber harvest on private lands in the basins in response to favorable lumber prices and declining federal timber volume available. This has led to increased road building activities on private lands. There is little control on road construction/maintenance or use on private lands. Under State

Forestry Practices Act, landowners are encouraged to minimize road construction to meet their harvest objectives. In general road densities on private forest lands usually exceed what is considered acceptable on Federal forestlands. As long as timber prices create favorable markets, heavy timber harvesting from private lands will continue. New road construction on private lands is expected to continue contributing sediment to bull trout habitats in the basin.

Livestock Grazing

Livestock grazing is widespread across the analysis area on private and public lands. Impacts from grazing on riparian habitat certainly vary from individual operators/lessees, but all have impacts. The cumulative impact of these operations, although not quantified are probably significant.

Livestock commonly congregate along stream corridors where water, forage and shade are initially abundant in the season. When improperly managed, concentrations of livestock along waterways can destroy streamside vegetation, cause soil compaction, accelerate erosion and breakdown of streambanks, and impact water quality. Accelerated erosion and unstable streambanks increase delivery and deposition of fine sediments in spawning and rearing habitats of bull trout and other salmonids.

The cumulative impact of livestock grazing activities in riparian habitats continues to be a limiting factor to fish production on private lands, and to a lesser degree on public lands (Forest Service). BLM does not have any grazing lands that are adjacent to bull trout spawning/rearing habitat within the analysis area. No statutory regulations exist that provide protection for riparian habitat within private lands managed for non-timber use. Consequently, grazing practices along streams is entirely left to the discretion of the private landowner, no matter how degraded the habitat becomes after overgrazing.

Recreational Activities

Recreation opportunities within the analysis area includes rafting, fishing, hunting, camping, picnicking, scenic viewing, horseback riding/camping, hiking, bicycling, swimming, ATV and motorcycle riding, and wilderness camping. The National Forests host a wide range of outdoor recreation opportunities, more limited opportunities are available on BLM lands, and private lands offer little to the general public, as most ranches are off limits to everyone except invited guests.

Developed recreation opportunities are found in campgrounds, picnic areas, boat launching sites, resorts, recreation homes, and other constructed facilities. Trampling of vegetation and compaction of soils occur at heavily used recreation sites. Facilities near

water tend to contribute to bacterial pollution. Campgrounds near bull trout spawning/rearing streams may increase harassment or illegal take of individuals.

Dispersed recreation opportunities occur on most National Forest and BLM lands and some private lands. Impacts from dispersed recreation include human waste problems near water, littering, trampling of riparian vegetation, and harassment or illegal take of fish.

Float boating/rafting is a popular activity that occurs on the North Fork John Day River, and there appears to be increasing numbers of river users each year. Floating conditions on the river are best between April and June, when flows are high enough. Incidental power boat activity occurs as well.

Steelhead fishing in the John Day Basin is done mostly from late fall to mid April, and likely is associated with float/drift and power boating on the North Fork John Day. Acquiring large blocks of land along the North Fork may increase visitors using the area and anglers floating the river. Bull trout are caught infrequently by steelhead anglers on the North Fork during winter and spring seasons. Bull trout use the North Fork as winter migrating habitat down to about Wall Creek (RM 22.5). More steelhead fishing on the North Fork (because of better access and camping opportunities) may result in higher incidental catch and hooking mortalities on adult migrating bull trout. All bull trout caught by anglers must be released unharmed, according to State of Oregon game laws.

Mining

Cumulative effects of mining activities on bull trout habitat are largely the result of past habitat disturbances in the upper North, Middle and Mainstem John Day reaches that are slowly recovering towards more natural conditions. Extensive placer and dredge mining in the 1800's and early 1900's for gold essentially turned stream reaches in the upper John Day Basin upside down. These operations had severe impacts to fish habitat as streams were diverted, dredged, channelized, and stripped of vegetative cover. Mining claims and instream disturbances occurred on private and public lands alike. The upper reaches of the North Fork (primarily on National Forest) was heavily impacted from placer mining, leaving miles of habitat impacted from large dredge piles that prevented natural floodplain function. Some placer mining claims remain active today, although at a much smaller scale however. Recreational miners/gold panners contribute small local impacts in the basin, mainly on National Forest lands and limited amounts on BLM.

The Umatilla Basin has had relatively little mining activity, and thus little impact to bull trout habitat from mining activities. Aggregate is likely the most common surface

mining activity in the basin. Excavation of aggregate pits could, if adjacent to streams cause sedimentation and loss of riparian vegetation.

Irrigation Diversions

Current surface water diversions for irrigating pasture and alfalfa fields in the analysis area certainly impact bull trout rearing habitat. Decreased instream water flows diminishes available habitat to be used by fish, and causes streams to warm because flow is reduced. Return surface flows to streams are often warmed considerably, and may deliver agriculture pollutants which degrade water quality. Certainly diversion for irrigation purposes on private lands will continue in the basins. It is unknown if any new water diversion rights within bull trout habitat will be granted in the forseeable future. Many streams in the basins are already over appropriated.

