

**Hunter Creek Forest Health Restoration Project  
Environmental Assessment#OR135-00-21**

**Bureau of Land Management  
Spokane BLM District  
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**Environmental Assessment  
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EA# OR-135-00-21**

**Introduction**

An environmental assessment (EA) (#OR-135-07-05) for this action was prepared in 1997, but never signed. The EA was renumbered and rewritten to update information and reformat the document to improve readability.

**Purpose and Need for Proposal**

The Hunters Creek Forest Health Restoration Project area is in the Spokane District's Huckleberry Management Area, which is identified in the Spokane District Resource Management Plan (1987) to be managed as commercial forest land. One purpose for the proposed harvest is to manage the area for the values designated in the RMP.

The restoration need was identified in the Eastside Forest Health Assessment (1994) and the Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin (1996), both of which found that many forested ecosystems in eastern Washington and Oregon are stressed and unstable. Additionally, fire suppression and past management practices in some of the forested areas have created conditions susceptible to fire, insect infestation and disease.

Site specifically, two forest health surveys by BLM staff (1993 and 1996) indicated a need to improve forest health in the Hunters Creek area. The project area has prevalent and widespread infestations of mistletoe and various root rot diseases, as well as insect infestations and damage and windthrow.

**Location of the Project Area**

The project area encompasses 126 acres of BLM-administered public land on Huckleberry Mountain in the northeast corner of Washington state, 30 miles northwest of Spokane, in south-central Stevens County (Map 1). The area is legally described as Section 26 of T. 31 N., R. 38 E., W.M.. A portion of the top and north slopes of Huckleberry Mountain and also a small portion on the south slope of the mountain are included in the project area. Elevation ranges from 4,040 feet along Hunters Creek, to 5,126 feet in the southwest of Section 26.

Most land (70%) within 5 miles of the project area is privately owned. The only public lands in the general project area are those managed by the Washington State Department of Natural Resources (DNR) and the BLM.

## Background

No timber sales have previously been conducted on BLM-administered lands in the project area. Some firewood permits have been issued to harvest standing dead trees, primarily adjacent to the Huckleberry Mountain road. Timber harvesting has been conducted in the past on non-BLM lands adjacent to the north and south boundaries of the project area, with cutting practices ranging from clearcuts to light selective cuts.

## Description of Alternatives

Three alternatives were analyzed:

- Alternative 1 - No Action. Allow physical and biological processes to continue, with the objective to continue custodial management without timber harvest.
- Alternative 2 - Improve forest stand health by removing diseased and infected trees and harvesting merchantable trees.
- Alternative 3 - (Proposed Action) - Restore forest health and vigor by removing diseased and infected trees and creating stands that are structurally diverse in species composition and in tree size, age, and density.

The goal of both action alternatives (Alternatives 2 and 3) is to improve the health of forest stands and to provide commercial timber products. Management objectives emphasize reducing the most serious pathogens affecting the stands (dwarf mistletoe, root and stem rot, and bark beetles). The long-term goal of Alternatives 2 and 3 is to improve the vigor of trees in all age classes by reducing damage from these pathogens.

Alternatives 2 and 3 are described in detail below.

### Alternative 2

Approximately 2 MMBF of timber would be harvested in 9 units, ranging in size from 3 to 28 acres (see Map 2). Most of the infected overstory and understory trees would be harvested. Healthy trees would be thinned to improve their growth and vigor.

Two units (3 and 6) would be skyline yarded; three units (1, 5, and 7) would be tractor yarded, and four units (2, 4, 8 and 9) would be harvested using harvester/forwarder equipment.

Approximately 0.5 mile of road would be constructed (see Map 1).

### Alternative 3 (Proposed Action)

Between 0.5 and 1.0 MMBF of timber would be harvested in 8 units, ranging in size from 3 to 28 acres (see Map 1). Unit 3 (which has accessible slopes over 35 percent slope) would be skyline yarded. Three units (1, 5, and 6) would be tractor yarded, and four units (2, 4, 7 and 8) would be harvested by harvester/forwarder.

Areas in Unit 7 that have larger Douglas-fir and Grand fir trees along the western edge and along the road transecting BLM-administered lands would be marked by a wildlife biologist to retain these larger trees. Retained islands of trees would be centered around designated snags and live replacement snags consisting of large Douglas-fir, western larch, and Ponderosa Pine to create structurally diverse habitats and to maintain adequate habitat to support viable populations of cavity-dependent wildlife.

Overstocked understory stands (Units 2, 4, 7, and 8) would be thinned to a 4-inch top within areas accessible to harvester and/or forwarder yarding system. Most dominant and codominant Ponderosa Pine would be harvested, and understory fir species would be selectively harvested from stands dominated by Ponderosa Pine. To promote growth and minimize reserve tree damage, trees would be thinned to a minimum 18-foot by 18-foot spacing.

Lodgepole stands infected with bark beetle would be thinned to retain healthy trees measuring 10-inch dbh and larger.

Susceptible trees in areas infested with laminated root rot would be removed in a dispersed pattern.

Approximately 0.5 mile of road would be constructed (see Map 1).

## **Management Actions Common to Alternatives 2 and 3**

### *Timber Harvest and Silvicultural Treatments*

Silvicultural treatments will include single tree and group selection, shelterwood, and seed tree selection. Group selections would be 5 acres or less in size.

At least two wildlife reserve trees (green trees or culls that are a minimum of 12 inches in diameter and at least 10 feet in height) will be retained per acre to maintain a viable population level of cavity-dependent wildlife and to provide for biological diversity in the area.

All live trees infected with root rot will be harvested. Resistant and non-susceptible trees will be retained within infection centers and within a 30-foot perimeter of these centers. Susceptible tree species within infection centers and a 30-foot perimeter will be harvested. The harvested areas will be planted with root-rot resistant species.

Where western larch is present in the overstory, mistletoe-free individuals will be retained as a seed source. In addition, perimeter trees will be thinned to provide additional seed. Group selection will be used when western larch regeneration is desired. Because successful reproduction of this species requires direct sunlight and mineral soil exposure, competing Douglas-fir and grand fir will be removed in areas where western larch is the desired species.

