ENVIRONMENTAL ASSESSMENT FOR

ASHLEY LAKE TIMBER SALE

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FINDING

PROPOSED ASHLEY LAKE TIMBER SALE
DNRC – KALISPELL UNIT

December 29, 2003

An interdisciplinary team (ID Team) has completed the Environmental Assessment (EA) for the proposed Ashley Lake Timber Sale on state owned land in Section 36, T29N, R24W.

After a thorough review of the EA, project file, public correspondence, Department policies, standards, guidelines, and the State Forest Land Management Rules 36.11.401 through 36.11.450, Administrative Rules of Montana, I have made the following decisions concerning this project.

1. ALTERNATIVE SELECTED

Two alternatives are presented and were fully analyzed in the EA:

- No-Action Alternative: Timber management other than occasional, small amounts of salvage would not occur. Minimal road maintenance on state roads and some noxious weed control might occur, dependent upon funding and factors affecting priority. Public uses of the project area for general recreation and firewood cutting would continue. Wildland fire suppression would continue.

- Action Alternative: The proposed timber sale would entail harvesting approximately 4-8 million board feet (MMBF) of timber from 628 acres. Three harvest units would be treated with a seedtree harvest cut. Nine miles of existing road would be used and maintained. All but 1.08 miles of road would be closed to motorized use after logging is complete. After logging treatments would include mechanical site preparation or prescribed burning on 420 acres and hand planting western larch seedlings over 350 acres.

Both the No-Action and Action alternatives would:

- Meet the project objective to maintain and improve future management activities by developing a transportation system that utilizes existing roads to minimize new road construction.

I have selected the Action Alternative for implementation with the understanding that resource mitigation measures identified in the Environmental Assessment will be applied to meet the intended protection.

For the following reasons, the Action Alternative has been selected:

- The Action Alternative meets the Statement of Need and all of the specific project objectives on pages 1 and 2 of the EA.

628 acres to be harvested, stand conditions will be more representative of historical valley bottom western larch stands, after treatment. Open canopied stands will consist of higher proportions of western larch and Douglas-fir in both the understory and overstory as a result of favoring these species for retention in the selection of seed trees and following harvest with site preparation and planting of western larch seedlings. General stand health (growth and vigor) will improve with the removal of diseased and insect infested trees and a reduction in overstory stand densities. Although stocking levels will be reduced the number of old, large diameter trees per acre will be sufficient to maintain the amount of existing old growth (23 acres), and improve the growing conditions for young and old western larch in both the understory and overstory. The potential for old growth development on the other treated acres will be maintained with this entry, as well. Seedtrees are usually selected from the larger diameter size classes, exhibiting good stem and crown form. These trees often respond to reduced stocking with increased diameter and/or height growth and may allow for 10 seed trees per acre actually attaining 17 inch or greater diameters on some of the treated acres within the next decade.

- Noxious Weeds – The following measures to be implemented with the action alternative have been effective in minimizing the potential encroachment of noxious weeds on logging sites. Heavy equipment used for felling and skidding activities will be washed thoroughly before being brought on site. Areas disturbed will be seeded with a native grass seed mix. The project area will be monitored and if needed will be scheduled for herbicide treatment as part of the Weed Management Cooperative Agreement with Flathead County Weed District.

- Wildlife – *Coarse Filter:* Forest stand conditions after implementing the action alternative will improve wildlife habitat conditions on 628 acres for species preferring open stands, seral tree species, and edges created from different tree canopy levels, emulating conditions that were more prevalent in the past. Use of this area by wildlife species preferring low levels of human activity is already compromised due to its proximity to residential development along Ashley Lake and its accessibility from the county road.

    a. *Threatened Species:* This section lies outside the Northern Continental Divide Ecosystem or Cabinet/Yaak Ecosystem recognized for grizzly bear recovery. Preferred Canada lynx habitats are not present. Harvest units will involve 119 acres of bald eagle home range and project design provides for retention of key habitat elements that includes large snags, perch trees, roost trees, and emergent trees complying with ARM 36.11.429 (1)(e). Active gray wolf den sites or rendezvous sites were not identified in the project area, but the provisions are in place for temporary suspension of operations if such sites are discovered. State ownership and actions will involve approximately ½ % of white – tailed deer winter range and even less of the larger elk and moose ranges. The removal of 2 acres of winter thermal cover and much of the hiding cover on 628 acres may result in changing use patterns for wolves and ungulates and higher ungulate hunter success rates, for the next several decades while young forest stands become established and attain sufficient sizes to provide more hiding and thermal cover on site. Limited amounts of hiding and thermal cover will still be provided within the Ashley Lake project area by retaining pockets of advanced regeneration in harvest units, avoiding riparian vegetation within and adjacent to the 15 acre wetland and along the intermittent stream and canyon in the southeast corner.
    b. *Sensitive Species:* Harvest units will leave potential preferred fisher habitat (riparian vegetation) in the project area mostly unaffected, but will reduce the quality or suitability of treated forest stands for resting and foraging. Since fisher use of the state parcel and adjacent lands is presently limited and potential use is not expected

3. SHOULD DNRC PREPARE AN ENVIRONMENTAL IMPACT STATEMENT (EIS)?

Based on the following, I find that an EIS does not need to be prepared:

- The EA adequately addresses the issues identified during project development and displays the information needed to make the decisions.
- Evaluation of the potential impacts of the proposed Ashley Lake Timber Sale indicates that no significant impacts would occur.

Finding Decision prepared by:
Beverly O'Brien, Kalispell Unit Forest Management Supervisor, DNRC

Beverly O'Brien — January 8, 2004

Signature — Date

CHAPTER 1: PURPOSE OF PROJECT

I. PURPOSE AND NEED FOR ACTION

Introduction:

The Montana Department of Natural Resources and Conservation (DNRC), Kalispell Unit, proposes the Ashley Lake Timber Sale. The proposed action would harvest approximately 4-8 million board feet (MMBF) of timber and includes maintenance on 9 miles of existing road. The project encompasses one full section and is located 13 air miles west of Kalispell, Montana in Flathead County. Timber sale activities would likely begin in the summer/fall of 2004 and conclude in the year 2006.

Table 1-1: State Land involved in the Ashley Lake Timber Sale:

Section	Township/Range	Subdivision	Acres	Trust
36	T29N, R24W	ALL	640	C.S.

C.S.= Common Schools

Statement of Need:

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools, state colleges, and universities, and other specific state institutions such as the School for the Deaf and Blind (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The board of Land Commissioners and the Department of Natural Resources and Conservation are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA).

Project Objectives:

In order to meet the goals of the management philosophy adopted through programmatic review in the State Forest Land Management Plan, the Department has set forth the following specific project objectives:

- ✓ Harvest 4 to 8 million board feet of sawtimber to generate revenue for the appropriate school grants.
- ✓ Improve the long term productivity of the timber stands by increasing vigor, reducing the susceptibility of stands to insect and disease infestations, and regenerating the stands to promote appropriate species mixes.

V. RESOURCE CONCERNS

The major resource concerns were identified through the scoping process. The majority of all resource concerns were resolved by mitigation measures incorporated into the project design for the action alternative. The major resource concerns are briefly described below and explored in greater depth in chapters II, III, and IV. They are listed in no particular order of importance.

A. Vegetation

- Lack of younger age classes are resulting in reduced productivity and increased risk to insect and disease mortality.
- Overstocked stand conditions are contributing to reduced growth rates and increase in insect and disease activity.
- Lack of large openings in the canopy and significant disturbance events has led to a decrease in seral tree seedling establishment and is contributing to a shift away from historic stand conditions.
- The amount of acres defined as old growth could be reduced as a result of silvicultural prescriptions aimed at promoting regeneration of seral tree species.

B. Soil

- Long-term soil productivity could be reduced depending on area and degree of physical effects from skidding and other logging activities, and the amount and distribution of coarse woody debris retained for nutrient cycling.

C. Wildlife

- Timber harvesting could reduce bald eagle nesting and perching habitats and/or disturb bald eagles.
- Timber harvesting could displace gray wolves from important habitats, particularly denning and rendezvous sites and/or influence prey availability.
- Timber harvesting and associated activities could displace grizzly bears from important habitats and/or reduce hiding cover and visual screening, reducing security for grizzly bears.
- Timber harvesting could remove lynx habitat and/or prevent lynx movement through the area.

CHAPTER 2: DESCRIPTION OF PROJECT ALTERNATIVES

I. INTRODUCTION

This chapter describes development of alternatives, including a "no-action" alternative and compares the alternatives by summarizing their environmental consequences. For this project, only one action alternative was developed and was designed to meet the project objectives. In addition to describing and comparing the alternatives, this chapter describes the alternative development process and mitigation and compensation measures that are designed for the action alternative.

II. DEVELOPMENT OF ALTERNATIVES

Purpose of Alternatives

Action alternatives are developed to meet project objectives in alternative ways that would resolve issues. Because resolving issues creates conflicts with others, it is often necessary to develop several action alternatives to accommodate these conflicts. For this project, all resource concerns were resolved by incorporating mitigation and compensation measures into the project design. As a result, only one action alternative was developed.

A "no action" alternative provides the baseline for comparing the environmental consequences of other alternatives.

Description of the Alternatives

This section describes the action alternative and the no-action alternative, proposed harvesting, logging methods, and mitigation and compensation measures that are specific to the action alternative.

1. **No Action Alternative**
If the no action alternative were selected, there would be no timber harvesting. Current land management activities and uses would continue. Many of these activities would be limited depending upon funding and would include: spot treatment for noxious weeds, road maintenance, dispersed recreation (mostly hunting), and fire suppression.

2. **Action Alternative**
If the action alternative were selected, 628 acres of timber would be harvested from 3 harvest units. Seed tree/shelterwood harvest systems would be prescribed on all 628 acres. Follow-up treatments would include approximately 420 acres of site prep and jackpot burning and 350 acres of hand tree planting. 9 miles of existing road would be brought up to Best Management Practices (BMP) standards.

- Existing skid trails and roads will be utilized for skidding and hauling, wherever possible, to reduce the amount of ground disturbance.

- The logger and sale administrator will agree to a general logging plan prior to harvest operations, in order to limit ground disturbance due to skidding operations.

- Retain 10-15 tons of coarse woody debris after harvest for nutrient cycling.

- Grass seed areas disturbed during maintenance activities.

- Ground scarification for site preparation will be limited to less than 50% bare soil exposure.

- A burn plan will be prepared to limit impacts to the soil resource from prescribed burning.

C. Wildlife

- Cease all operations if a threatened or endangered species is encountered. Consult a DNRC biologist and develop additional mitigations that are consistent with the administrative rules for managing Threatened and Endangered Species (ARM 36.11.428 through 36.11.435).

- Temporarily cease operations and consult with a DNRC biologist should a bald eagle nest be observed within 1 mile of the project area.

- Temporarily suspend all mechanized activities and administrative uses in areas that are within a 1- mile radius of any known, active wolf den until such time as wolves are known to have vacated the site or it has been determined that resumption of activities will not present conflicts with wolf use (ARM 36.11.430 (1)(a)(i)).

- Temporarily suspend operations if a suspected wolf rendezvous site is observed within a 0.5- mile radius of mechanized activities. Activities may resume if the department determines that resumption of activities will not present conflicts with wolf use (ARM 36.11.430 (1)(b)).

- Retain snags, snag recruits, and coarse woody debris.

- Retain a vegetated buffer along the intermittent stream.

- Effectively close roads and skid trails after the proposed activities to reduce the potential for motor vehicle disturbance and loss of snags to firewood gathering.