Determination

Within the analysis area, 2.4 miles of perennial streams that drain into migrating and historic bull trout habitat will be transferred from Federal management to private landowners. In exchange, the BLM would acquire from private entities 12.3 miles of migrating bull trout habitat on the North Fork John Day River and 52.3 miles of perennial streams that drain into and effect migratory bull trout habitat on the North Fork John Day.

BLM finds upon completion of this Biological Assessment that disposal of 119 tracts (9,635 acres) within the range of bull trout in the John Day and Umatilla River basins may effect bull trout and it's habitat, but the action is "Not Likely to Adversely Affect" the species.

BLM also finds that acquisition of approximately 47,000 acres within the range of bull trout distribution in the John Day may effect bull trout and it's habitat. Acquiring 12.3 miles of migratory bull trout habitat on the North Fork John Day River and an additional 52.3 miles of perennial streams within blocked land parcels that drain into migratory bull trout habitat is expected to benefit the species over the long term with the application of a wide array of restoration management practices.

The BLM requests concurrence from the Fish and Wildlife Service on this Biological Assessment of the proposed land exchange of these 119 tracts (9,635 acres) of disposal lands and over 47,000 acres of acquistion lands.

Rationale for Determination

Disposal Lands

In the John Day Basin, 87 disposal tracts (7,508 acres) within the analysis drain into migratory bull trout habitat. Most of these tracts are upland forested or rangeland parcels that are well away from (over 5 riverine miles) bull trout habitat and contain little or no perennial stream connectivity (2.35 miles on 11 tracts) to migratory bull trout habitat.

Two parcels, G162 and G163 (240 acres total) contain forested uplands that drain into bull trout spawning/rearing habitat. G162 (80 acres) has been harvested recently, and likely will not be ready for harvest for over 60 years. It has no stream channel connectivity to bull trout habitat, and lies 0.2 miles upslope of Reynolds Creek. G163 (160 acres) contains about 108 acres of commercial forestlands economically suitable for harvest. About 0.1 miles of non-perennial stream channel corners through the parcel, and then drains to Reynolds Creek 0.7 miles downstream. Because of the tract configuration and topography, future timber harvest operations would utilize cable yarding systems, which is less damaging to soils and vegetation than tractor yarding. No effect to stream temperatures or instream cover is antipated to Reynolds Creek since this is an upland tract with no perennial streams within it. Immeasurable or no impact to downstream water quality is anticipated due to harvest restrictions in the logging plan of this parcel (See Appendix D: Attachment #1). The parcel would be logged during winter (over snow) or late summer (dry) to minimize soil disturbance. Road construction would be limited to about 0.4 miles on upper mid-slope. Measurable increases in sediment delivery to Reynolds Creek are unlikely to occur, depending on ground disturbance levels adjacent to the non-perennial stream channel in G163.

In the Umatilla River Basin, 29 parcels (1,690 acres) drain into the lower reaches of the river below the Umatilla Indian Reservation boundary. This is historic bull trout habitat, but the species is probably extinct in this portion of the basin. About 0.05 mile of perennial stream on UM10 is the only connectivity to the lower Umatilla River in these tracts.

One 40 acre parcel (UM62) drains into migratory bull trout habitat in Meacham Creek. It is an upland forested parcel that is well away from occupied habitat (over 5 riverine miles), with no perennial stream connectivity to bull trout habitat.

A 200 acre rangeland parcel (UM39) lies within 0.1 mile of resident bull trout habitat in the Umatilla River, 2.0 miles upstream of the Umatilla Indian Reservation boundary. It contains no perennial streams, and a paved road lies between the parcel and the river. Because of the parcel's steep topography, it is not suitable for livestock grazing or development. No off site impacts from the parcel are anticipated that may effect habitat in the Umatilla River

Acquistion Lands

Lands to be acquired within the range of bull trout include 47,300 acres in the North Fork John Day drainage. Approximately 12.3 miles of migratory bull trout habitat in the North Fork John Day River, and 52.3 miles of perennial streams that drain into migratory bull trout habitat can be acquired. Acquisition lands are largely blocked, fairly contiguous, and border over 20 miles of National Forest.

Acquisition of 12.3 miles of migrating bull trout habitat on the North Fork John Day, and over 47,000 acres of uplands, and over 50 miles of tributary streams that drain into the North Fork will benefit bull trout and their habitat when management strategies are implemented that facilitate riparian improvement. PAC-FISH riparian habitat conservation area buffer guidelines would be applied to all acquisition lands. Federal riparian buffers afford greater protection to streams than State Forestry Practices Act standards. Implementing conservative levels of livestock grazing (significantly less than is occuring now as private land) and designing rotation grazing systems that sustain native vegetation on riparian and upland habitats will allow riparian and upland vegetation to improve and re-establish in areas that have been damaged.