Trees with a dwarf mistletoe rating of four or more will be harvested, except for those retained for wildlife purposes.

All harvested units will be monitored and evaluated at intervals of 1, 3, and 5 years after project completion to determine the need for additional forest health restoration treatments, including thinning and planting.

### Buffers

The boundaries of Unit 8 would be defined to provide a 100-foot no-harvest buffer between the unit and the class 5 water (seep) north of the unit (see Map 1).

### Snag Trees, Down Woody Debris and Other Material

A minimum of 14 snags greater than 20 inches diameter and at least 50 feet in length will be retained per 100 acres to maintain nesting habitat for pileated and black-backed woodpeckers. If less than 14 snags this size are available per 100 acres, then the next largest sizes will be retained. For foraging habitat, large stumps and numerous large logs will be retained in various stages of decay. If possible, during harvest, some dying trees, trees with heartwood rot, insect-infested trees, and trees with distorted shape or wind breakage will be reserved. Trees with the greatest potential for immediate use by pileated woodpeckers have old cavities, broken tops, about 33 percent of limbs and bark remaining, and some decay. Trees with broken tops (both live and dead) are the most heavily used for foraging.

Where snag habitat is not present or is limited, green trees or culls will be retained for future snag habitat unless they pose a safety hazard.

Snags to be retained in Unit 7 will be marked by a wildlife biologist to maintain adequate numbers and types of important wildlife habitat, specifically roosting and wintering habitat for blue grouse. Known roosting areas of blue grouse in Unit 7 will be retained; this will include large, mistle-toe laden Douglas-fir thickets near ridges. In areas containing wintering habitat for blue grouse in Unit 7, the reserved trees will include at least 100 trees standing per acre with greater than 9 inches diameter and with openings of less than 800 feet wide to allow for grouse movement across them.

Down logs greater than 12 inches in diameter will be retained, to a maximum range of 30 to 35 tons per acre averaged throughout each unit. Where this size class cannot be left due to site conditions, the largest available downed woody material will be retained.

Logging and thinning slash disposal will be accomplished by lopping and scattering branches, tops, and unmerchantable logs to a height of less than 24 inches above the ground. Slash concentrations posing fire hazards at landings and within 200 feet of mainline roads will be piled and burned.

### Yarding Systems

Yarding will be done by skyline, tractor, and harvester/forwarder (see Map 1). Where tractor skidders are used, D5 equivalent or smaller will be required. Tractor yarding will be limited to slopes less than 35% and when soil moisture is less than 20%.

Trees selected for harvest from Unit 3 (skyline yarding unit) will be 10 inches in diameter at breast height (dbh) or larger, and trees to be tractor yarded (Units 1, 5 and 6 of Alternative 3; Units 1, 5 and 7 of Alternative 2) will be 8 inches dbh and larger. An exception to these silvicultural treatments will be where live and dead trees have been individually marked, or marked by groups, to provide for wildlife habitat and to maintain biological diversity in the area.

### Roads and Road Use

Access will be via state and county roads and existing easements.

Skid trails for tractor yarding will be spaced a minimum of 100 feet apart. Yarding will be accomplished using tracked vehicles, and the leading end of each yarded log will be suspended from the ground.

Temporary roads, all landings, and main skid trails identified by the Authorized Officer will be ripped, waterbarred as needed, and seeded after logging operations are completed.

Landings will be designated by BLM and located adjacent to roads.

Skid trails, landings, cut and fill slopes, and other areas of soil disturbance will be reseeded with native grasses and forbs, if available, following completion of logging activities. Non-native species commonly used for erosion control and site stabilization will be considered if seed supplies of appropriate native species are not available.

Vehicles and heavy equipment previously operating in areas contaminated with noxious weeds will be power washed and visually inspected for noxious weeds, with any found being removed prior to entering the project area.

Haul roads and spurs will be closed at sale termination, recontoured, and seeded the first 200 feet. Cut banks and fill for all constructed roads will also be seeded. Road surface drainage systems and culverts will be placed in a manner that prevents surface erosion.

### Wildlife Habitat

If an active goshawk nest is found during harvesting, road building, or other activities related to this proposal, a minimum of 30 acres of the most suitable habitat surrounding the nest will be excluded from the sale. Sale activities within 1 mile of the nest will be delayed to minimize disturbance during the bonding and nesting period, through a seasonal restriction from April 1 to August 30.

No harvest or harvest-related activities, including road construction, will occur between October 15 and June 15 to prevent disturbance to wildlife, specifically big game fawning (May 1 to June 15 protection) and displacement of wintering grouse from important habitat (October 15 to June 1).

### Noxious Weeds

Noxious weeds will be treated, as needed, using chemical and biological control methods. Noxious weed control will be implemented under the guidelines set forth in the *Final EIS for Vegetation Treatment on BLM Lands in Thirteen Western States* dated July 1991 and the Spokane District Noxious Weed Control Environmental Assessment.

### Cultural Resources

Appropriate resource inventories (including cultural, botanical and wildlife) will be conducted prior to implementing specific projects. If important resources are identified or located, the project would be redesigned to reduce or eliminate impacts to those resources. If cultural properties cannot be avoided, consultation will be conducted with the Office of Archaeology and Historic Preservation, tribal governments or historical societies, as appropriate, and in some cases the Advisory Council of Historic Preservation.

### **Other Alternatives Considered But Rejected and Not Analyzed in Detail**

An alternative that proposed clearcut of Units 1-7, creation of a mixed seral stand in Units 8 and 9, and harvest of another unit (Unit 10) was considered. This alternative was rejected and not analyzed in detail, because wildlife habitat requirements and hydrology concerns in Units 1-7 are not compatible with heavy harvest recommendations. Unit 10 has larger Douglas-fir and Grand fir (20 to 36 inches dbh) along the ridgetops, a 50 to 60 percent canopy, and small amounts of down woody material. Unit 10 was removed from the proposed alternatives to protect wintering habitat for blue grouse.