IV. COMPARISON OF ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

The following table (2-2) compares the alternatives by summarizing their environmental consequences. The table lists the major resource concerns and compares the related effects for each alternative. The scientific basis for the environmental effects summarized here are discussed in Chapters 3 & 4.

Resource	Issue	No Action Alternative	Action Alternative
Vegetation	Cover Type Distribution	21 acres of current mixed conifer cover types that are more appropriately western larch/Douglas-fir.	21 acres of current mixed conifer cover types converted to western larch/Douglas-fir.
	Age Class Distribution	No change in current age class distribution.	Timber harvesting would occur on 628 acres using seed tree harvest method to promote development of younger age classes.
	Tree/Timber stand growth and vigor	Static or declining on 628 acres.	Static or increasing on 628 acres.
	Insect and disease	Bark Beetles: Continued endemic activity with potential for epidemic activity.	Bark Beetles: 640 acres with endemic levels treated.
		Dwarf Mistletoe: Light infection over 75 acres.	Dwarf Mistletoe: 75 acres treated with removal of mistletoe infected trees.
	Old Growth	23 acres meeting Green definition of old growth not treated.	23 acres meeting Green definition of old growth treated silviculturally with maintenance treatment. Would still meet definition after harvest.
	Noxious Weeds	Continued spread along roads and trails.	Increase in risk of spot infestations with increases in bare mineral soil exposure from logging and road maintenance operations.

	Big Game Winter Range	No short-term change in big game thermal cover. Long-term reduction in forage and increase in thermal cover.	Slight reduction of deer winter range (2 acres).
	Elk Security	No change in elk security cover.	No change in elk security cover.
Soils	Soil Productivity	18 acres impacted by existing roads.	Timber harvesting activities would reduce productivity on 92.3 acres.
Hydrology	Sediment Delivery	No timber harvest or road maintenance to deliver sediment to intermittent streams affecting water quality.	Short-term increase in sediment from timber sale activities may occur but are not likely to result in adverse cumulative effects to water quality.
	Water Yield	No increase in water yield in the Ashley Lake Watershed.	No impacts associated with water yield increase due to well-drained soils, stable ephemeral draws and all but 20 acres of harvest with no surface delivery to another body of water.
Air Quality	Smoke production from slash and broadcast burning.	No slash or broadcast burning would be done. Current levels of smoke production would continue.	Short-term increases in smoke from burning of slash and broadcast burning of harvest units.

Table 3-1: Merchantable Timber Characteristics for Ashley Lake Section

Merchantable Timber Characteristics								
Species Comp	**Gross Vol/Ac**	**TPA**	**BA/AC**	**Avg. D.B.H.**	**Avg. HT**	**Avg. Age**	**Growth rate/trend**	**Habitat Types**
DF- 60%, WL-20%, AF- 15%, LP-3%, ES-1%, PP-1%	15.8	131	120	11"	80	190	8/D	PSME/PHMA PSME/LIBO PSME/SYAL ABGR/LIBO ABLA/CLUN ABLA/LIBO ABLA/MEFE

SPECIES COMP= species composition: DF= Douglas-fir, PP= Ponderosa pine, WWP= Western white pine WL= Western larch, LP= Lodgepole pine, AF= Alpine fir, GF= Grand fir ES= Engelmann Spruce.

GROSS VOL/AC= gross volume per acre measured in thousand board feet (MBF); **TPA**= trees per acre; **BA/AC**= basal area per acre measured in square feet; **AVG DBH**= average diameter at breast height; **AVG HT**= average height in feet; **AVG AGE**= average age in years; **GROWTH RATE/TREND**= radial growth for last ten years measured in 20ths of an inch and letters indicate growth trend with D= Decreasing. **Habitat Types**= PSME/PHMA= Douglas-fir/ninebark, PSME/LIBO= Douglas-fir/twinflower, PSME/SYAL= Douglas-fir/snowberry, ABGR/LIBO= Grand fir/ twinflower, ABLA/CLUN= Alpine fir/queencup beadlily, ABLA/LIBO= Alpine fir/ twinflower, ABLA/MEFE= Alpine fir/menziesia,

B. Cover Type Distribution

1. Kalispell Unit Cover Types

Estimates of current and appropriate cover types were determined at the landscape level for the entire Kalispell Unit. The Kalispell Unit Stand Level Inventory (SLI) was used in conjunction with John Losensky's 1997 report *Historical Vegetation of Montana* to compare what this landscape may have looked like historically in regards to amount and distribution of cover types.

percentage today is around 2%. These changes are due to several factors. Past timber harvests removed some of the overstory seral species and not enough of the shade tolerant canopy. The lack of larger openings in the canopy has prevented seral regeneration from establishing. The lack of fire disturbance has increased the amount of shade tolerant species in the overstory and understory.

C. Age Class Distribution

Table 3-4: Ashley Lake Age Class Distribution by Cover Type

Current Type	Stand Age Class				
	0-39	40-99	100-149	150+	TOTAL
	Acres				
WL/DF	0	0	0	594	594
MC	7	0	21	0	28
TOTALS	**7**	**0**	**21**	**594**	**622**

D. Old Growth

As per the State Land Board's decision in February 2001, the DNRC adopted the definition for old growth based on the number and size of large trees per acre and age of those trees as noted in Old-Growth Forest Types of the Northern Region, by P. Green, J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann (1992, USFS Northern Region, Internal Report). Only one stand, stand #2 (23 acres) met the age and number of large diameter trees criteria as noted in Old-Growth Forest Types of the Northern Region. Based on forest habitat types present and climatic factors, the criteria for old growth type 5, which requires 10 trees per acre greater than 17 inches, was used to assess the project area stands for old growth characteristics. Inventory data shows this stand has 31 trees per acre greater than 17". All other stands do not have the required number of large trees per acre to meet the definition.

E. Insect and Disease Activity

Inventory and field reconnaissance were used to identify and quantify insect and disease activity in the project area.

1. Bark Beetles

The Douglas-fir beetle (Dendroctonus pseudotsugae) is the most common bark beetle found in the project area. The beetle is responsible for small pockets of mortality throughout the section. The pockets of mortality have been small in size and no widespread outbreak has occurred. The numbers of beetles appears to have peaked in the late 1990's to early 2000 and populations have been holding steady. Continuing mortality is occurring due to the large areas of suitable older age class habitat and droughty weather conditions.

Soil types in the project area are primarily gentle (0-40%) glacial till deposits on hilly terrain. Portions of the upper slopes are glaciated mountain slopes on 40-60% gradient, and the southeast corner of the proposed project area contains steep stream breaklands leading to a stream bottom. The Flathead National Forest Soil Survey identified no areas of soils at high risk for mass movements in the project area. No slope failures were identified during reconnaissance in the project area. A list of soil types found in the Ashley Lake project area and their associated management implications is found in Table 3-5.

Table 3-5: Soil Map Unit Descriptions

Map Unit	Description	Soil Drainage	Road Limitations	Topsoil Displacement & Compaction	Seedling Establishment	Erosion (Bare Surface)
23-9	Glaciated mountain slopes, 40-60%	Well drained	Low	Mod/High	Moderate- vegetation competition	Moderate
26G-7	Glacial moraines, 0-20%	Well drained	Low	Mod/High	Moderate- vegetation competition	Moderate
26G-8	Glacial moraines, 20-40%	Well drained	Low	Mod/High	Moderate- vegetation competition	Moderate
74	Stream breaklands, 60-90%	Well drained	High surface erosion	Mod/High	Moderate- vegetation competition	Moderate

III. WILDLIFE

Introduction

DNRC attempts to promote biodiversity by taking a 'coarse-filter approach', which favors an appropriate mix of stand structures and compositions on State lands (ARM 36.11.404). Appropriate stand structures are based on ecological characteristics (e.g., land type, habitat type, disturbance regime, unique characteristics). A coarse-filter approach assumes that if landscape patterns and processes are maintained similar to those with which the species evolved, then the full complement of species will persist and biodiversity will be maintained. This coarse-filter approach supports diverse wildlife populations by managing for a variety of forest structures and compositions that approximate historic conditions across the landscape. DNRC cannot assure that the coarse-filter approach will adequately address the full range of biodiversity; therefore, DNRC also employs a "fine filter" approach for threatened, endangered, and sensitive species (ARM 36.11.406). The fine-filter approach focuses on a single species' habitat requirements.

These departures probably benefited wildlife species that rely on shade tolerant tree species and/or closed canopy habitats, while negatively affecting species that rely on shade intolerant tree species and/or open habitats. Past timber harvesting has likely reduced quality and quantity of snags and coarse woody debris compared to historical conditions, reducing habitat for those wildlife species that require these components.

Wildlife species that require connectivity of forest habitat types between patches or those species that are dependent upon interior forest conditions can be sensitive to the amount and spatial configuration of appropriate habitats. Therefore, patch size and juxtaposition can influence habitat quality and population dynamics for some species. Some species are adapted to thrive near patch edges, while others are adversely affected by the presence of edge or the presence of other animals that prosper in edge habitats. Connectivity under historical fire regimes (Losensky 1997) likely remained relatively high as fire differentially burned various habitats across the landscape. Connectivity within the vicinity of the proposed project area has been altered with ongoing timber harvesting and subdivision. Limited streamside management retention buffers exist to provide movement corridors. Larger patches of forests exist to the north of the proposed project area that could facilitate movement for some wildlife species. The network of open roads and development within the vicinity of the proposed project area has reduced some of the landscape-level connectivity. Historically, patch sizes in the vicinity of the proposed project area were likely rather large following mixed-severity and stand-replacing fires.

In western Montana, 85% of all bird species use riparian areas, which comprise 1% of the land. Half of those bird species, or 40-45% of all birds, are restricted to riparian areas for breeding purposes (Mosconi and Hutto, 1982). No perennial streams and only 0.4 miles of intermittent streams exist within the proposed project area. In addition to permanent water such as lakes, rivers, and other riparian areas, vernal pools and other seasonal wetlands are important for many of Montana's amphibians. Within the proposed project area there is a 15-acre herbaceous wetland along with several wide bottom drainages that could be seasonally wet. No avalanche chutes, rock outcrops, or cliffs exist in the project or analysis areas.

Threatened and Endangered Species

In northwestern Montana, the bald eagle, grizzly bear, gray wolf, and Canada lynx are classified as "Threatened" under the Endangered Species Act of 1973. No terrestrial species listed as "Endangered" under the Endangered Species Act are found in Northwestern Montana.

1. Bald Eagle

Strategies to protect the bald eagle are outlined in the Pacific States Bald Eagle Recovery Plan (United States Fish and Wildlife Service [USFWS] 1986) and the Montana Bald Eagle Management Plan (Montana Bald Eagle Working Group 1994). Management direction involves identifying and protecting nesting, feeding, perching, roosting, and wintering/migration areas (USFWS 1986, Montana Bald Eagle Working Group 1994).

openings, and near big game wintering areas for dens and rendezvous sites. Within the proposed project area, limited amounts of these habitat features exist.

Another important component of wolf habitat is secure areas away from open roads. Roads can increase mortality risk due to automobile collisions or illegal harvesting. An open road bisects the state section providing for human access to the area. Additionally, ineffective closures on some of the spur roads off the main road have further increased motorized access and subsequently disturbance levels within the proposed project area.

Wolves have been documented in the vicinity of the proposed project area in the past. Members of the relocated Castle Rock pack moved through the proposed project area on their way to new territories to the south of proposed project area. These wolves have formed the Fishtrap and Hog Heaven packs that occupy areas south of Route 2 in the Browns Meadow area and the middle Thompson River area. (T. Meier, USFWS, pers. comm., March 2003). Reproduction in each of these packs was documented in 2002 (USFWS et al. 2003). Wolves could pass through the area at any time, however extensive use is unlikely due to the surrounding development and level of human disturbance.