As these lands are connected and adjacent to National Forest lands, opportunities to effectively manage lands and resources on a watershed scale can be realized. Headwater lands and streams on National Forest lands (North Fork drainage) contain the largest concentrations of bull trout and suitable habitat in the basin.

Bald Eagle Analysis

Description of Project Area

Bald eagle wintering habitat within the analysis area in the John Day Basin mainly occurs along the corridor of the main stem John Day River, the North Fork, Middle Fork, and South Fork, and the lower reaches of major tributaries. The habitat adjacent to the North Fork consist of mainly the coniferous forest type, with ponderosa pine and Douglas fir being the dominant tree species. The Middle Fork has coniferous forest as well as wet meadow/deciduous type. The floodplain of the Main Stem is lower gradient than the other forks and much of it has been converted to

pasture. Cottonwoods are common in riparian areas at the lower elevations. The South Fork has a mix of cottonwoods, coniferous forest and juniper woodlands in the lower reaches, and coniferous forest / developed pastureland in the upper reaches.

There are several tracts included in phase I along the Columbia and Umatilla Rivers. The Columbia River tracts are composed of Columbia basin shrubb-steppe habitat that is dominated by basin big sagebrush, and annual grasses. The Umatilla River tracts are composed of rangeland habitat dominated by basin big sagebrush and annual grasses.

Refer to the NOALE EIS Affected Environment Chapter 3 (John Day and Umatilla Basins Sections) for general information on vegetation, soils, geology, geography, hydrology, and wildlife/fisheries habitat within each basin.

Description and Distribution of Species

Bald eagle habitat has decreased in both quantity and quality since pre-settlement times. Land uses such as timber harvesting, road construction, livestock grazing, and mining have reduced many of the large trees that eagles use for roosting, perching, and in some cases nesting. Natural events such as insect infestations and epidemics, large catastrophic fires, and flooding have also contributed to the decline of bald eagle habitat.

The bald eagle is the only North American representative of the fish or sea eagles (Grossman and Hamlet 1964). Occurring throughout most of North America, the species is primarily associated with coastal waters, inland lakes, and rivers. Migrating and wintering eagles are found in most states while large breeding populations in the contiguous 48 states are found in the Great Lake states, Florida, the Pacific Northwest, Chesapeake Bay**,** and Maine (Isaacs et al. 1993).

Historic and present levels of distribution of the bald eagle are essentially the same. However, the numbers of eagles in the continental U.S. decreased until the late 1970's. In response to that decline, the bald eagle was declared endangered in 43 of the 48 contiguous states and threatened in Oregon, Washington, Michigan, Minnesota, and Wisconsin (U.S. Dept. Inter. 1978). Major reasons for the decline included shooting, poisoning, pesticide contamination, and human activities resulting in habitat alterations and possible disturbance to nesting and wintering birds (U.S. Fish and Wildl. Serv. 1986)**.**

Breeding populations of bald eagles in Oregon and Washington are still widely distributed, but historical information suggests significant declines and changes in distribution (U.S. Fish and Wildl. Serv. 1986). Recently most nesting populations in the lower 48 states have increased (Green 1985, Kjos 1992). This probably has been due to habitat protection and enhancement, reduced persecution, and recovery from the effects of DDT (Isaacs et al. 1993). Breeding success in Oregon during recent years also appears to be steadily increasing. In a report by Isaacs and Anthony (1996), in 1979 of 95 breeding territories surveyed, 73 were occupied during the breeding season. In 1996, 284 breeding territories were surveyed and 266 were occupied during the breeding season.

Bald eagles that nest in harsh climates migrate to areas with milder winters during the nonbreeding season. Most birds that nest in Oregon, probably winter in the vicinity of their nests. Some move relatively short distances to lower elevations or inland food sources (U.S. Fish and Wildl. Serv. 1986). Nests in Oregon are usually located in uneven-aged (multi-storied) coniferous stands with old growth components (Anthony et al. 1982) and are near water bodies that support and adequate food source. Factors such as relative tree height, diameter, species, form, position on the surrounding topography, distance from water, and distance from disturbance also appear to influence nest site selection (Grubb 1976, Lehman et al. 1980, Anthony and Isaaacs 1981).

Wintering habitat depends on a variety of factors, and proximity to a food source is probably the most important factor influencing perch selection by bald eagles. Most tree perches selected provide a good view of the surrounding area (Servheen 1975, Stalmaster 1976), and eagles tend to use the highest perch sites available (Stalmaster 1976).

Habitat requirements for communal roosting are different from those for diurnal perching. Communal roosts are invariably near a rich food resource and in forest stands that are uneven-aged and have at least a remnant of the old-growth component (Anthony et al. 1982). Most communal winter roosts used by bald eagles in Oregon offer considerably more protection from the weather than diurnal habitat (U.S. Fish and Wild. Serv. 1986).