### **Affected Environment**

#### **Soils**

Soils on the project area are in stable condition, with no evidence of slope failure, (mass wasting) slumps or soil creep. Some minor cut bank sloughing and soil compaction is evident on existing roads. The primary soil is the Huckleberry Silt Loam, 40 to 65 percent slopes. Huckleberry soil is moderately deep and well drained, with moderate permeability and high available water-holding capacity. This soil has very rapid runoff and also very high water erosion hazard.

#### **Vegetation**

The primary overstory species are Douglas-fir and grand fir. Grand fir comprises the majority of the understory and reproduction. Scattered throughout the stands are concentrations of western larch and lodgepole pine. Drainage bottoms have significant populations of Engelmann spruce. A small amount of Ponderosa Pine is located on a south-facing slope in the northwestern quarter of the project area. The predominant association indicator plants are Ocean spray, Big huckleberry, Pachistima, Ninebark, Baldhip rose, Queencup beadlily, and Twinflower.

The vast majority of the area is classified as the Grand fir/Queencup beadlily forested plant association. Succession to more shade-tolerant tree species on these sites is slow. In the absence

of disturbance, Grand fir will dominate the stands. Most stands are less than 200 years old, and Grand fir is subordinate to the seral trees even though it dominates the tree reproduction. Fires are relatively infrequent in this higher elevation site.

The second major plant association is Grand fir/Ninebark. The majority of the stands are mid-successional. Data suggest that the successional patterns and site characteristics of this plant association are fairly open in nature, with Grand fir dominating the tree regeneration. In some locations, such as the drainage bottoms where natural disturbance has not occurred recently, conditions indicate a late-successional stage. Crown closure ranges from a low of 5%, to 98% in the more dense stands.

Units 2, 4, and 7-9 (proposed for harvester/forwarder harvest) are characterized by dense stands of trees averaging less than 10 inches in diameter (dbh). In the tractor yarding and skyline yarding units (Units , merchantable trees range in diameter from 8 inches to 24 inches dbh. Trees marked for cutting average approximately 12 inches dbh.

The most prevalent and widespread problem is Douglas-fir dwarf mistletoe and larch dwarf mistletoe. Additionally, about 40 percent of the stand has various rot diseases scattered throughout. Those identified include: Red-brown butt rot, Brown cubicle butt rot, Indian paint fungus, Black stain root disease, and Red ring rot. Approximately 25 percent of the area has top diseases, the most prevalent being larch needle cast and Yellow witches broom of the fir. Root rot pockets are scattered throughout, with the most prevalent being Armillaria and Annosus root rot and Laminated root rot. Insect activity by the Douglas-fir beetle, Spruce beetle , and Lodgepole pine beetle is causing mortality. In addition, the damage in trees subjected to natural forces, such as the wind, is compounded by disease and insect spread.

The presence of root and butt rot, as well as mortality from suppression, accounts for a moderate to significant amount of down woody material scattered throughout the stands. Current downed woody debris averages approximately 25 tons per acre. This root rot is more prevalent in areas of high tree density, on ridge tops where wind damage is significant, and around edges of root-rot pockets (Units 1-6). Recent wind storms have increased the amount of downed woody material to the point where passage becomes difficult. Snags are present, primarily resulting from Armillaria and bark beetle mortality. They are generally scattered, although there are isolated concentrations around major disease centers.

There are numerous downed trees, and many of the standing trees are small, although there are pockets of larger diameter trees (up to 24-inch dbh).

Special Status Plant Species: No endangered, threatened, or sensitive plants were found during botanical surveys. There are no records of such species within six or more miles of the parcel.

Noxious Weeds: Throughout the project area, there is less than one acre of noxious weeds. These weeds are found on travel corridors and other areas of past disturbance. Existing noxious weed species include: spotted knapweed, St. John's Wort, and Canada thistle. Noxious weeds were most likely introduced through seed sources from vehicle and wildlife movement and prevailing winds.

## Water Resources

The proposed harvest areas were designed to exclude streams. However, streams in the general area are described here for analysis purposes. The intermittent stream courses within the general area form a portion of the headwaters of Hunters Creek; these streams are classified as type 4 and type 5 waters. The main channels of Hunters and Deer Creek are classified by the Washington State Forest Practice Rules and Regulations as type 3 waters. Type 3, 4 and 5 waters are described as follows:

Type 3 waters - This classification includes segments of natural waters that have moderate to slight use by fish, wildlife and people. These streams have a defined channel of 5 feet or greater and are highly significant for protection of downstream water quality.

Type 4 waters - This classification is applied to segments of natural waters for the purpose of protecting water quality downstream. They remain Type 4 until the channel becomes less than 2 feet wide between the ordinary high water marks. These waters may be perennial or intermittent.

Type 5 waters - This classification includes streams with or without well-defined channels, areas of perennial or intermittent seepage ponds, natural sinks, and drainage ways having short periods of spring or storm runoff.

The intermittent stream courses within the general project area are in fair to good hydrologic condition. Presently, there are no roads that cross these drainage ways.

Three first order and one second order intermittent stream courses lie below the proposed harvest units (see Map 1). Three stream courses drain in a westerly direction to Hunters Creek, and a fourth drains to the east to Deer Creek. Both Hunters Creek and Deer Creek drain to Lake Roosevelt, which contains the region's largest resident fishery.

A class 5 water (seep) is located about 100 feet from the boundary of Unit 8.

## Wildlife Habitat

### *Wildlife Species In the Project Area*

Wildlife associated with Hunters Creek analysis area includes numerous game and non-game species of birds (grouse, neotropical migratory birds, and cavity-nesting birds), as well as many game and non-game species of mammals (mule deer, black bear, and bats). Winter surveys completed in 1999 for forest owls did not locate any owls in the project area. Wildlife species observed within the Hunters Creek analysis area during wildlife surveys and field reconnaissance conducted in 1997 and 1998 (spring, summer and fall) are listed below.

Mammals: black bear, mule deer, white-tailed deer, bat species (California myotis), and the yellow pine chipmunk (as well as evidence of likely use by elk and moose).