Cumulative effects were analyzed using field evaluation and aerial photograph interpretation within a 32,300-acre polygon. Within this analysis area, some big game winter range exists, as well as numerous meadows and other openings near water and in gentle terrain. The analysis area is largely managed by the USFS (22,300 acres) with some industrial timberland (7,074 acres) and other private holdings (2,006 acres). Factors considered within this analysis area include level of human disturbance and prey availability.

3. Grizzly Bear

Grizzly bears are wide-ranging mammals that use forested upland habitats. Preferred grizzly bear habitats are meadows, riparian zones, avalanche chutes, subalpine forests, and big game winter ranges, all of which provide seasonal food sources. The proposed project area is approximately 19 miles southwest of the Lazy Creek subunit of the Stillwater River Bear Management Unit of the North Continental Divide Ecosystem Recovery Area (USFWS 1993). There have been no documented observations of grizzly bears in the general vicinity of the proposed project area (A. Jacobs, USFS-FNF, pers. comm. June 2003). The proposed project area is, however, approximately 2 miles outside of "occupied habitat" as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (T. Wittinger, Unpub Interagency Map). Grizzly bears could, however, show up in the proposed project area at any time.

Managing human access is a major factor in management for grizzly bear habitat. Presently the proposed project area has 1.3 miles of open road bisecting the section plus several miles of roads behind ineffective closures. Extensive grizzly

TABLE 3-6 – Listed Sensitive Species for the NWLO showing the status of these species in relation to this project.

SPECIES	DETERMINATION-BASIS
Black-backed woodpecker	No further analysis conducted – No recently burned areas are in the project area.
Coeur d'Alene salamander	No further analysis conducted – No moist talus or streamside talus habitat occurs in the project area.
Columbian sharp-tailed grouse	No further analysis conducted – No suitable grassland communities occur in the project area.
Common loon	No further analysis conducted – No suitable lake habitats occur within the project area, although loons frequently nest on Ashley Lake.
Fisher	**Included** – Potential fisher denning habitat occurs on the project area.
Flammulated Owl	No further analysis conducted – No suitable dry ponderosa pine habitats occur within the project area.
Harlequin duck	No further analysis conducted – No suitable high-gradient stream or river habitats occur in the project area.
Northern bog lemming	No further analysis conducted – No suitable sphagnum bogs or fens occur in the project area.
Peregrine falcon	No further analysis conducted – No suitable cliffs/rock outcrops occur in the project area.
Pileated woodpecker	**Included** – Western larch/Douglas-fir and limited ponderosa pine habitats occur in the project area.
Townsend's big-eared bat	No further analysis conducted – No suitable caves or mine tunnels occur in the project area.

1. Fisher

The fisher is a medium-sized mammal belonging to the weasel family that uses mature and late-successional habitats, particularly for resting and natal dens. Fishers are generalist predators and use a variety of habitat types, but are disproportionately found in stands with dense canopies. In the Rocky Mountains, fishers appear to prefer late-successional coniferous forests for resting sites and tend to use areas within 150 feet of water more than their availability on the landscape (Jones 1991). Such areas typically contain large live trees, snags, and logs, which are used for resting and denning sites and dense canopy cover, which is important for snow intercept (Jones 1991). Forest-management considerations for fisher involve providing for resting and denning habitats near riparian areas while maintaining travel corridors. Modeling the above conditions using SLI data generated an estimate of fisher resting and denning habitat (Heinemeyer and Jones 1994).

The proposed project area ranges from 4,100 to 4,900 feet in elevation, with one intermittent stream. No appreciable fisher denning habitat was identified within

feeding sites and 0 to 3 variably (12+ in dbh) spaced snags per acre were observed in the proposed project area.

Cumulative effects were analyzed on the surrounding 8 sections (Figure E-1) using a combination of field evaluation and aerial photograph interpretation. Factors considered within the analysis area included the degree of harvesting and the amount of continuous forest within the analysis area.

Big Game

1. Big Game Winter Range

Winter ranges enable big game survival by minimizing the effects of severe winter weather conditions, which can be limiting for big game populations. Winter ranges tend to be relatively small areas that support large numbers of big game, which are widely distributed during the remainder of the year. Winter ranges suitable for buffering the effects of severe winter conditions have adequate midstory and overstory to reduce wind velocity and intercept snow, while moderating ambient temperatures. Besides providing a moderated climate, the snow-intercept capacity effectively lowers snow depths, which enables big game movement and access to forage. Snow depths differentially affect big game; deer are most affected, followed by elk, then moose. Typically if winter range habitats are provided for white-tailed deer, winter requirements for mule deer, elk, and moose will be met.

Department of Fish, Wildlife, and Parks (DFWP) identified white-tailed deer winter range along the southeastern corner of the proposed project area and moose winter range across the parcel. The white-tailed deer winter range that enters the proposed project area is part of a larger winter range that covers 116,700 acres; the moose winter range in the project area is part of a larger contiguous 2-million acre moose winter range that extends to the north and west through much of northwestern Montana.

Winter snow depths and suitable microclimates influence deer, elk, and moose distribution and use within the Salish Mountains and the proposed project area. Mature Douglas-fir in the western larch/Douglas-fir stands that comprise much of the proposed project area, are providing attributes facilitating use by wintering big game. Proximity to open roads and ongoing subdivision construction likely limits the quality of the winter ranges. Evidence of summer use by deer, elk, and moose was noted throughout the proposed project area during field visits.

Cumulative effects were analyzed on the contiguous 116,700-acre white-tailed deer winter range (Figure E-2) using a combination of aerial photograph and field evaluation. Factors considered within the analysis area include acres of winter range harvested and level of human disturbance and development.

2. Water Yield

Timber harvesting and associated activities can affect the timing, distribution, and amount of water yield in a harvested watershed. Similarly, effects of stand replacement wildfire also affect water quantity and yield in a watershed. Water yields increase proportionately to the percentage of canopy removal, because removal of live trees reduces the amount of water transpired, leaving more water available for soil saturation and runoff. Canopy removal also decreases interception of rain and snow and alters snowpack distribution and snowmelt, which lead to further water yield increases. Higher water yields may lead to increases in peak flows and peak-flow duration, which can result in accelerated streambank erosion and sediment deposition.

B. Analysis Methods

Existing conditions for water quality and water yield were analyzed using field site visits and visual inspection of the drainage features in the proposed project area.

C. Analysis Area

1. Water Quality

The analysis area for water quality is the proposed project area, and all forest roads that lead into the project area from other ownerships. The primary focus of the sediment delivery analysis was on the discontinuous streams and draws located within the proposed project area.

2. Water Yield

The analysis area for water yield is the ephemeral draws covered by the project area.

D. Existing Conditions

1. Regulatory Framework

a. Montana Surface Water Quality Standards: According to ARM 17.30.607 (1), the Ashley Creek drainage above Smith Lake and its tributaries, including Ashley Lake, are all classified as B-1. Among other criteria for B-1 waters, no increases are allowed above naturally occurring levels of sediment and minimal increases in turbidity. "Naturally occurring," as defined by ARM 17.30.602 (17), includes conditions or materials present during runoff from developed land where all reasonable land, soil and water conservation practices (commonly called BMP's) have been applied. Reasonable practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses. These practices include but are not limited to structural and non-structural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after completion of activities that may impact the resource.

d. Forest Management Rules: By definition in ARM 36.11.403 (95), the NW¼ of the SE¼ of Section 36 of the proposed project area contains a wetland of approximately 15 acres. As required in ARM 36.11.426, this wetland should have a 50-foot Wetland Management Zone (WMZ) delineated around its perimeter.

2. Water Quality

The existing road system in the proposed project area is moderate to low standard. Most of this system meets applicable Best Management Practices for surface drainage or erosion control. Portions of the existing road system have erosion control and surface drainage that requires minor improvement, but road grades are moderate and the road system is located away from draws and streams except at crossings. No other sources of erosion or deposition were identified through field review. The intermittent tributary to Ashley Lake becomes subsurface below the proposed project area. All evidence of a channel disappears, and no surface water is delivered to Ashley Lake except during extreme runoff events. None of the other draws in the proposed project area delivers to another body of water, so no sediment has been delivered to any downstream waters outside of the project area.

3. Water Yield

Past activities in and around the proposed project area include timber management, agriculture, and home site development. These activities have led to reductions in forest canopy cover, and construction of roads.

Following field reconnaissance of the proposed project area, it was determined that a detailed water yield analysis would not be necessary for the proposed project area. None of the broad ephemeral draws within the proposed project area have any evidence of overland flow (channel scour, re-alignment of litter, definable banks). The defined stream channel in the southeast corner of the project area has a stable, intermittent channel with no evidence of instability from water yield increases, and very little scouring effect from annual runoff events. All evidence of this channel disappears below the project area and before reaching Ashley Lake. As a result, water yield increases resulting from past activities have not been sufficient to create overland flow or a defined stream channel below the proposed project area, or in any of the broad draws throughout the project area.

V. AIR QUALITY

This area is currently managed under the Montana Airshed Group and lies within Airshed 2. The Airshed Group monitors weather conditions and manages open burning restrictions in the airshed to prevent or limit burning operations during poor dispersion and ventilation conditions. Overall air quality in this area is good; with temporary periods of lower quality air during the spring and fall open burning seasons.

levels and provide more light and nutrients to remaining trees and retain the healthiest trees in the stand. Reduced stocking favoring the healthiest trees will ensure increased growth and vigor and improve long-term productivity through establishment of thrifty, young stands of trees. Site conditions would favor regeneration of seral tree species.

B. Cover Type Distribution

1. Direct and Indirect Effects

Kalispell Unit
On the Kalispell Unit, the shift in current cover types when compared to "desired future" or appropriate cover types shows a decrease in western larch/Douglas-fir cover types and an increase in mixed conifer cover types. The reasons for this trend revolve around past management and fire suppression.

No Action Alternative: There would be no change to the current cover type amount and distribution on the Kalispell Unit under this alternative. The shift of the western larch/Douglas-fir cover types to 'other' cover types (mostly mixed conifer) would continue to occur without natural disturbances or stand replacement type harvest treatments to open the canopy and allow for seral tree species regeneration.

Action Alternative: Although 628 acres would be silviculturally treated, the implementation of the action alternative will only slightly change the overall cover type amount and distribution on the Kalispell Unit. The action alternative would slow the current shift of cover types by favoring retention of overstory seral species (western larch) that are under represented and by removing shade tolerant species (alpine fir and grand fir), which are over represented. Regeneration of western larch would be promoted to maintain and promote the development of WL/DF cover types.

Ashley Lake Project Area
While most of the stands in the project area currently meet the species composition criteria for appropriate type, there is a species shift going on in the project area towards stands being dominated by shade tolerant species.

No Action Alternative: There would be no change to the current cover type amount and distribution on the Ashley Lake Project area in the short term. The current shift in western larch/Douglas-fir cover types to alpine fir and mixed conifer would continue to occur without natural disturbances or stand replacement type harvest treatments to open the canopies and allow for seral tree species regeneration. Shade tolerant species such as alpine fir and grand fir would continue to increase in the appropriate western larch/Douglas-fir cover types keeping with the overall Kalispell Unit trend of increasing acreage of mixed conifer cover types.

C. Age Class Distribution

1. Direct and Indirect Effects

No Action Alternative: No timber harvesting or related activities would occur. The current age class distribution on the project area would remain the same without natural disturbances or stand treatments that would convert stands to younger age classes.