Historical observations of bald eagles during late-fall, winter, and early-spring along the John Day River indicated that there were substantial numbers of bald eagles present from January through March and that communal roosting areas existed (Issacs et al. 1993). In a study by Isaacs et al. (1993) it was found that night roost trees were generally large trees (mature and over-mature individuals), which were close to feeding areas and isolated from human activities. Their observations suggest that roost tree characteristics were similar to those reported for bald eagle roosts in similar forest types in the Pacific Northwest. Isaacs et al. (1993) believe that roosts used by smaller numbers of eagles, often fewer than needed to fit the communal definition, were important.

Inventories and Surveys

The public lands identified for exchange on the Prineville District were surveyed by field crews during the 1995, 1996, and 1997 field seasons. Wildlife crews (one crew of two individuals) spent approximately 16 days a month from late April through late August surveying the project area. The total number of man-hours spent surveying and doing work related to the inventory was approximately 4,000 hours per year for a total of 12,000 man-hours. Inventories were focused on habitat descriptions, sensitive species observations, and any special habitat uses or features (nests, roosts, etc.). Inventory on all tracts for phase one was completed in 1997.

All tracts identified for phase 1 in the Vale District were also surveyed by Matt Kniesel, wildlife biologist for the Baker Resource Area. The total number of hours spent surveying these tracts is undetermined at this time as Matt retired and was unavailble for comment at the time this section was written.

Personal contact with Frank Isaacs and Isaacs et al. (1993), which described the habits of bald eagles wintering along the upper John Day River, were also vital information sources for determining roost locations and habitat use in the project area.

Analysis of Effects

Forestland / Nesting, Roosting, and Perching Habitat

Since the early 1990's, timber sales on federal lands in eastern Oregon have declined significantly, in response to increased protection for fisheries habitats (Pacfish, Infish) and old growth forest stands, and because of increased litigation by environmental protection groups. Reduction of public timber being offered on the market has reduced lumber supplies, and thus increases in the price of lumber occurred as demand remained high. Higher lumber prices has precipitated many private timberland owners to cut more of their lands to meet market demands. Generally, timber harvest on private lands results in greater environmental impacts because State Forestry regulations are much less restrictive than Federal requirements, which must comply with National Environmental Protection Act, Federal Land Policy Management Act, Endangered Species Act, Pacfish, and soon guidelines provided by the Interior Columbia Basin Ecosystem Management Project.

The forestland habitat on acquisition lands was not inventoried by BLM wildlife personnel so the best data available was used in determining the forestland that could provide nesting, roosting, and perching habitat. This data is based on cruise information obtained from private cruisers contracted by Clearwater Land Exchange and from field check cruises by BLM foresters for data verification. From the cruise data, the data considered the best available for making quality of habitat determinations was those acres considered as commercial forestlands. Commercial forestlands are forestlands capable of producing merchantable timber at rates of at least 20 cubic feet per acre per year and is currently or prospectively accessible and not withdrawn from such use. By using cruise information on commercial forestlands a determination can be made of the size of trees that are found on both acquisition and disposal lands. By doing this an analytical assumption can be made that if a tract is considered commercial forestland and has large trees, it potentially could be used as bald eagle habitat. Commercial trees in the North Fork John Day River acquisition area have a diameter (DBH) range of 7-49 inches and an average diameter of 12.5 inches. In order to get an estimate on how many acres of forestland in the acquisition area occurs within the six mile corridor, an analytical assumption will be made. There are 51,840 acres in potential acquisition areas, of which there are 11,994 acres of commercial forestlands. Therefore it can be assumed that approximately 23% (11,994/51,840) of the acquisition land has some type of commercial timber. There are approximately 36,460 acres of acquisition area within the 6 mile corridor. If 36,460 acres is multiplied by 23% an analytical assumption can be made that approximatley 8,427 acres of commercial forestland occurs within the 6 mile corridor on lands to be acquired.
There are 876 acres of commercial forest on 29 tracts considered for exchange that are currently in BLM ownership within a six mile corridor. It is assumed that these commercial forest lands will be harvested within 10 years and will be harvested under the State Forestry Practices Act

rules and guidelines. The harvesting of these tracts will, more than likely, reduce the large tree component of these mixed conifer stands. The larger trees on these tracts could potentially be used for nesting, roosting, and/or perching by bald eagles. When and if these stands are harvested, some potential to provide habitat would be lost.

The BLM has determined that approximately 23,962 acres of disposal land identified for exchange (182 parcels) are within three miles of major river / stream tributaries, constituting a six mile corridor. Of this total, 144 parcels contain 20,097 acres of rangeland habitat (sagebrush/grassland, juniper/sagebrush/ grassland) and 38 parcels contain 3,865 acres of a combination of rangeland/forestland habitat. The latter group of parcels (39 parcels; 3,865 acres), analyzed in more detail shows that there are 29 of the 38 that have commercial timber on 876 acres (Appendix A; Tables A-1 and A-2).

In potential acquisition areas for Phase I approximately 36,460 acres are within a six mile corridor of major rivers / streams in known bald eagle wintering habitat. Of this total, approximately 32,140 acres occurs on the North Fork of the John Day River (JDR) and 4,320 acres occurs on the South Fork JDR.