Cavity Nesters: pileated woodpecker, black-backed woodpecker, red-naped sapsucker , Williamson's sapsucker, northern flicker, hairy woodpecker, black-capped chickadees and mountain chickadees. During a site visit on July 30, 1998, a pair of black-backed woodpeckers were observed foraging within the sale boundary of Unit 9.

Neotropical Birds: Townsend's warbler, red crossbill, pine siskin, red-breasted nuthatch, golden-crowned kinglet, ruby-crowned kinglet, winter wren, yellow-rumped warbler, Swainson's thrush and dark-eyed junco.

Specifically, during field surveys in 1997 and 1998, numerous neotropical songbirds were observed foraging in the forest edge. No neotropical bird species were observed within the interior forest habitat of the Hunters Creek timber sale area, although this does not mean that they are not using the interior habitat for breeding purposes

Other Bird Species: blue grouse, gray jay, common raven, red-tailed hawk and turkey vulture .

In addition to the species listed above that were observed during the 1997 and 1998 surveys, other wildlife that could use the habitat in the project area include marten and forest owl species.

### ***Threatened and Endangered Species***

There are no federally threatened or endangered species known to occur within the sale area. However, there is potential habitat for four T&E species within the Huckleberry Mountains, including the project area. These include one endangered species (gray wolf) and three threatened species (bald eagle, grizzly bear, and Canada lynx).

Gray Wolf: The proposed project is located outside the designated recovery areas of the gray wolf and does not contain habitat proposed as critical or identified as linkage habitat between recovery areas. No wolves have ever been verified to occur within the analysis area, nor are they expected to occur there. Any use of the analysis area by the gray wolf is likely for transitory purposes only.

Bald Eagle: The bald eagle is known to use the Columbia River corridor, Lake Roosevelt, year round. The project area is located approximately 10 miles from Lake Roosevelt. There are no known bald eagle nests in the vicinity of the sale area.

Grizzly Bear: The proposed project is located outside the designated recovery areas for the grizzly bear and does not contain habitat proposed as critical or identified as linkage habitat. The grizzly bear has never been verified to occur within the analysis area, nor are they expected to occur there.

Canada Lynx: The project area is located outside mapped Canada lynx habitat as defined under the Lynx Conservation Assessment and Strategy (2000). A lynx track was verified approximately 10 miles east of the project area (1981 record). No other records indicate anything other than transitory movement by a single animal.

The streamlined ESA Section 7 consultation process was implemented in developing the proposed action and biological evaluation (BE). Early involvement of the U. S. Fish and Wildlife and the Washington State Department of Fish and Wildlife Priority Habitat and Species (PHS) database and field review were completed prior to this assessment to ensure proposed actions are not likely to jeopardize the continued existence of threatened or endangered species, or adversely modify their critical habitat.

Potential habitat available for any threatened and endangered species is marginal due primarily to past harvest practices of adjacent properties (ranging from clearcuts to extreme selective cuts).

### ***BLM Sensitive Species***

The only BLM sensitive species known to occur, either historically or currently, within the vicinity of the proposed project area is the Northern goshawk. Goshawks generally nest in closed canopy forests throughout Washington state and are associated with mature and overmature forest habitats. According to Colville National Forest stand data, goshawk nests were found in the following types of habitat: mixed conifer or Douglas-fir stands; nest tree diameter ranged from 10 inches in diameter to 35 inches in diameter (averaged 19 inches in diameter regardless of tree species); and canopy closure ranged from 50 percent to 70 percent.

Goshawk surveys were conducted in the sale area in 1997 and 1998 with no positive response. Prey species important to the Northern goshawk (such as grouse and snowshoe hare) were not observed during 1997 and 1998 wildlife surveys, although grouse are known to be present during the winter months after the Northern goshawk has migrated south to their wintering habitat. Goshawk nesting and post-fledging area (PFA) habitat within the sale area is marginal due to a lack of suitable nesting habitat, as well as a lack of potential foraging area for fledglings. Harvest practices in adjacent areas, ranging from heavy selective cut to clearcuts, have diminished available nesting and PFA habitat surrounding the sale area.

### ***Species of Concern***

Species of concern are those species identified by the Washington Department of Fish and Wildlife's Priority Habitat and Species Program that either occur or have potential habitat within the project area. The only species of concern known to occur within the project area is the blue grouse, with the project area providing wintering habitat for this species.

### ***Wildlife Habitat Within the Project Area***

Forest practices on adjacent parcels involving heavy selective cut (minimum forest practice) to clearcuts (shrub fields) removed large areas of important snag habitat surrounding the proposed project area. Considering that few snags remain on adjacent lands, snags on the project area are important habitat for cavity-nesting birds and black-backed woodpeckers. The present level of snags scattered throughout the area is sufficient to support a viable population of cavity nesters.

Considerations for big game habitat are cover, security/vulnerability and displacement, and big game winter range. The existing cover forage ratio for the general analysis area is approximately 52:48 (about 3,000 acres of cover: about 2,700 acres of forage). Road densities within the

watershed are high (4 to 5 miles per square mile). Big game vulnerability is likely high at the beginning of the hunting season until animals are displaced into adjacent drainages, security areas, or wintering areas.

The aspect of the analysis area is north to west and east-facing slopes, and therefore not considered important winter habitat for big game.

Foraging habitat for deer is limited in the project area and includes shrub fields to 85 percent canopy closure with little or no vegetation on the forest floor. Deer and other large ungulates appear to be using this area as a transitory movement corridor. Deer in this area historically move towards the lower elevations in the spring/summer.

There are no known wildlife corridors within the proposed sale area. Movements within the area are likely local, especially given the fact that surrounding habitat is highly fragmented by private land activities that act as movement barriers to long-ranging species. Currently, there is less than 0.5 square mile of unroaded contiguous habitat that would allow for minimal dispersal ability with protected travel.

The class 5 water (seep) located about 100 feet from the boundary of Unit 8 provides wildlife habitat.

Overall, wildlife habitat in the general analysis area is fragmented due to heavy harvesting on private lands one mile north and east, as well as some two miles south of the project area. On most harvested private lands, fewer than 20 trees (greater than 8 inches dbh) per acre remain. The BLM-administered lands and Washington state DNR lands to the north and northwest have little or no timber harvesting with large components of the overstory remaining.