Action Alternative: Timber harvesting would occur on 628 acres using seed tree harvest methods to promote the development and establishment of younger age classes. Retention of seral species would be promoted in the harvest and planting of western larch would occur in larger openings.

2. Cumulative Effects

No Action Alternative: No change in age class distribution would occur. Stands would continue to age and result in older age classes in the project area without natural disturbances or stand treatments that would convert stands to younger age classes.

Action Alternative: 628 acres would be harvested using seed tree harvest methods. This would promote the development of younger age classes over the project area. The conversion to younger age classes would result in increased timber productivity for the treated stands.

D. Old Growth

1. Direct and Indirect Effects

No Action Alternative: Under the no action alternative, there would be no change in the amount of old growth in the project area. Some stands in the project area may develop the characteristics that would enable them to meet the criteria necessary to be classified as old growth over time. This would depend upon growth rates and the development of large diameter trees.

Action Alternative: There are 23 acres of "Type 5" old growth in the project area that would be silviculturally treated under the action alternative. The old growth definition for this type requires 10 trees per acre greater than 17 inches in diameter. The silvicultural treatment prescribed in the old growth stand would focus on removing the shade tolerant species and retaining the healthiest 15-30 large diameter trees in the stand. With the retention of the best 15-30 trees per acre, the stand will still be classified as old growth after harvest (only 10 required for leave).

Action Alternative: Douglas-fir and western larch infected with mistletoe would be harvested under the action alternative. Reduction in infected overstory trees will remove sources of infection and reduce future losses in growth and yield.

2. Cumulative Effects

No Action Alternative: Insect and disease populations under the no action alternative would remain static or increase over time. Bark beetles would remain static or increase in the short term depending upon drought and stocking conditions. Dwarf mistletoe infection in Douglas-fir and western larch would persist and result in continuing infection and loss to growth and yield.

Action Alternative: With implementation of the action alternative, insect and disease levels would remain static or decrease over time. Silvicultural prescriptions reducing stocking levels would increase growth and vigor in the remaining trees, increasing their resistance to bark beetle attacks. Dwarf mistletoe infection would be reduced in the overstory and future infection of younger stands would also be reduced.

G. Noxious Weeds

1. Direct and Indirect Effects

No Action Alternative: Current weed populations would continue to increase over time without treatment. Motorized vehicle use, the main proponent in weed seed dispersal, would continue to spread weed seed along all open roads in the project area. Road maintenance activities on State and private roads would have the potential to create conditions conducive for new infestations or increases in existing populations. With adoption of the SFLMP and cooperative agreement with Flathead County, a more aggressive approach to identification and treatment of noxious weeds has occurred than in the past. This ongoing treatment of noxious weeds should help mitigate any increase in noxious weed spread and may reduce the number of acres infested in the future.

Action Alternative: The action alternative would include initial maintenance on over 9 miles of existing road. Much of the existing road is already infested with noxious weeds. Logging operations such as skidding logs, log landings, site preparation, road maintenance, and log hauling operations increase the exposure of bare mineral soil. The increase in bare mineral soil from these activities would increase the area where noxious weeds could become established. With adoption of the SFLMP and cooperative agreement with Flathead County, a more aggressive approach to identification and treatment of noxious weeds has occurred than in the past. This ongoing treatment of noxious weeds should help mitigate any increase in noxious weed spread and may reduce the number of acres

long-term soil productivity based upon the implementation of mitigation measures to control the area and degree of detrimental soil impacts to less than 15% of the proposed harvest area. A combination of skidding and site preparation mitigations would include: restricting the season of use to periods when soil is dry, frozen, or snow covered; utilizing a minimum of skid trail spacing; installing erosion control in trails and corridors where needed; retaining woody debris; targeting less than 50% bare soil exposure with site prep following all applicable BMP's.

Table 4-1: Estimated maximum acres of soil impacts from harvest methods

Harvest Method	Harvest area (acres)	% Area Impacted	Acres Impacted
Cable	38	10%	3.8
Ground Based	590	15%	88.5
TOTALS	**628**	**12.5%**	**92.3**

2. Cumulative Effects

No Action Alternative: The no action alternative would have no cumulative impacts on soil productivity. No soil would be disturbed under this alternative and no re-entry of past harvest units would occur with the no action alternative.

Action Alternative: The action alternative would enter some stands that have been previously harvested. Cumulative effects to soils may occur from repeated entries into a forested stand, where additional ground is impacted by equipment operations. DNRC would maintain long-term productivity and minimize cumulative effects by application of Best Management Practices and implementation of the soil mitigations that include using existing skid trails, installing erosion control features, skid trail spacing, and soil moisture restrictions. In addition, 10 to 15 tons of coarse woody debris and fine litter would be retained per acre for long-term nutrient cycling.

III. WILDLIFE EFFECTS

Coarse Filter Assessment

1. Direct and Indirect Effects

No Action Alternative: Forest conditions would continue to move toward denser stands of shade-tolerant tree species with high canopy cover. No immediate changes are anticipated in the patch size, shape, or connectivity. Over time, shade-intolerant tree species in the proposed units would die, and dense shade-tolerant species in the midstory would prevent replacement of shade-intolerant species. A stagnated, dense stand of Douglas-fir and grand fir would likely result. Under this alternative, no changes in diversity of wildlife species are expected;

private ownership are largely younger stands, while stands on parcels managed by the USFS are a mosaic of age classes that are skewed toward the mature classes. Younger stands on adjacent private ownership are the result of management that emulated stand-replacing and mixed severity fire regimes. Edge habitats between these earlier harvested stands and the state parcels would gradually be reduced through advances in succession. Parcels to the south and southeast are undergoing subdivision and edge habitats are not expected to develop or be maintained within these areas. This alternative would cause neither changes in the amount of fragmentation nor changes in patch size and configuration. Limited, existing habitats for forested interior and old-stand-associated species would continue to persist in the analysis area. No appreciable changes to wetlands or riparian habitats in the analysis area are anticipated under this alternative.

Action Alternative: This alternative would open stands up and decrease the amount of mature forest habitat in the analysis area. Edge habitats exist to a degree along the boundaries of state and USFS parcels in the analysis area. The proposed harvest would gradually blend with adjacent, harvested parcels to the north and west, increasing patch size of younger stands within the analysis area. Some wildlife species would benefit from this increase in edge and juxtaposition of different cover types, while, for other species, disturbance would limit available habitat. Within the analysis area, those species benefiting from edge habitats and early successional stage habitats have benefited at the expense of those species requiring contiguous stands of mature timber; the proposed activities associated with this alternative would be additive to past activities increasing amounts of edge habitats and early successional stage habitats, which were likely more typical on these sites under average historic conditions. Landscape connectivity has largely been compromised within the analysis area, and no appreciable change is expected with this alternative. The reduction in forested cover is expected to interrupt movement by species requiring contiguous forests, but since these species are not expected to appreciably use the state section presently, the effects would be minor. The reduction in canopy closure and tree density on approximately 628 acres would reduce potential habitat for old-stand-associated species and would be additive to the past losses of habitat within the analysis area. However, it is unlikely that the state section alone could sustain populations of any of these species in the analysis area. No appreciable changes to wetlands or riparian habitats in the analysis area are anticipated under this alternative.

USFS managed parcels and, to a lesser degree, on privately managed parcels. Hauling along the county road is not expected to alter nesting success since this road already receives considerable heavy equipment traffic. Concurrently, no other plans are under consideration that would affect eagle use of the territory.

Gray Wolf

1. Direct and Indirect Effects

No Action Alternative: Disturbance to wolves would not increase. Forest canopy closure would continue to decrease big game forage, while slightly improving thermal cover in the area. No changes in white-tailed deer habitat are expected during the short-term therefore no changes in wolf prey are anticipated. Wolf use of the proposed project area would be expected to continue at current levels.

Action Alternative: Harvesting activities could disturb wolves if they are using the area. After harvesting activities, wolf use of the proposed project area would likely revert to preharvest levels. In the short term, the proposed harvest units are expected to lead to a decrease in winter thermal cover and an increase in big game forage. The reduction in winter thermal cover could result in local decreases in abundance during the winter months, which could alter wolf use of the proposed project area.

2. Cumulative Effects

No Action Alternative: Under this alternative, white-tailed deer winter range would not be affected, and substantive change in white-tailed deer population, distribution, or habitat use is not anticipated. Very little permanent development exists within the analysis area, and outside of timber harvesting and dispersed recreation, levels of human disturbance are relatively low and are expected to remain relatively low into the future. No changes within the analysis area are anticipated that would alter gray wolf use of the area.

Action Alternative: Since the expected effects of this project on wolves would be minor, cumulative effects would also be minor. Reductions in cover associated with the proposed project might cause slight decreases in use by deer and elk within the proposed project area, however no appreciable changes are expected within the analysis area. The analysis area is largely a mosaic of mature and regenerating forests that supports healthy populations of deer and elk. The southern edge of the analysis area, where the proposed project is located, would likely receive limited use due to proximity to extensive disturbance and subdivision. Again, very limited permanent development exists within the analysis area. Human-disturbance levels in the analysis area are anticipated to be elevated in part of the analysis area during the proposed project, but are expected

closures within the state section) in the vicinity of the proposed project would have little effect on grizzly bears. No permanent increases in human disturbance level are expected to result from this project. The analysis area is largely managed by the USFS, with some scattered parcels managed by DNRC, Plum Creek Timber Company, and other private landowners. Reductions in hiding cover would be additive to the reductions due to past timber harvesting in the analysis area; however, most of the analysis area is providing hiding cover presently. Early successional stages of vegetation occurring in harvest units could provide foraging opportunities that do not exist in some mature stands.

Sensitive Species

Fisher

1. Direct and Indirect Effects

No Action Alternative: No effects to fishers would be expected under this alternative. Little change to the stands potentially providing fisher foraging habitat would be expected. Habitats that are conducive to fisher travel might improve due to increased tree growth and canopy closure; however, foraging opportunities might gradually decline with the reduction in habitat diversity components such as edge and younger age-class stands. Human disturbance and potential trapping mortality are expected to remain similar to current levels.

Action Alternative: Under this action alternative, riparian habitats along the intermittent stream in the proposed project area would largely be unaffected. Fisher travel habitats along the intermittent stream would continue to facilitate movement. Fisher foraging and resting habitat might also be slightly reduced due to the proposed overstory removal on the uplands (628 acres) adjacent to the riparian areas; but much of the harvesting would avoid habitats typically preferred by fishers. No long-term changes in human disturbance or potential trapping mortality are anticipated with this alternative.

2. Cumulative Effects

No Action Alternative: Under the No-Action Alternative, fisher foraging and travel habitats would be retained. Suitable fisher denning habitat appears limited within the analysis area. Uplands within the analysis area are largely western larch/Douglas-fir types that are not typical fisher denning habitats. Within the analysis area approximately 2,000 acres (or roughly 40%) have been harvested in the last 30 years, and is not suitable fisher habitat. Limited riparian areas exist within the analysis area along 8.4 miles of intermittent streams and 1.2 miles of permanent streams. Landscape connectivity within riparian areas is limited, and although forested corridors exists, extensive use is not expected given the levels of disturbance and harvesting in the analysis area. Road access within the

the majority of the midstory and overstory would be removed. This would likely reduce pileated nesting in this area. After the proposed harvesting, the 628 harvested acres within the proposed project area would be too open to be considered pileated woodpecker habitat. The silvicultural prescriptions would retain healthy western larch, ponderosa pine, and Douglas-fir and promote regeneration of these same species. Retention and recruitment of western larch and ponderosa pine would benefit pileated woodpeckers in the future by providing nesting, roosting, and foraging habitats, however the proposed project area alone is not expected to be capable of supporting a pair of pileated woodpeckers in the near-term.