As a result of the proposed action no known parcels currently in public ownership with bald eagle roosts or nests will be exchanged. One known bald eagle roost was initially identified on a parcel of public land considered for disposal. The roost is on a parcel near Bear Creek at T12S R33E Sec. 30 SE¼, and was dropped from the exchange because of the roost. Three roost sites that are currently in private ownership will potentially be acquired. There are an additional 12 roost sites that are currently in BLM ownership on lands that are to be retained that are near private land that would be acquired. Further blocking up of habitat in these areas, as would be done in the proposed action, could prove beneficial to this species in future management (Appendix C. Table C-1).

Determination

The BLM finds upon the completion of this Biological Assessment that all of the parcels with rangeland habitat, 20,097 acres on 144 parcels, within a six mile corridor of major rivers / streams have a "No Effect" determination on the bald eagle or bald eagle habitat (Appendix A. Table A-1). These tracts have virtually no habitat to support nesting and roosting bald eagles, and have low potential to offer perching habitat for foraging birds. Management of these tracts is not going to change significantly after land is transferred to private ownership.

The BLM finds upon the completion of this BA that all of the parcels that have forestland with or without commercial timber, 3,865 acres on 38 parcels, within a six mile corridor of major rivers / streams have a " May Affect, Not Likely to Adversely Affect" determination on the bald eagle or bald eagle habitat (Appendix A. Table A-2). The BLM acknowledges that the tracts with commercial timber will more than likely be harvested within ten years, and the tracts with younger forest stands have the potential to provide habitat for bald eagle life processes in the future. These tracts could provide diurnal perching habitat for foraging birds, however there are

no tracts with documented bald eagle nest or roost sites. This is substantiated by surveys and inventories conducted by the BLM and Isaacs et al. (1993).

The private lands along the North Fork and the South Fork of the John Day Rivers that have been identified for exchange to the BLM contain some of the most important currently occupied bald eagle wintering habitat in the John Day Basin. The BLM has also determined that actions associated with this project have a "May Affect Not Likely to Adversely Affect" determination for bald eagles or their habitat on these private lands. Having these lands in a larger, more contiguous block would prove beneficial to bald eagles as much more land within a six mile corridor along the North and South Forks of the John Day River would be acquired than would be exchanged. Approximately 23,962 acres (3,865 acres of forestland) within the six mile corridor would be exchanged out of public ownership, and approximately 36,460 acres (8,427 acres of forestland) within a six mile corridor would be put in public ownership. This significantly increases the number of acres in public ownership that could be used by the species for nesting, roosting, and foraging in the John Day Basin.

It is concluded that there would be a net benefit to the bald eagle and its habitat as a result of this transaction. Three bald eagle roost sites would also be transferred to public ownership.

The BLM requests that the U.S. Fish and Wildlife Service review and concur with this Biological Assessment for the Northeast Oregon Assembled Land Exchange.

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Table D-1. Potential Disposal Lands Containing Commercial Timber, And Proximity To Salmonid Fish Habitat (bull trout, steelhead/redband trout)					
Parcel#, Sub-basin	**Legal Description**	**Parcel Size/ Acres of Commercial Timber**	**Non Fish-Bearing Stream Channel Miles**	**Riverine miles to (*or Miles Of*) Fish Habitat from (or in) Parcel**	
				Bull Trout	Steelhead or Redband
John Day Basin - Grant County					
T. 7 S., R 29 E.					
G5[NF]	Sec. 14,15	120/59	0.3-NP	1.3 to MBH	1.3 to AH
T. 7 S., R. 30 E.					
G4[MF]	Sec. 15	40/33	0.3-NP	>5 to MBH	0.8 to AH
G2[MF]	Sec. 23	40/40		>5 to MBH	3.0 to AH
G3[MF]	Sec. 23	40/40	0.1-NP	>5 to MBH	1.2 to AH
G1[MF]	Sec. 24	40/32		>5 to MBH	2.2 to AH
T. 8 S., R. 27 E.					
G8[NF]	Secs. 14 and 15	160/44			3.5 to AH
G9[NF]	Sec. 15	80/5			4.5 to AH
T. 8 S., R. 28 E.					
G16[NF]	Sec. 22	40/5			1.4 to AH
G22[MF]	Secs. 22 and 23	160/4		>5 to MBH	3.0 to AH
G23[MF]	Sec. 24	120/5		>5 to MBH	2.2 to AH
G24[MF]	Secs. 11,12, and 14	680/32	1.2-NP	3.0 to MBH	1.0 to AH
G25[MF]	Sec. 7	360/59	0.6-NP, .4P	3.0 to MBH	1.0 to AH
G26[MF]	Sec. 18	40/15	0.3-NP	4.5 to MBH	1.5 to AH
G28[MF]	Sec. 22,27	320/40		>5 to MBH	*0.1 AH*
T. 8 S., R. 30 E.					
G32[MF]	Sec. 12	40/40		2.5 to HBH	1.1 to AH
G33[MF]	Sec. 14	40/40		1.0 to HBH	0.2 to AH
G34[MF]	Sec. 24	80/20	0.2-NP	***0.4 HBH***	*0.4 AH*
T. 8 S., R.31 E.					
G704	Sec. 23	40/12		>5 to MBH	2.0 to AH
G35[MF]	Sec. 30	28/12		0.3 to HBH	0.3 to AH
T. 9 S., R. 26 E.					
G83B[NF]	Sec. 27	40/30	0.1-NP		0.5 to AH
T. 9 S., R. 28 E.					
G54[NF]	Sec. 9	40/11			1.5 to AH
G53[NF]	Sec. 22	120/60	0.5-NP		2.8 to AH
T. 9 S., R. 31 E.					
G47[MF]	Sec. 8	40/40		1.5 to HBH	1.5 to AH