Only one of the nine proposed cutting units (Unit 7 totaling approximately 13 acres) has late-successional habitat. This unit has large Douglas-fir trees, with diameters up to 30-inches dbh, within the western portion of the stand and a canopy of 70% to 80%.

## **Recreation**

Recreation use of the project area is low and mainly by local residents. The busiest use season is the late summer/fall. Several people collect huckleberries late in the summer. Hunting use likely exceeds use for berry picking and also likely occurs for a longer period of time. Some camping does occur, as was evidenced by the remains of a campfire ring and litter at one pull-through camp spot between Units 1 and 3. There is no destination point recreation.

## **Cultural Resources**

The project area is located within the traditional use area of members of the Spokane Tribe and The Confederated Tribes of the Colville Reservation. The surrounding mountains and valleys were frequented by a number of Native American groups and individuals for hunting, gathering, and other traditional activities.

The Native American seasonal cycle of economic pursuits involved spring gathering of plants and roots, summer salmon and steelhead fishing, and fall hunting and gathering of berries (kinnikinnick, thimbleberry, huckleberry, currants Oregon grape and others) until the collectors re-occupied their "permanent" winter villages. Expected Native American use of the project area includes collection of many forest materials including fruits, lichens, fungi, mosses, ferns and fern-allies, conifers, and flowering plants. Wildlife resources important to Native Americans include but are not limited to deer, bear, elk, and moose, with deer being of greatest importance. Mineral materials may also have been collected from the area including ocher, alluvial clays, pumice, and tool stone materials. Traditional religious or spiritual pursuits may have occurred in the project area.

The first recorded Euro-American intrusion into the area began in 1811 with David Thompson and the Canadian-owned Northwest Fur Company. The first wave of missionaries arrived in the late 1830s and worked intensively with the Upper Columbia indigenous populations. Placer mining for gold along the Upper Columbia River began around 1855. In 1872, a reservation for the Colville, Lakes, and a number of other bands was established east of the Columbia River and north of the Spokane River. The reservation was moved to the west of the Columbia River and east of the Okanogan River shortly thereafter. In 1892, the reservation was divided in half; the north half was restored to public domain. In 1896, the northern half was opened to mineral entry and in 1900 to homestead entry. The Spokane Indian Reservation, located about 12 miles south of the proposed project area, was created by Executive Order in 1881.

Historically, the proposed project is situated in the Deer Trail Mining District. A number of mineral exploration and extraction sites were located adjacent to the project area in the 1890s and early 1900s. The primary minerals produced in the District were lead, zinc, silver and magnesite. Remnants of a number of early mining activities are still evident outside the project area and include the Wells Fargo and Cleveland mines and the Red Marble Quarry.

The timber sale area was surveyed by BLM archaeologists in 1984 and 1997, following a review of BLM records and databases and the Washington State Office of Archaeology's and Historic Preservation's site data base. This review indicated that no sites have been recorded in this area. The survey's purpose was to locate and document previously unrecorded Native American or historic sites in the area. Although surveys have located numerous historic structures and features associated with homesteading and mineral exploration and extraction activities in the surrounding area, no cultural resources were located within the proposed project area..

Consultation with the Spokane Tribe and the Confederated Tribes of the Colville Reservation was initiated by letters sent August 28, 1997. In subsequent follow-up telephone calls to the Spokane and Colville Confederated tribes, no concerns with cultural resources in the project area were expressed.

## **Air Quality**

Air quality in the project area is rated high and is generally maintained throughout the year. Natural factors influencing air quality here are mountainous topography, prevailing southwesterly winds from the Columbia Basin, and weather fronts from the Pacific Ocean and Canada.

*Impacts on Air Quality:* Proposed management actions in Alternatives 2 and 3 that could affect air quality include fugitive dust from vehicular travel on forest roads.

## **Visual Resources**

The Visual Resource Management (VRM) rating of the project area is Class IV. This VRM class allows changes to occur and to be evident.

## **Environmental Impacts**

This section addresses resource values within the Hunters Creek sale area, as well as some in the general area, to analyze direct, indirect and cumulative effects of the alternatives. Reasonable foreseeable future actions considered were timber sales (including Lane Mountain and Red Marble), firewood harvesting, recreation, grazing, mining, and road construction. Reasonably foreseeable future actions are those activities that may occur over the next three years, the length of time needed to complete the proposed timber sale. The cumulative effects analysis considered past, present and future actions on federal, non-federal, and private lands within the general area. In addition, the cumulative effects analysis included future habitat modification activities that may occur within the next 10 years, the minimum amount of time for a harvested area to regenerate into a seedling/sapling stage.

### **Impacts on Soils**

Under Alternative 1, soil erosion and displacement would continue at its present level. Allowing forest health to decline further could cause extensive stand mortality and subsequent heavy fuel loading, creating potential for an intense wild fire. Intense fires could damage soils, thereby reducing their productivity. Soil impacts would include accelerated surface erosion and displacement within the project area and increased sediment delivery within the affected watershed.

Under Alternatives 2 and 3, soil compaction on six acres impacted by roads, landings and main skid trails would have potential to reduce water infiltration, increase runoff and subsequent erosion, and reduce vegetation vigor and density. Designed management actions (including proper road layout and design, road closures and restoration of disturbed areas), however, would minimize the potential for soil compaction, erosion, and loss of soil productivity.

Soils would be displaced or compacted on the units harvested by tractor and harvester/forwarder (all units except Unit 3). Specific impacts would occur from track equipment and soil gouging as a result of tractor log skidding on three units (1, 5, and 7 of Alternative 2, and 1, 5 and 6 of Alternative 3). Harvester/forwarded operations would have similar, but less, soils impacts as tractor harvesting. Soils on Unit 3 would have little or no impact due to skyline harvesting.

## Impacts on Vegetation

Impacts of Alternative 1 (No Action) on Vegetation: Vegetative species would remain relatively constant in numbers and types. Tree mortality from wind damage, disease, or insects could create open areas that would favor increased levels of shrubs and herbs.