2. Cumulative Effects

No Action Alternative: Under this alternative, western larch and ponderosa pine trees would continue to grow and die over time in the proposed project area, providing nesting and foraging habitats. Through time, conversion of stands to shade-tolerant species would reduce nesting substrates for pileated woodpeckers. Approximately 1,550 acres (95%) of the 1,640 acres of USFS managed lands within the analysis area are presently in mature western larch/ Douglas-fir and mixed conifer cover types that provide nesting and foraging habitats for pileated woodpeckers. Nearly 72% of the 2,690 acres of privately managed lands have been harvested within the last 30 years and do not possess qualities that make them highly suitable for pileated woodpecker nesting or foraging. Although limited pileated woodpecker habitat exists on these lands, foraging habitat is developing and is expected to be suitable in 35-50 years. It is possible that under this alternative, that the analysis area could support 2-3 pairs of pileated woodpeckers.

Action Alternative: Under this alternative, reductions in pileated woodpecker habitat are expected. Existing snags, coarse woody debris, and suitable nesting trees would be retained within the proposed project area. Within the proposed project area, canopy closure on 628 acres proposed for harvesting would largely be too open for appreciable pileated woodpecker use. Approximately 41% (or just over 2,000 acres) of the analysis area, including roughly 72% of all private lands, has been harvested within the last 30 years and is not providing pileated woodpecker nesting habitat. The harvesting proposed under this alternative would be additive to the losses associated with timber harvesting and subdivision that has occurred in the analysis area. Foraging habitat is, however, developing on some of this acreage harvested 20-30 years ago. Within the analysis area, approximately 1,550 acres managed by the USFS are providing pileated woodpecker nesting habitat and would likely continue providing these habitat attributes in the immediate future. Under this alternative, the proposed harvesting would likely reduce the carrying capacity of the analysis area to 1-2 pairs of pileated woodpeckers, but long-term habitat quality is expected to improve, as is long-term use.

Elk Security

1. Direct and Indirect Effects

No Action Alternative: Under this alternative, no changes in elk security cover are expected. Elk security would still not be present in the proposed project area. Timber stands would continue advancing to climax plant species. No alterations in cover would occur that would increase elk vulnerability during the elk hunting season. No changes are anticipated in disturbance and potential mortality due to hunting.

Action Alternative: Under this action alternative, by definition, elk security cover would not develop despite providing effective closures on the spur roads. The proposed project area would still remain within ½ mile of an open road. Additionally, the proposed reductions in mature trees would also eliminate this parcel from being considered as security cover. The proposed road closures would have a negligible effect on hunter accessibility and big game survival. The retention trees and areas of advanced regeneration within the proposed units would contribute to elk and deer hiding cover.

2. Cumulative Effects

No Action Alternative: Under this alternative, no changes are anticipated in elk security cover, big game hiding cover, or hunter accessibility. Over time, recently harvested stands would mature and hiding cover would improve, but this would likely only offset the reductions associated with ongoing harvesting and subdivision. Temporal shifts in security cover at the hunting district can be expected as successional stages change, but long-term changes are not expected.

Action Alternative: Under this alternative, negligible effects to big game survival are anticipated. No changes in long-term elk security cover or hunter accessibility are expected with the proposed project. Overall these changes would have a negligible effect at the hunting district level. Likewise negligible short-term reductions in hiding cover are also expected. In the northern portion of the hunting district, 1,139 acres of hiding cover are being reduced with the Good/Long/Boyle Timber sale on the Stillwater State Forest. DNRC is also considering the Cliff Lake timber sale within this district. Much of this hunting district is managed by the USFS, and limited timber harvesting is expected within this district, so district-wide reductions in hiding cover are not anticipated. In general, negligible effects to big game security at the hunting district are expected with this alternative.

Action Alternative:

a. Water Quality
Risk of sediment delivery in the proposed project area would be reduced from current levels. Improvement of erosion control and surface drainage on the existing road system would reduce erosion rates from current levels and reduce the risk of sediment delivery to other areas.

b. Water Yield
Past activity in and around the proposed project area has mainly consisted of timber management. On sites where timber was harvested, there has been substantial vegetative and hydrologic recovery with no apparent impact to stream channels or draws from water yield increases. Watershed cumulative effects are not anticipated for the following reasons: 1) The well-drained nature of the soils would produce little or not detectable change in water yield, 2) The ephemeral draws within the project area are stable and vegetated with a dense mat of grass and forb vegetation, making them capable of handling potential water yield increases without destabilizing, and 3) All but approximately 20 acres of the proposed harvesting would occur in ephemeral draws with no surface delivery to another body of water, and the remainder of the harvest would be located near an intermittent stream channel with no surface delivery to another body of water, therefore potential increases in sediment or water yield from harvest activities would not affect downstream waters.

V. AIR QUALITY EFFECTS

1. Direct and Indirect Effects

No Action Alternative: Under the no action alternative, air quality would not change from the existing condition. No slash or site prep burning would be done. Wildfires are possible and would temporarily reduce air quality.

Action Alternative: Under the action alternative, timber harvesting and road building activities have the potential to reduce air quality in the project area. All slash burning would be done in cooperation with the Montana Airshed Group. This would provide for burning when conditions are acceptable in terms of ventilation and dispersion. No slash burning would be done when inversions or other stable weather systems are present. Site preparation burning under the action alternative would be accomplished under a written burn plan that provides for burning when conditions are acceptable in terms of ventilation, dispersion and consumption of fuels in meeting burn objectives. Wildfires are still possible under the action alternative.

Table 4-1: Costs and Benefits Estimates by Alternative

	No Action		Action Alternative		
	Total $	$/ Acre*	Total $	$/ MBF	$/ Acre*
Forest Improvement	$0.00	$0.00	$399,000.00	$66.50	$623.44
Estimated Total $ Revenue to the Trust from Timber (Stumpage x harvest volume)	$0.00	$0.00	$1,200,000.00	$200.00	$1,875.00
Estimated Timber Dollar Collected by the State (Stumpage + FI)	$0.00	$0.00	$1,599,000.00	$266.50	$2,498.44
Estimated Total Dollar Revenue to the Trust	$0.00	$0.00	$1,000,000.00	N/A	$1,875.00

Effects of the No Action Alternative: The estimated Total Dollar Revenue to the Trust would be $0.

Effects of the Action Alternative: The estimated Total Dollar Revenue to the Trust would be $1,200,000.

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Endangered Species Act (ESA): The Act that required consultation with the Fish and Wildlife Service (Interior) if practices on National Forest System lands may impact a threatened or endangered species (plant or animal). Direction is found in FSM 2670.

Forest Health: A condition for forest ecosystems that sustains their complexity while providing for human needs. In terms of ecological integrity, a healthy forest is one that maintains all of its natural functions. In relation to management objectives, forest health represents a condition which meets current and prospective future management objectives. (After O'Laughlin et al. 1993, Monnig and Byler 1992)

Habitat Type: A collection of land areas potentially capable of producing similar plant communities at climax, generally named for the predicted climax community type. (After Pfister et al. 1977)

Hydrology: A science dealing with the properties, distribution, and circulation of water, specifically the study of water on the surface of land, in the soil and underlying rocks, and in the atmosphere, with respect to evaporation and precipitation. (After Webster 1963 In: Schwarz et al. 1976)

Noxious Weed: Plants that conflict with, interfere with,or otherwise restrict land management are commonly referred to as weeds. A plant that has been clssified as a weed attains "noxious" status by an act of State legislation.

Open road: A road that is open year-round with no restrictions.

Riparian area: Green zones associated with lakes, reservoirs, estuaries, potholes, springs, bogs, fens, wet meadows, and ephemeral, intermittent, or perennial streams. The riparian/wetland zone occurs between the upland or terrestrial zone and the aquatic or deep water zone.

Salvage Cutting: The removal of dead trees or trees being damaged or killed by injurious agents other than competition, to recover value that would otherwise be lost. (Silviculture Working Group 1993)

Scarification: A deliberate, moderate disturbance of soil to remove or mix surface duff with less than 1" of surface mineral soil. Scarification provides bare mineral soils for trees that need it to regenerate. It also promotes oxidation of organic matter and speeds its breakdown into nutrients to enrich soil.

Sensitive species: A U.S. Forest Service designation for plant or animal species that are vulnerable to declines in population or habitat capability which could be accelerated by land management activities.

Shelterwood: A method of regenerating an even-aged stand in which a new age class develops beneath the partially-shaded environment provided by the residual trees.

Wetlands: Areas that are permanently wet, or intermittently water covered, such as swamps, marshes, bogs, muskegs, potholes, swales, glades, and overflow land of river valleys. Large, open lakes are commonly excluded, but many kinds of ponds, pools, sloughs, holes, and bayous may be included. (Veatch and Humphrys 1966 In: Schwarz et al. 1976.

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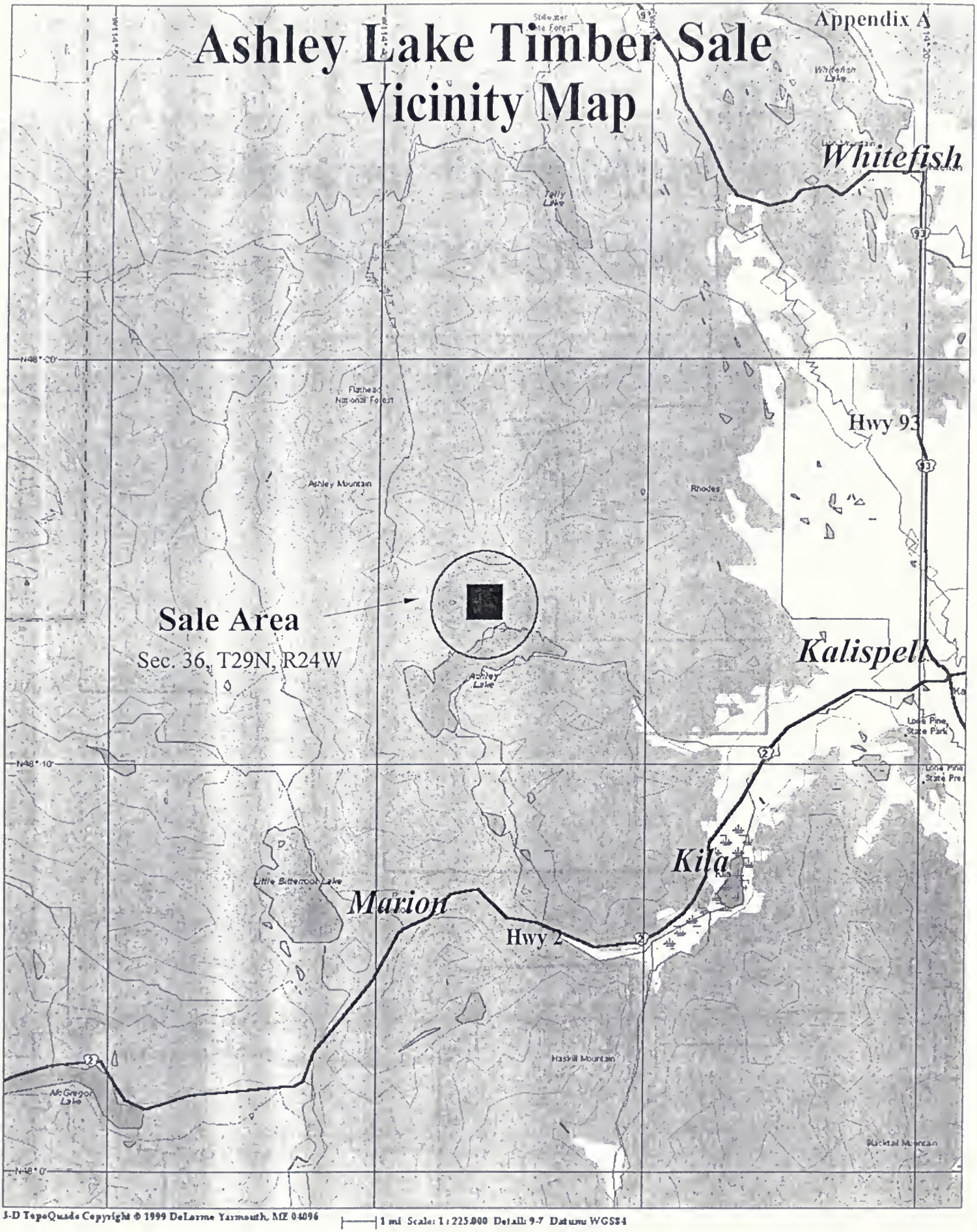
ACRONYMS