MBH - Migratory Bull Trout Habitat *HBH - Historic Bull Trout Habitat*
BSH - Bull Trout Spawning, Rearing, or Resident Adult Habitat *RH - Resident Fish Habitat*
AH - Anadromous/Resident Habitat (steelhead/redband trout) *NP - Non Perennial Stream*
P - Perennial Stream (Non Fish-Bearing) *BSC - Beaver/South Fork Crooked #17070303*
UJD - Upper John Day Subbasin #17070201 *NF - North F. John Day Subbasin #17070202*
MF - Middle F. John Day Subbasin #17070203 *LJD - Lower John Day Subbasin #17070204*

G46^{MF}	Sec. 15	40/40		1.0 to HBH	1.0 to AH
G45^{MF}	Sec. 23	40/28		1.5 to HBH	0.3 to AH
T. 9 S., R. 32 E.					
G38B^{MF}	Sec. 4	40/15		4.5. to HBH	1.5 to AH
G43B^{MF}	Sec. 18	40/10	0.2-NP	***0.2 HBH***	*0.2 AH*
T. 10 S., R. 27 E.					
G88^{NF}	Sec. 22	80/65	0.3-NP		2.5 to AH
G89^{NF}	Sec. 26,27	80/79	0.6-NP		1.5 to AH
T. 10 S., R. 28 E.					
G94A^{NF}	Sec. 16	120/37	0.2-NP		3.0 to AH
G94B^{NF}	Sec. 16	40/4			3.5 to AH
G95^{NF}	Sec. 22, 27	160/141			4.5 to AH
G96^{NF}	Sec. 23	40/28			4.0 to AH
G97^{NF}	Sec. 23	80/63			>5 to AH
G98^{NF}	Sec. 26	40/33			>5 to AH
G99^{NF}	Sec. 26	40/36			>5 to AH
T. 10 S., R. 29 E.					
G102^{MF}	Sec. 13,14	80/80		>5 to MBH	>5 to AH
G101^{NF}	Sec. 30	40/31	0.3-NP		3.3 to AH
T. 10 S., R. 31 E.					
G104D	Sec. 21	40/25		>5 to MBH	4.1 to AH
G104B^{MF}	Sec. 29	80/54	0.4-NP	>5 to MBH	1.3 to AH
G104A^{MF}	Sec. 30	40/40		>5 to MBH	0.5 to AH
T. 11 S., R. 29 E.					
G106^{NF}	Sec. 29,32	280/4	0.2-NP		2.0 to AH
G107^{NF}	Sec. 30	40/16			2.6 to AH
G108^{NF}	Sec. 30	42/9			3.2 to AH
T. 12 S., R. 30 E.					
G150A^{UJD}	Secs. 24 and 25	600/165	1.5-NP		*0.2 AH*
G150B^{UJD}	Sec. 25	40/8			0.6 to AH
G149^{UJD}	Sec. 34	160/86	0.7-NP		2.5 to AH
T. 12 S., R. 31 E.					
G151A^{UJD}	Sec. 30	200/49	0.6-NP		0.1 to AH
T. 12 S., R. 32 E.					
G157^{UJD}	Sec. 26	160/52	1.1-NP	>5 to MBH	0.2 to AH
G156^{UJD}	Sec. 28	120/69	0.4-NP	>5 to MBH	0.2 to AH
G153^{UJD}	Sec. 30	40/34			1.7 to AH
G154^{UJD}	Sec. 30	80/30			1.7 to AH
T.12 S., R. 33 E.					