In stands with the highest crown closure and stocking rates (Units 3, and 6-10 in Alternative 2; and Units 3, and 6-8 in Alternative 3), the sun-tolerant species (western larch, lodgepole pine, and Ponderosa Pine) would continue to have decreased regeneration. Mistletoe would continue to spread. The high level of tree stocking in these areas would continue to slow nutrient cycling and further limit water availability.

Alternative 1 would allow insects and disease to continue to infect trees within all units and could result in increased mortality of all tree species. There would be increasing potential for catastrophic wildfire to occur.

Impacts of Alternative 2 on Vegetation: Removal of a large percentage of the commercial tree canopy would substantially change the composition and density of understory vegetation. The Grand fir plant associations, which dominate the project area, all have potential for heavy shrub invasion as stands are opened up. In most cases, complete tree canopy removal would result in a layer of dense medium and low shrubs and moisture dependent herbs. Efforts to plant shade-intolerant western larch and Ponderosa Pine in established shrubfields would fail due to competition from overtopping shrubs. Shade from shrubs may benefit Grand fir regeneration.

Removing most merchantable trees would retain genetically inferior trees and excessive slash buildup, interfere with regeneration, and also accelerate dwarf mistletoe growth. Remaining stands would be composed of seed trees, unmerchantable trees retained for wildlife, advanced regeneration, and small pole-sized trees. Invading shrubs and herbs would compete with tree species, making establishment of viable regeneration difficult, if not impossible.

Opening stands of greater crown closure would expose small understory trees to full sunlight for the first time. Some trees may not be able to use the greater radiation load because they are adapted to lower light levels. When exposed to full sunlight, their leaves may be unable to use the extra light and could become, in effect, sunburned. A new crop of leaves adapted to increased sunlight would be needed before the trees could put on new crown growth. In the interim, when the trees are under stress, they would be more susceptible to disease and insect attack, and some mortality would be expected. Where there are few trees in this crown class, any losses could leave the stand understocked.

In Alternative 2, thinning the remaining trees and those on the stand/unit perimeter would reduce the infection of the new regeneration. This would allow the trees to outgrow the mistletoe infection and, in some cases, create stands that do not have mistletoe.

Harvesting of trees would expose mineral soil, especially where tractor yarding is implemented (Units 1, 5, and 7 totaling 48 acres). The exposed mineral soil would increase reproduction success of western larch.

Impacts of Alternative 3 (Proposed Action) on Vegetation: Maintaining all tree canopy layers and early-seral tree species would limit the amount of shrub and herb growth. Harvesting in those areas that have pockets of root rot would likely open the stand to sunlight, possibly increasing growth of understories of shrubs and herbs. Slashing and other treatments would stimulate root crowns, also producing increased shrub regeneration. Shrub invasion would be limited in stands where all canopy layers remain intact and disturbance is minimized.

Under Alternative 3, thinning of Grand fir, Douglas-fir, western larch, and lodgepole pine in all crown classes would allow flexibility to manage the stands.

Thinning the Grand fir/Douglas-fir/western larch overstory and understory would provide potential to retain trees in all crown classes. Thinning heavily stocked stands would create more healthy residual trees and simulate late-successional structure.

Although the thinning in this alternative would not likely remove all trees infected with dwarf mistletoe, the retained trees would likely outgrow the disease. In the long term (30 to 50 years), the trees with mistletoe would have it located primarily in their lower crowns.

Residual trees in the harvester/forwarder units (Units 2, 4, 7 and 8) would not be damaged. Residual trees in Unit 3 (cable yarding units) and Units 1, 5, and 6 (tractor yarded units) would have minimal damage. Thinning of trees in all crown classes would allow adequate spacing for tractor skid trails.

### **Impacts on Noxious Weeds**

Under Alternative 1, noxious weeds would continue to spread from such sources as vehicle traffic, hikers, wildlife movement, and prevailing winds. Soil-disturbing actions proposed in Alternatives 2 and 3 (yarding, skidding, log landings, and road construction) could lead to increased populations of noxious weeds. However, management direction to clean vehicles prior to entering the project area and to treat weeds would reduce the potential for weed invasion and expansion.

### **Impacts on Water Resources**

Under Alternative 1, there would be no impacts to the water resources.

Under Alternatives 2 and 3, which provide for no timber harvest activities in riparian areas or in the vicinity of water sources (such as springs and seeps), the total projected surface disturbance (roads, landings, skid trails) within the proposed project area would be approximately six acres.

Partial removal of the forest canopy could accelerate snow melt and subsequent surface-water runoff. This may result in physical damage to various intermittent stream channels and cause increased sedimentation and water temperatures. The absence of timber activities in riparian areas would reduce the risk of degradation and sedimentation of drainage areas.

Openings created within the forest canopy by timber harvest, road construction, skid trails, log landings, and other surface disturbances would reduce interception and result in more

precipitation becoming available for stream flow at an accelerated rate. Increases in runoff may lead to channel degradation. Road construction and surface disturbances related to timber harvest are a major contributor of sediment, and can account for 80 to 90 percent of accelerated sediment delivery to streams.

## **Impacts on Wildlife Habitat**

### ***Threatened and Endangered Species***

The Biological Evaluation (BE) completed to address the proposed actions in Alternatives 2 and 3 concluded a “no effect” determination for federally listed species that have potential to be found in the project area (bald eagle, gray wolf, grizzly bear, and Canada lynx). The analysis considered all potential direct, indirect, and cumulative effects to the species and their critical habitat. The determination was reviewed by the USFWS in 1997 after a field tour of the project area.

*Bald Eagle:* Since the project area does not have a water source to support the prey base required by the bald eagle, the project would not directly or indirectly modify any habitat potentially used by the bald eagle or their primary prey base (fish and waterfowl).

*Gray Wolf:* Opening of the tree canopy as proposed in Alternatives 1 and 2 would improve forage for big game, possibly increasing their numbers and likewise the prey basis for the gray wolf. However, since the proposed project area is not high quality winter range for deer, being located on north aspects, and since sufficient habitat is available for big game use following the harvest, adequate forage would be available for gray wolf, if needed. It is likely that wolves use the area for transitory range and not as important denning/foraging habitat.