ARM	Administrative Rules of Montana
AUM	Animal Unit Month
CMP	Corrugated Metal Pipe
DBH	Tree Diameter At Breast Height
DNRC	Department of Natural Resources and Conservation
ECA	Equivalent Clearcut Acres
ESA	Endangered Species Act
MCA	Montana Codes Annotated
MBF	Thousand Board Feet
MMBF	Million Board Feet
SMZ	Streamside Management Zone
USFS	United States Forest Service
WYI	Water yield increase

Appendix A

Ashley Lake Timber Sale
Vicinity Map



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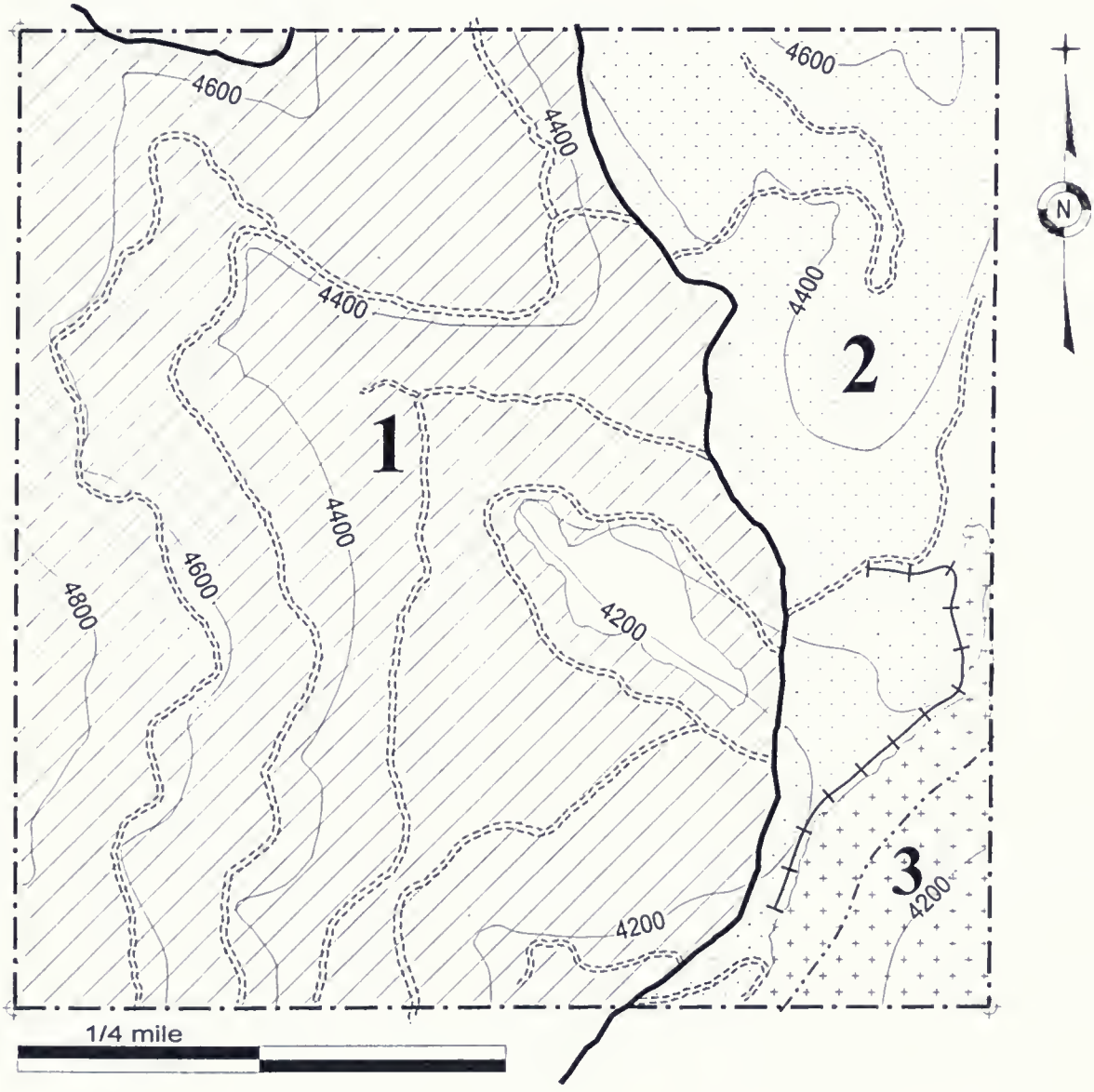
Ashley Lake Timber Sale
Harvest Unit Map
Sec. 36, T29N, R24W

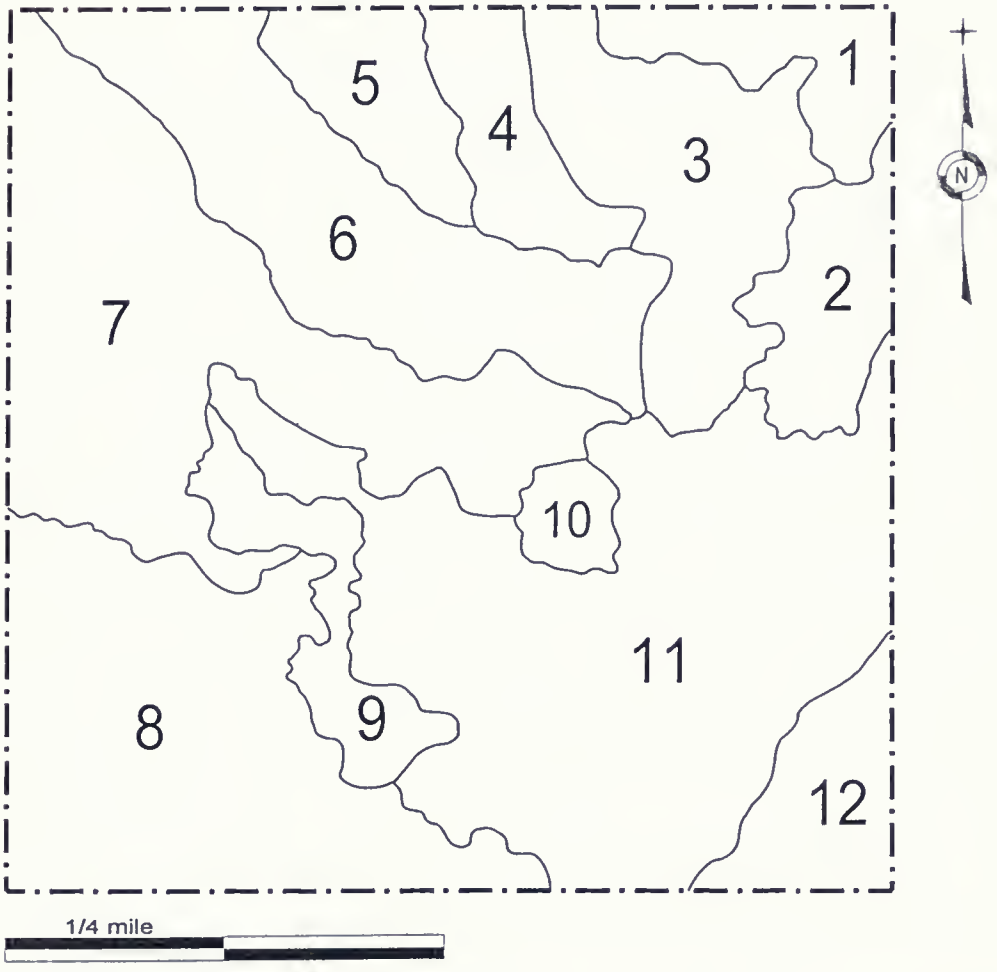


Legend

State Section Line		Contour Line	4400
Main Forest Road		Stream	
Temporary Spur Road		Harvest Unit	1
Spur Road			