MBH - Migratory Bull Trout Habitat *HBH - Historic Bull Trout Habitat*
BSH - Bull Trout Spawning, Rearing, or Resident Adult Habitat *RH - Resident Fish Habitat*
AH - Anadromous/Resident Habitat (steelhead/redband trout) *NP - Non Perennial Stream*
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G158^{UJD}	Sec. 5	40/24	0.3-NP	>5 to MBH	3.0 to AH
G159^{UJD}	Sec. 15,16	200/200	0.4-NP	>5 to MBH	0.2 to AH
G160^{UJD}	Sec. 17	160/134	0.5-NP	>5 to MBH	0.8 to AH
G161A^{UJD}	Sec. 20	40/40	0.3-NP	>5 to MBH	0.5 to AH
G161B^{UJD}	Sec. 20	40/38		>5 to MBH	*0.2 AH*
G161C^{UJD}	Sec. 20	40/34		>5 to MBH	0.2 to AH
T. 13 S., R. 28 E.					
G187^{UJD}	Secs. 29 and 30	80/13			1.0 to AH
G188^{UJD}	Sec. 29	40/9			0.1 to AH
G192^{UJD}	Sec. 30	150/98			2.5 to AH
G189^{UJD}	Sec. 31	57/57			1.2 to AH
G191^{UJD}	Sec. 29,30	80/34	0.3-NP		3.0 to AH
G186^{UJD}	Sec. 33	240/24	0.5-NP, 0.3-P		0.2 to AH
T. 13 S., R. 34 E.					
G163^{UJD}	Sec. 24	160/108		***0.3 to BSH***	0.3 to AH
T. 13 S., R. 35 E.					
G162^{UJD}	Sec. 30	80/60		***0.2 to BSH***	0.2 to AH
T. 14 S., R. 29 E.					
G197^{UJD}	Sec. 11	240/96	0.2-NP		*0.2 AH*
T. 14 S., R. 31 E.					
G210B^{UJD}	Secs. 15, 21, and 22	800/498	0.8-NP		2.0 to AH
G212^{UJD}	Sec. 21	40/40			0.1 to AH
G210A^{UJD}	Sec. 27	80/66			1.1 to AH
G209A, 209B^{UJD}	Sec. 28	200/199	0.2-NP		4.0 to AH
G206^{UJD}	Sec. 29	80/71			3.4 to AH
G205^{UJD}	Sec. 31	120/120	0.1-NP		1.0 to AH
G207^{UJD}	Sec. 32	40/36			1.3 to AH
G208^{UJD}	Sec. 32	120/93			4.5 to AH
G211^{UJD}	Sec. 34	40/31			1.3 to AH
G204^{UJD}	Sec. 30	40/20	0.1		0.5 to AH
T. 14 S., R. 32 E.					
G218^{UJD}	Sec. 1	80/7		3.5 to MBH	*0.2 AH*
G214^{UJD}	Sec. 4	40/26		2.5 to MBH	2.5 to AH
G216^{UJD}	Secs. 1 and 2	428/62	0.5-NP	4.0 to MBH	0.2 to AH
G213^{UJD}	Sec. 9	80/30	0.4 NP	3.5 to MBH	0.3 to AH

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G215[UJD]	Sec. 10	40/12		3.0 to MBH	2.5 to AH
G217[UJD]	Sec. 12	40/22		4.5 to MBH	0.1 to AH
T. 14 S., R. 33 E.					
G219[UJD]	Sec. 7,8	240/124	0.5-NP	>5 to MBH	*0.2 AH*
G426[UJD]	Sec. 9	160/94	0.5-NP	>5 to MBH	0.2 to AH
T. 17 S., R. 26 E.					
G239A[BSC]	Sec. 35	160/108	0.4-NP		2.0 to AH
G240A[UJD]	Sec. 25	120/50	0.6-NP		1.5 ot AH
T. 18 S., R. 26 E.					
G238[UJD]	Sec. 1	40/13			*0.3 RH*
G231[BSC]	Sec. 2	240/32	0,8-NP		2.0 to RH
G239B[BSC]	Secs. 9 and10	240/84			*0.3 RH*
G237[BSC]	Sec. 12,13	320/136	0.6-NP		2.0 to RH
G232[BSC]	Sec. 21	40/28			0.6 to RH
G236B[BSC]	Sec. 25	80/53	0.1-NP		0.5 to RH
G236A[BSC]	Sec. 26	40/8	0.2-NP		0.6 to RH
G235[BSC]	Sec. 28	80/18	0.3-NP		3.0 to RH
T. 18 S., R. 27 E.					
G251[UJD]	Sec. 10	40/25	1.5-NP		*0.3 RH*
T. 18 S., R. 28 E.					
G260[UJD]	Secs. 7 and 8	840/83			*0.9 RH*
T. 18 S., R. 29 E.					
G271[UJD]	Sec. 7	160/73	0.3-NP		1.5 to RH
John Day Basin - Wheeler County					
T. 6 S, R. 23 E.					
W1[LJD]	Sec. 23	40/37			1.6 to AH
T. 7 S, R. 22 E.					
W2/3[LJD]	Sec. 12	80/72			1.5 to AH
W4[LJD]	Sec. 14	40/40	0.4-NP		2.8 to AH
W5[LJD]	Sec. 20	40/36			0.5 to AH
W6[LJD]	Sec. 23	40/39			4.0 to AH
W7[LJD]	Sec. 25	40/38			4.2 to AH
W8/9[LJD]	Secs. 25 and 26	200/192			3.0 to AH
W10[LJD]	Sec. 34	40/40			1.5 to AH
T. 8 S, R. 21 E.					
W24B[LJD]	Sec. 14	40/24			>5 to AH
T. 8 S., R. 22 E.					