The proposed action is outside the designated recovery areas and does not involve identified critical habitat or linkage habitat between recovery areas.

### ***BLM Sensitive Species***

*Northern Goshawk:* Alternative 1 (No Action) would retain any nesting or foraging habitat that has potential to support the Northern Goshawk.

Alternative 2 would remove approximately 45 acres of potential nesting habitat for the Northern Goshawk. Timber harvest would reduce the canopy closure to below the 70 percent that goshawks prefer. The early successional age class and loss of canopy could discourage future use for nesting, although harvest would not affect available foraging habitat.

Alternative 3 would remove approximately 38 acres of potential nesting habitat, although retaining most larger diameter trees necessary for potential nesting habitat. This alternative would preserve the current age class of trees without switching to a younger age class stand; it would also retain habitat for prey animals. Selectively harvesting trees would open the canopy and allow smaller trees to compete, creating future wildlife habitat and promoting faster vegetative growth. Available foraging habitat would not be affected under this alternative.

Management guidance to protect any goshawk nest discovered during harvest operations would minimize potential for impacting nests. It is unlikely that the project would affect continued use of the area by this species, nor the viability of the species.

### ***Species of Concern***

Blue Grouse: Under Alternative 1 (No Action), there would be no short-term loss of grouse wintering habitat.

Alternatives 2 and 3 would remove a small amount of wintering habitat for blue grouse, but this loss would not affect the viability of the species. Important wintering habitat was marked by the wildlife biologist and would be maintained under both alternatives. The proposed harvest would reduce the canopy cover and alter the stand characteristics used by blue grouse, but would not affect species use of the area. Sufficient habitat would remain on the project area to support the needs of populations here.

### ***Snag Habitat and Cavity-Dependent Species***

Retaining a minimum of 14 snags greater than 20 inches diameter per 100 acres and green trees in clusters would help maintain essential nest and foraging habitat for cavity-nesting birds.

Under Alternative 1, the increased amount of down woody debris resulting from dead and dying infected and diseased trees would, in the short term, provide habitat for some wildlife species, such as pine marten.

In Alternatives 2 and 3, timber harvesting and road construction could improve available habitat for species such as pine marten and their prey, but would reduce the amounts available. This reduction of habitat would be temporary and would not likely affect the viability of the species and/or its important habitat components. The retained snags and large woody debris would provide sufficient resting and foraging areas.

Alternative 3 would create small openings for foraging for various species, yet leave larger trees and down woody material for cover and movement. Down woody debris sufficient for foraging and winter travel would remain under this alternative.

Woodpeckers: Under Alternative 1, snags created by the root and butt rot problems, dwarf mistletoe, needle cast, and beetle infestations would increase available habitat for black-backed and pileated woodpeckers, as well as other cavity nesters, but only in the short term. In the long term, the increased disease within the stand could preclude trees from maturing into large late-seral size trees. Without the larger snags and recruitment trees, primary cavity nesters (such as pileated woodpecker and black-backed woodpecker) would have limited habitat for future nesting and foraging use.

Under Alternative 2, retaining all existing snag habitat would ensure habitat for 100 percent viability of cavity-nesting species. Future snag habitat and sufficient down woody debris would be available under this alternative.

Under Alternative 3, retaining the larger diameter trees along the ridgetops and within the stand would preserve the late-successional Grand fir and Douglas-fir within the sale area. Wildlife trees and recruitment snags would be established as under Alternative 2, and sufficient downed woody material would be available for nesting and foraging. The WDFW recommended habitat for black-backed woodpeckers would be met under Alternatives 2 and 3.

Retaining adequate habitat aimed at 100 percent viability for cavity-dependent species would help mitigate forest practices of adjacent parcels. Having biologists mark important snag habitat would ensure retention of appropriate wildlife trees and pockets of early old-growth trees surrounding the large diameter snags. These islands would provide adequate protection from wind forces and temperature variations, as well as potential cover for other species, including big game and small mammals.

### ***Down Woody Debris***

Under Alternative 1, where natural forest succession would continue, there would be increased amounts of late-successional stages and down woody material. With forest succession, there would eventually be an age class switch to an early-successional stage with little or no recruitment trees available to replace the large down woody debris .

The woody debris reserved under Alternatives 2 and 3 would allow for winter travel by pine marten and other mammals.

### ***Big Game Habitat***

Under Alternative 1, forage vegetation for big game would initially increase as the tree component switches to an early successional stage and the canopy opens. Shrub and herbaceous cover would increase as the stand continues to lose the larger diseased and infected trees. Seasonal use would be affected based on the amount of thermal cover available within the stand. The north, west, and east-facing slopes within this area discourage regular winter ungulate use.

Under Alternative 2, 108 acres of cover would be removed, resulting in a cover to forage ratio of 50:50 (2,887 acres of cover; 2,873 acres of forage). This represents a 2 percent decrease in overall cover habitat available and is closer to the optimum condition favored by big game animals (cover:-forage ratio of 40:60). Deer and elk could initially benefit with increased forage being available, while still maintaining sufficient summer thermal cover.

Alternative 3 would remove 65 acres of cover, resulting in a cover to forage ratio of 51:49 (2,930 acres cover to 2,830 acres forage). This represents a 1 percent decrease in overall cover habitat available and is again closer to the optimum condition favored by big game animals (cover:forage ratio of 40:60). Opening the stand with a selective harvest could improve ungulate summer forage and still provide summer thermal cover within the stand.

Timber harvest and associated road construction and use impact big game habitat through a direct loss of habitat and indirectly through displacement and increased vulnerability associated with displacement. Big game would be temporarily displaced from the sale area during harvest activities (approximately 3 years) due to the intrusion of noise-related logging activities, as well

as increased travel on roads. Big game could move as far as 0.5 mile away from the harvested area and roads.

The loss of cover and security habitat, primarily used for summer hiding and thermal cover, would be minimal for big game even when considering past harvest practices in the general area..