Ashley Lake Timber Sale
SLI Stand Map

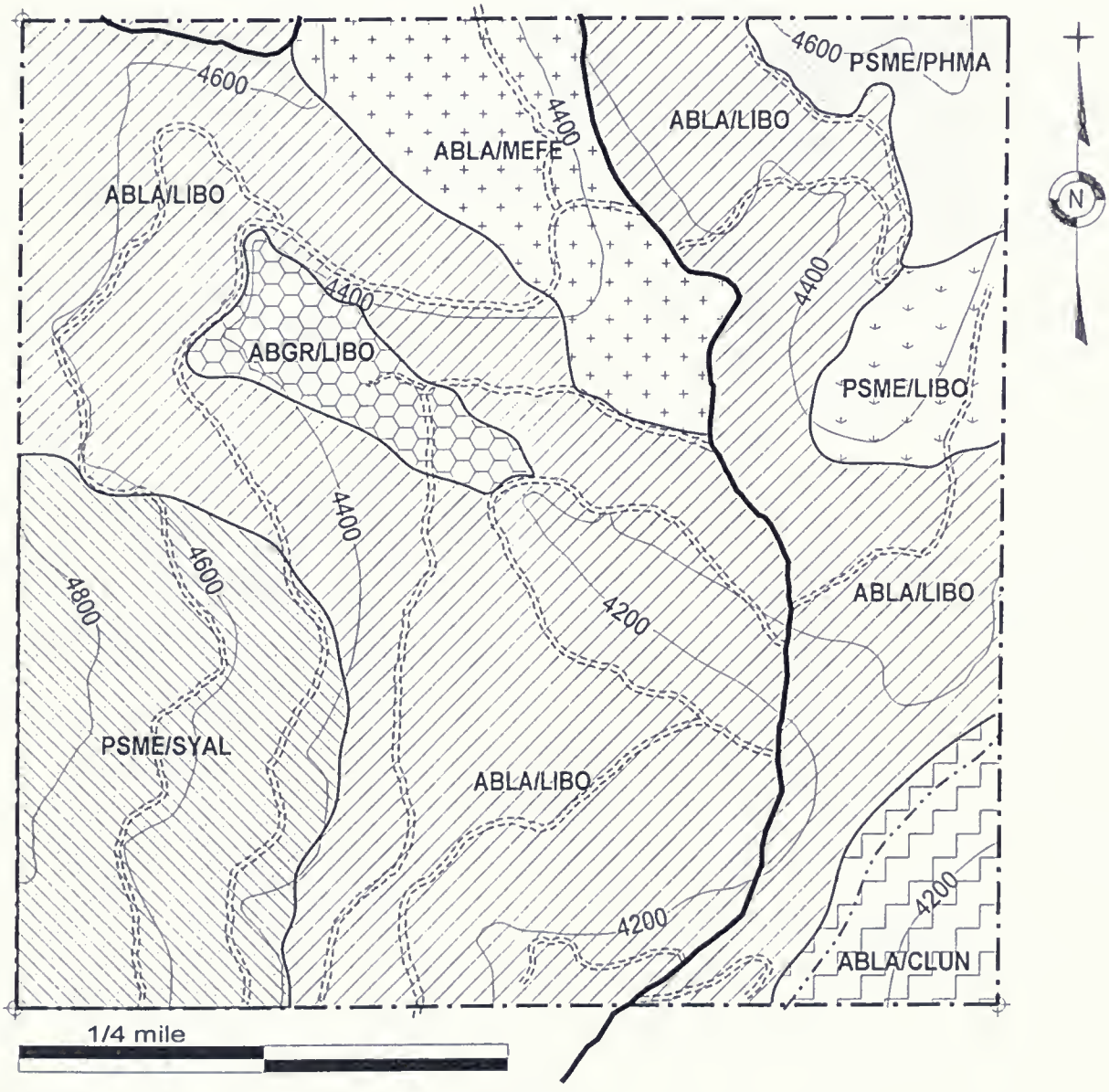
Sec. 36, T29N, R24W



Stand #	Acres	Current Type	App. Type	Age Class	Meet Green Old Growth
1	21	MC	WL/DF	100-149	No
2	23	WL/DF	WL/DF	150+	Yes
3	52	WL/DF	WL/DF	150+	No
4	19	WL/DF	WL/DF	150+	No
5	20	WL/DF	WL/DF	150+	No
6	70	WL/DF	WL/DF	150+	No
7	112	WL/DF	WL/DF	150+	No
8	101	WL/DF	WL/DF	150+	No
9	21	WL/DF	WL/DF	150+	No
10	7	MC	MC	0-39	No
11	151	WL/DF	WL/DF	150+	No
12	24	WL/DF	WL/DF	150+	Yes
Road	19	N/A	N/A	N/A	N/A
TOTALS	**640**				

Ashley Lake Timber Sale Habitat Types

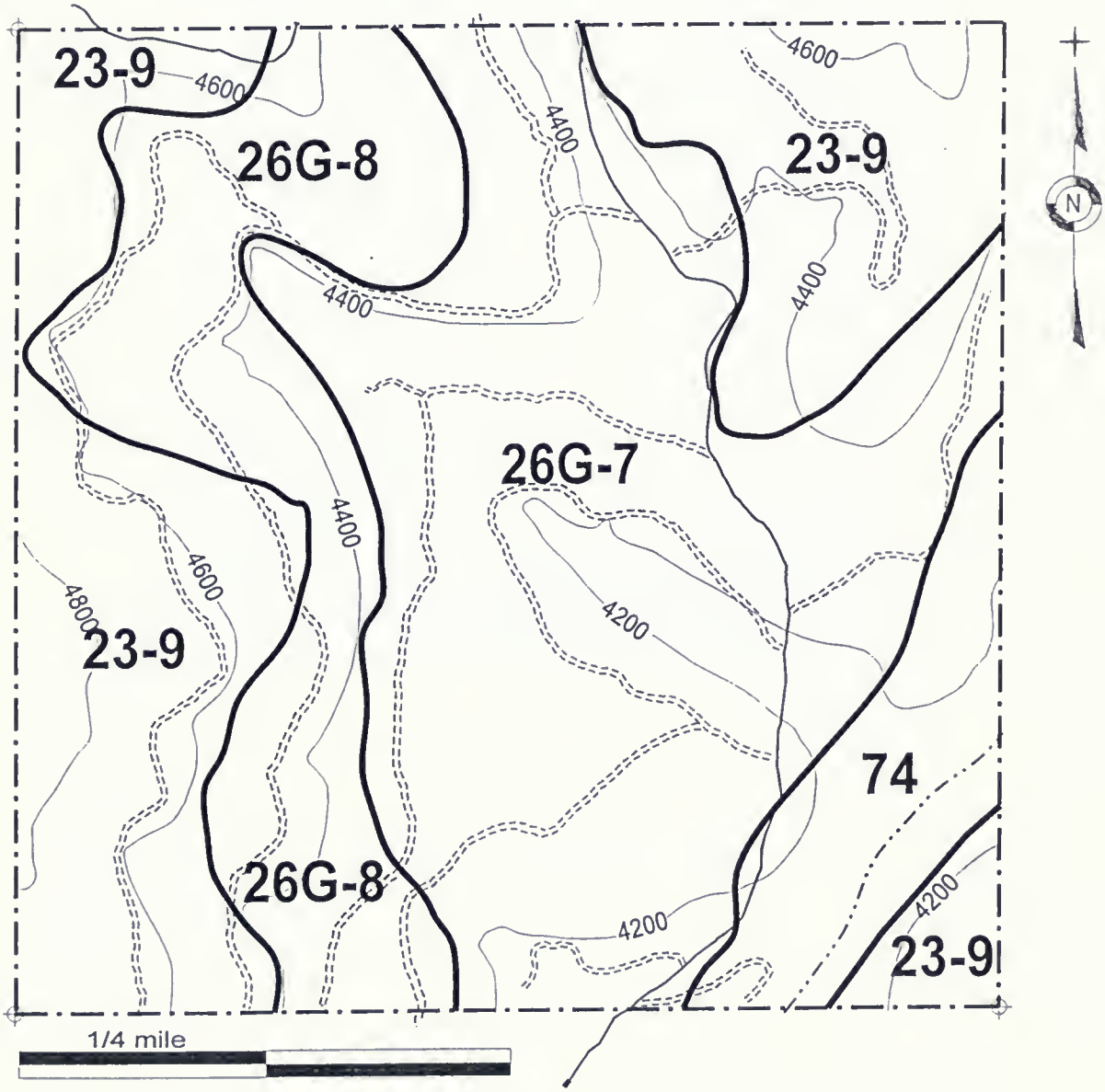
Sec. 36, T29N, R24W



Legend

State Section Line		Contour Line	4400
Main Forest Road		Stream	
Spur Road			

Ashley Lake Timber Sale
Soil Map
Sec. 36, T29N, R24W



Legend

State Section Line		Contour Line	4400
Soil Series Boundary		Stream	
Main Forest Road		Spur Road	

FIGURE E-1—LAND OWNERSHIP PATTERN WITHIN THE PROPOSED PROJECT ANALYSIS AREA USED FOR SEVERAL SPECIES.

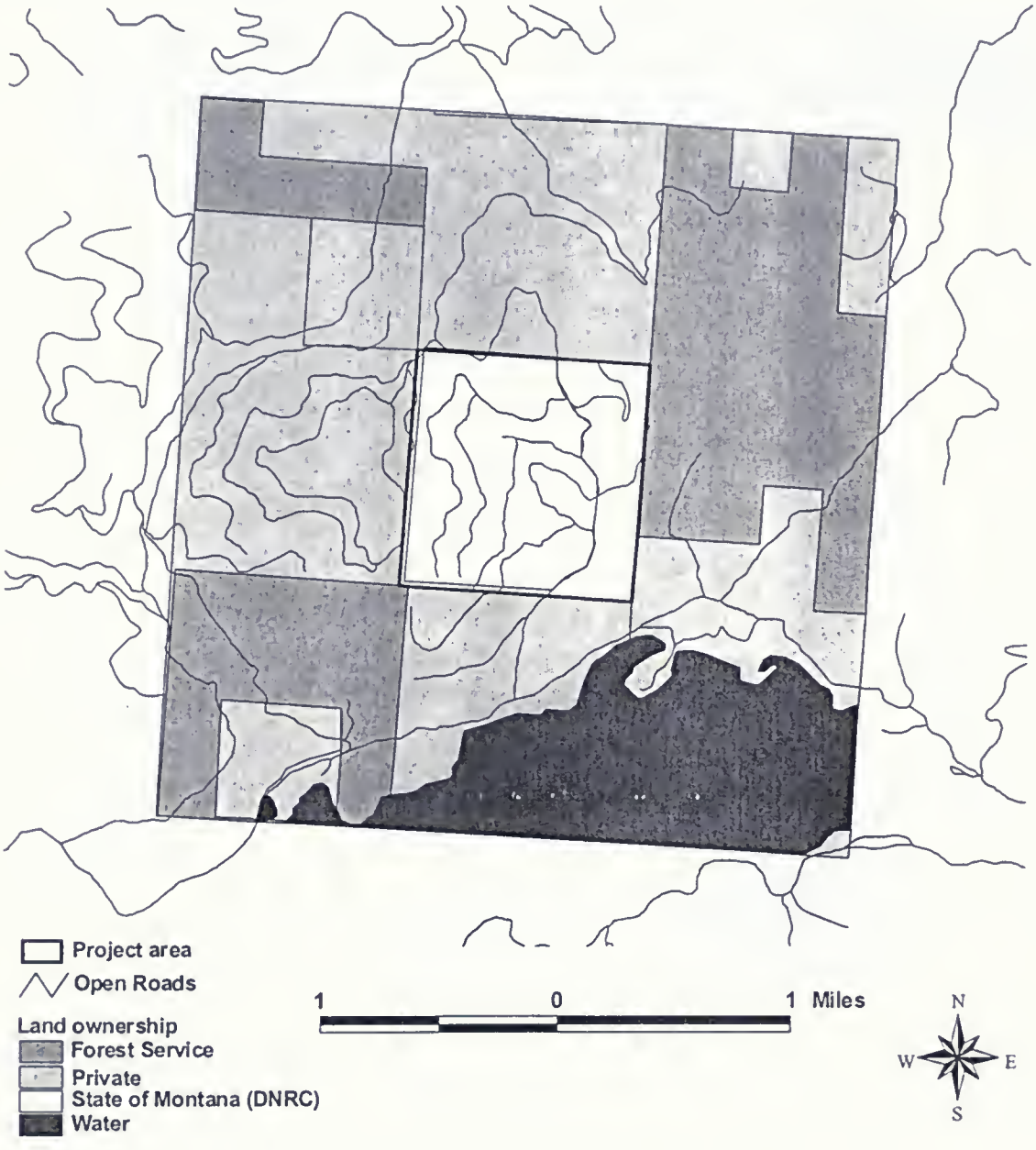
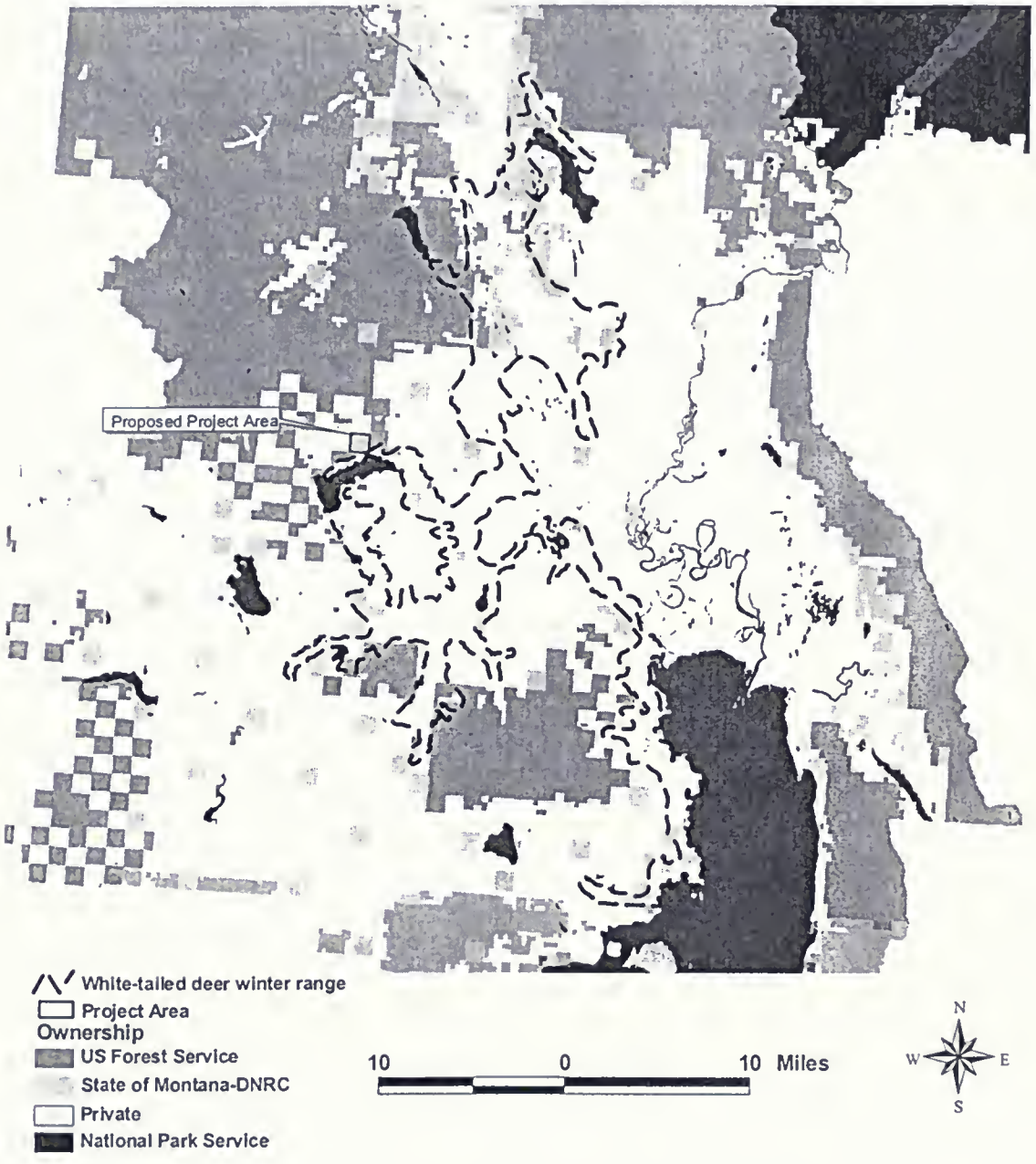