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W11[LJD]	Sec. 1	80/38			2.0 to AH
W15[LJD]	Sec. 1	40/39	0.2-NP		2.0 to AH
W17[LJD]	Sec. 6	40/27			>5 to AH
W17[LJD]	Sec. 7	80/68			>5 to AH
W14[LJD]	Sec. 9	80/61			0.5 to AH
W12[LJD]	Sec. 10	40/31			1.5 to AH
W13[LJD]	Sec. 11	40/40			0.1 to AH
W18[LJD]	Sec. 19	120/51			>5 to AH
W19[LJD]	Sec. 24	240/92			0.5 to AH
W19[LJD]	Sec. 25	280/24			1.0 to AH
W21,22[LJ]	Sec. 26	200/92	0.3-NP		>5 to AH
W20[LJD]	Sec. 30	120/20	0.1-NP		4.0 to AH
W700[LJD]	Sec. 34	40/6			>5 to AH
W21[LJD]	Sec. 35	80/8			0.5 to AH
W16[LJD]	Sec. 40	40/40			2.0 to AH
John Day Basin - Morrow County					
T. 6 S., R. 25 E.					
M5L[LJD]	Sec. 1	24/20			0.9 to AH
M2[LJD]	Sec. 6	23/12	0.3-NP		0.2 to AH
M1[LJD]	Secs. 7 and 8	80/30			0.4 to AH
M3[LJD]	Sec. 9	3			1.9 to AH
M4[LJD]	Sec. 10	40/20			2.3 to AH
M6[LJD]	Sec. 19	320/25			1.5 toAH
T. 5 S., R. 25 E.					
M7[LJD]	Sec. 31	39/20			0.5 to AH
John Day Basin - Umatilla County					
T. 4 S., R. 30 E.					
UM7[NF]	Sec. 13	80/47		>5 to MBH	0.5 to AH
T. 4 S., R. 31 E.					
UM49[NF]	Sec. 12	40/21		>5 to MBH	1.8 toAH
UM50[NF]	Sec. 12	40/22		>5 to MBH	2.0 to AH
UM 51[NF]	Sec. 12	40/24		>5 to MBH	2.7 to AH
UM 55[NF]	Sec. 18	80/71	0.1-NP	>5 to MBH	4.2 to AH
UM6[NF]	Sec. 19	280/107	0.3-NP	>5 to MBH	2.1 to AH
UM 52[NF]	Sec. 23	40/30	0.3-NP	>5 to MBH	2.5 to AH
T. 5 S., R. 31 E.					
UM57[NF]	Sec. 17	80/47		>5 to MBH	*0.05 AH*
UM4[NF]	Sec. 18	80/53		>5 to MBH	0.8 to AH
UM70[NF]	Sec. 21	40/28		>5 to MBH	*0.05 AH*
UM58[NF]	Sec. 23	40/10		>5 to MBH	0.1 to AH
T. 5 S., R. 33 E.					

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UM60^{NF}	Sec. 21	40/40		>5 to MBH	0.2 to AH
UM59A^{NF}	Sec. 30	40/7		>5 to MBH	0.2 to AH
T. 6 S., R. 33 E.					
UM80^{NF}	Sec. 5	80/46		>5 to MBH	*0.3 AH*
UM61^{NF}	Sec. 6	40/33	0.1-NP	>5 to MBH	1.3 to AH
Umatilla Basin - Morrow County					
T 4 S., R. 28 E.					
M12	Sec. 1	120/70			>5 to AH
M11	Sec. 15	40/37			1.2 to AH
T. 4 S., R. 29 E.					
M15	Sec. 3	40/34		>5 to HBH	2.1 to AH
M13	Sec. 6	80/12			>5 to AH
T. 5 S., R. 26 E.					
M-8	Sec. 11	40/20	0.3-P		4.8 to AH
T. 5 S., R. 27 E.					
M10	Sec. 3	40/10			1.6 to AH
M-9	Sec. 17	40/40			0.7 to AH
Umatilla Basin - Umatilla County					
T. 2 S., R. 35 E.					
UM62	Sec. 25	40/37	0.3-NP	4.4 to HBH	0.8 to AH
T. 3 S., R. 32 E.					
UM48	Sec. 2	80/74		>5 to HBH	0.9 to AH
T. 4 S., R. 30 E.					
UM13	Sec. 1	20/13		>5 to HBH	0.4 to AH
UM11	Sec. 2	20/14	0.1-NP	>5 to HBH	0.8 to AH
UM9	Sec. 10	40/30		>5 to HBH	0.1 to AH
UM10	Sec. 10	40/25		>5 to HBH	*0.05 AH*

Note: Parcel Numbers in **Bold** are within the range of bull trout distribution and included in analysis area discussions and determination of effects.

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