Big game vulnerability to hunting depends primarily on security cover. Given the fact that the area is not high quality winter thermal cover, the time when hunting pressure is concentrated, big game vulnerability should remain low. Leaving roads open during the life of the sale would result in a temporary increase in open road density.

In conclusion, the proposed timber sale is expected to have few impacts on big game because the project area does not include high quality winter range (critical time for big game), sufficient cover would remain after harvest, foraging availability would increase after the harvest, and big game security would increase after the sale is complete due to road closures.

Restricting the harvest from the fawning time would reduce spring displacement of big game.

### ***Riparian Habitat***

Placing buffers around riparian areas would protect any potential habitat or travel corridor use by forest wildlife. Buffering of all riparian areas (intermittent streams and springs) under Alternatives 2 and 3 with a minimum 100-foot buffer on each side and retaining all existing down woody debris within the riparian buffer would protect their current condition and function.

Riparian areas tend to provide concentrated wildlife movement, providing winter and summer thermal cover to wildlife. Since there would be no harvest in riparian areas or effects to this habitat, wildlife movement would remain intact within the riparian zone.

### ***Fragmentation***

Forest fragmentation is of concern due to its effect on forest songbirds, in particular neotropical migrant species. Changes in vegetation could lead to increased brood parasitism, predation, changes in populations, and increased competition along forest edges. These effects could cause population declines of species that depend on forest interior conditions.

Alternative 1 would have no effect on fragmentation. The proposed timber harvest in the action alternatives (Alternatives 2 and 3) would increase the amount of fragmentation within the project area. Although individual species shifts would occur as a result of continued fragmentation, the change would not likely affect the viability of those species thought to be using the area. Sufficient interior habitat should remain within surrounding drainages, although given the increased amount of private land actions, fragmentation effects may be critical in the future. Fragmentation effects within the project area would be temporary in nature, since forest succession would eventually create contiguous forested habitats.

### ***Interior Habitat***

Under Alternative 1, no interior habitat would be removed. The tree mortality and infection of younger trees due to continued problems with the various diseases and insect infestations would reduce the amount of forest with canopy closure and tree size to support interior forest species. There would be a limited amount of large size diameter trees available for future snags. This stand would likely regress to an early-seral stand with no large tree recruitment.

Under Alternatives 2 and 3, harvest of Units 7, 8 and 9 would remove approximately 30 acres of potential interior habitat. Harvesting of these three units would further fragment wildlife habitat in the general area by creating more edge habitat, but would not likely affect the viability of forest interior species using this habitat.

### **Impacts on Recreation**

Under Alternative 1, recreation patterns would not change from their present status. As succession takes place, however, fewer areas would be available for huckleberry gathering.

Thinning and removing root-rot pockets, as proposed under the two action alternatives, would open up stands. The open stands would increase huckleberry growth; improve accessibility for hikers, hunters and camping; and increase populations of deer for hunters.

### **Impacts on Cultural Resources**

Due to the absence of known cultural resources in the project area and the provision for protection of any that are located during implementation of the proposed activities, none of the alternatives would affect any known archaeological or historical resources, sacred sites, or traditional cultural properties in the project area.

### **Impacts on Air Quality**

Under Alternative 1, air quality would not be impacted.

Under Alternatives 2 and 3, air quality would be temporarily affected by timber harvest activities, including road construction and maintenance, tree falling, yarding, and hauling. These activities produce the most dust during the dry months of the year. Suspended dust adversely impacts air quality only during periods of active logging and log hauling.

Slash burning and prescribed understory burning would have the most noticeable impacts on air quality. Environmental factors such as wind direction, atmospheric stability, and moisture content of slash are crucial influences on smoke dispersion. Slash burning would degrade local air quality of the atmosphere for short periods of time.

Burning of slash piles over a five-year period on a small portion of the proposed project area would reduce local air quality for an estimated one to three days per ignition.

## **Impacts on Other Resource Values**

Fisheries: Providing a 100-foot riparian exclusion area following the headwaters creek out of the sale area would protect fishery values of downstream waters.

Visual Resources: There would be no impact on this type IV visual resource. The proposed harvest area is not within the viewshed of any major highway.

Environmental Justice: There would be no disproportionately high and adverse human health or environmental effects on minority or low-income populations from implementing either of the action alternatives.

Socioeconomic: Alternative 1 would not provide any economical value to the community, and also result in a loss of future timber value. Alternative 2 would provide timber valued at about \$300,000, and Alternative 3 would provide timber valued at \$140,000.

Other Elements Considered in the Analysis: The project area does not have any of the following: floodplains, prime or unique farmland, wild and scenic rivers, wilderness, special area designations, or hazardous/solid wastes.

## **Cumulative Impacts**

Under Alternative 1, the continued decline of the forest health would have cumulative impacts associated with reduced wildlife forage and cover. The insect and rot infestations would likely spread to other trees, covering a broader area.

The proposed harvests in Alternatives 2 and 3, when considered with past and future harvesting of private lands in the general area, would have some cumulative impacts associated with effects to wildlife cover and forage. Specifically, fragmentation of wildlife habitat is a concern in the long term, possibly causing some individual species shifts. These changes would not likely affect the viability of those species thought to be using the area. Overall, the effects would be minimal considering the placement of the units, selection criteria of trees to be harvested, and the expected improvements in forest health.

## **Irreversible or Irretrievable Impacts**

There would be no irreversible or irretrievable commitments of resources from implementing either action alternative (Alternatives 2 or 3).

## **Coordination With Other Agencies, Groups, and Individuals**

This environmental assessment was prepared by an interdisciplinary team of BLM resource specialists representing various resource values, including soils, hydrology (water), botany, wildlife habitat, recreation, and cultural values.

Other coordination and/or consultation occurred with the following:

- U.S. Forest Service, Colville National Forest

- Spokane Tribe (consultation on August 28, 1997)
- Confederated Tribes of the Colville Reservation (consultation on August 28, 1997)
- Chris Warren, U.S. Fish and Wildlife Service
- Washington State Department of Natural Resources
- Steve Zender, Washington State Department of Fish and Wildlife