FIGURE E-2 WHITE-TAILED DEER WINTER RANGE IN RELATION TO THE PROPOSED PROJECT AREA.



ASHLEY LAKE UNIT PRESCRIPTION

Sale Name: Ashley Lake Unit Number(s): 1

Location – Section 36 TWP: 29N RGE: 24W

Elevation: 4,500 (4,100-4,900) Slope: 21% (0-52%) Aspect: E

Habitat type: **ABLA/LIBO**, ABGR/LIBO, PSME/SYAL, ABLA/MEFE Acres: 442

Soils: Andeptic Cryoboralfs- Glacial till. Typic Eutroboralfs- Silty till. Soils have medium textured loess surface layers influenced by volcanic ash. Subsoils contain 35-80 percent rock fragments. Lower slopes have clay accumulations.

Description of existing stand: Harvest unit consists of a single-storied stand of Douglas-fir (60%), western larch (20%), and alpine fir (15%). Scattered lodgepole pine, ponderosa pine and engelmann spruce also are present. The overstory averages 140 trees per acre with an average age of 190 years old (range of 150 to 275 years in age). Stocking is fairly uniform throughout with a few breaks in the canopy. Growth rates the last 10 years are 8/20ths of an inch and declining. Understory is clumpy in distribution with seedlings/saplings being found mostly along the existing roads and in old skid trails. Alpine fir and Douglas-fir are the dominant species in the understory composition, with the western larch found mostly adjacent to the roads and old landing areas that were burned during past harvests. Heavy pinegrass in parts of the understory have prevented seedling establishment. There are a few minor problems with insects and disease in the stand. Small attacks by the Douglas-fir bark beetle during the last 5 years have caused pockets of mortality. The beetle numbers appear to be endemic at this time but conditions exist for future outbreaks. Minor amounts of dwarf mistletoe have been observed in the Douglas-fir but is not widespread in the unit. The western larch is generally healthy but the advanced regeneration is suffering from needle cast/blight caused by overstocked conditions in the understory.

Treatment Objectives:

1. Remove shade tolerant species that have encroached upon historic western larch cover types.

2. Retain 10-20 trees per acre to provide a seed source for natural regeneration, favoring western larch.

3. Protect soil productivity by minimizing soil displacement, compaction and erosion, and site productivity by retaining 10-15 tons of down woody debris and fine fuels per acre after treatment.

4. Retain and protect existing snags and promote recruitment of replacement snags.

Prescribed Treatment: Seed Tree

Harvest method: Ground based harvest unit. Slopes in unit average 21%. Harvest will use skid trails where possible and feasible. A skidding plan will need to be approved prior to felling activities. Harvest will remove dominant and co-dominant trees to open the canopy to provide for regeneration of seral species. Western larch, Douglas-fir, and ponderosa pine will be favored as leave trees over alpine fir, grand fir and lodgepole pine.

Hazard Reduction: Unit will be piled and burned. Piling will be done with either an excavator or dozer with brush blade. Unit may be prescribed burned to accomplish site prep but depends upon the fuel loading after harvest. Purchaser will pile landings and State crews will burn.

Site Preparation: Prepare a seed bed for natural and planted western larch. Site prep will be accomplished through mechanical site prep or by burning if conditions are acceptable.

Regeneration: Natural and planted regeneration. Plant western larch on a 15 x 15 spacing with C-10 seedlings.

ASHLEY LAKE UNIT PRESCRIPTION

Sale Name: Ashley Lake Unit Number(s): **2**

Location – Section 36 TWP: 29N RGE: 24W Subd:

Elevation: 4,400 (4,200-4,600) Slope: 29% (10-40%) Aspect: SE

Habitat types: **ABLA/LIBO**, PSME/PHMA, PSME/LIBO Acres: 148

Soils: Andeptic Cryoboralfs- Glacial till. Typic Eutroboralfs- Silty till. Soils have medium textured loess surface layers influenced by volcanic ash. Subsoils contain 35-80 percent rock fragments. Lower slopes have clay accumulations.

Description of existing stand: Harvest unit is a single storied stand of Douglas-fir (64%), western larch (25%) with minor amounts of lodgepole pine (10%) and scattered ponderosa pine (1%). The overstory averages 100 trees per acre with an average age of 190 years old (range of ages from 75 to 275 years old). Growth rates are generally declining in the overstory with a 10 year growth rate at 6/20ths of an inch. Stocking is fairly uniform throughout with small breaks in the canopy throughout. Minor insect and disease problems can be found in the stand. The past several years have seen an increase in number of trees killed from the Douglas-fir bark beetles but numbers are holding steady to declining. Scattered dwarf mistletoe infection is present in the Douglas-fir. Understory is scattered and clumpy in distribution consisting of approximately 600 Douglas-fir. Western larch is found mostly adjacent to existing roads and older skid trails. Regeneration is limited due to extensive coverage of pinegrass.

Treatment Objectives:

1. Remove shade tolerant species that have encroached upon historic western larch cover types.
2. Retain 10-20 trees per acre to provide a seed source for natural regeneration, favoring western larch.
3. Protect soil productivity by minimizing soil displacement, compaction and erosion, and site productivity by retaining 10-15 tons of down woody debris and fine fuels per acre after treatment.
4. Retain and protect existing snags and promote recruitment of replacement snags.
5. Retain 10 trees per acre in Stand 11 to maintain old growth classification.

Prescribed Treatment: SEED TREE

Harvest method: Ground based harvest unit. Slopes average 29% in the unit. Existing skid trails shall be used wherever possible and feasible. A skidding plan will need to be approved prior to felling activities. Protection of soil productivity will be maintained by retaining 10-15 tons of slash per acre. This will be accomplished through return skidding of slash. Retention of clumps of small diameter trees adjacent to the main road will provide hiding cover. Existing spur roads will be closed after harvest. Harvest will remove dominant and co-dominant trees to open the canopy to provide for regeneration of seral species. Western larch, Douglas-fir, and ponderosa pine will be favored as leave trees over lodgepole pine.

Hazard Reduction: Unit will be piled and burned. Piling will be done with either an excavator or dozer with brush blade. Unit may be prescribed burned to accomplish site prep but depends upon the fuel loading after harvest. Purchaser will pile landings. State crews will burn.

Site Preparation: Prepare a seed bed for natural and planted western larch. Site prep will be accomplished through mechanical site prep or by burning if conditions are acceptable.

ASHLEY LAKE UNIT PRESCRIPTION

Sale Name: Ashley Lake Unit Number(s): 3

Location – Section 36 TWP: 29N RGE: 24W Subd:

Elevation: 4,100 Slope: 45%, (20-60%) Aspect: SW, NW

Habitat type: ABLA/CLUN Acres: 38

Soils: Andeptic Cryoboralfs- Glacial till. Typic Eutroboralfs- Silty till. Soils have medium textured loess surface layers influenced by volcanic ash. Subsoils contain 35-80 percent rock fragments. Lower slopes have clay accumulations.

Description of existing stand: Single storied stand of Douglas-fir (64%), western larch (20%), Engelmann spruce (8%) and Alpine fir (8%). The unit has scattered relict Douglas-fir and western larch present. The overstory averages 240 trees per acre with an average age of 195 (range of 110 to 300). Stocking is uniform throughout with a few openings in the canopy created by bark beetle mortality. Understory is mostly alpine fir and Douglas-fir and clumpy in distribution averaging 1200 trees per acre. Heavy pinegrass in parts of the unit have prevented seedling establishment. Tree growth and vigor is declining in the overstory with a 10 year growth rate of 5/20ths of an inch. Minor insect and disease problems exist in the stand. Scattered pockets of mortality from the Douglas-fir bark beetle are present but numbers of beetle killed trees have been declining over the past couple of years. Heart rot is common in the scattered large relict overstory Douglas-fir and western larch.

Treatment Objectives:

1. Remove shade tolerant species that have encroached upon historic western larch cover types.
2. Retain 10-20 trees per acre to provide a seed source for natural regeneration, favoring western larch.
3. Protect soil productivity by minimizing soil displacement, compaction and erosion, and site productivity by retaining 10-15 tons of down woody debris and fine fuels per acre after treatment.
4. Retain and protect existing snags and promote recruitment of replacement snags.
5. Retain 10 trees per acre in greater than 21" to maintain old growth characteristics.

Prescribed Treatment: SEED TREE

Harvest method: Unit will be cable harvested using a running skyline to access timber on other side of draw/canyon that bisects unit. Slopes on edge of draw/canyon average 50-60%. A temporary skid road will need to be constructed along the break in slope on the west side of unit to facilitate skyline operation. The temp road will be rehabbed after harvest. Protection of soil productivity will be maintained by retaining 10-15 tons of slash per acre. This will be accomplished through return skidding of slash. Existing spur road will be closed after harvest. Harvest will remove intermediate and suppressed and co-dominant trees to open the canopy. Western larch, Douglas-fir will be favored as leave trees over alpine fir and engelmann spruce.

Hazard Reduction: Hazard reduction will be accomplished through whole tree harvesting. If hazard remains, unit will be excavator piled and burned. Piling will be done with either an excavator or dozer. Purchaser will pile landings. State crews will burn.

Site Preparation: Will need to determine extent of site preparation after harvest. Slopes in canyon too steep to mechanical scarify.

Regeneration: Plant western larch on a 15 x 15 spacing with C-10 seedlings.