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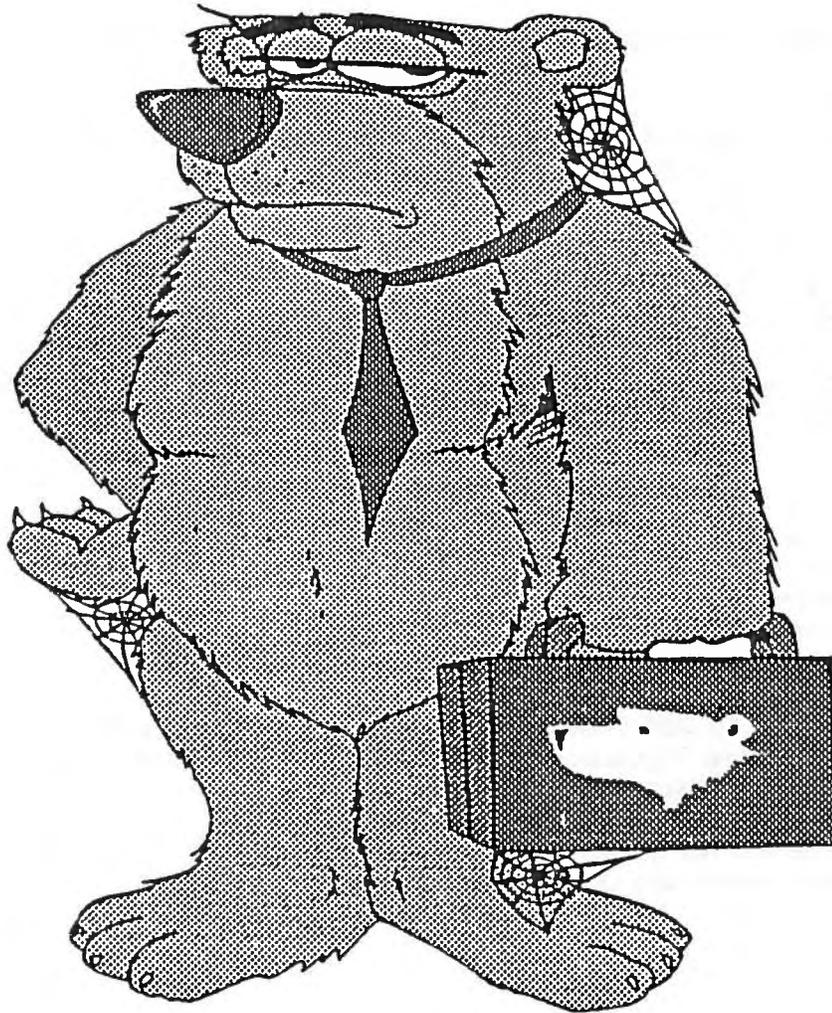
Pacific  
Southwest  
Region



# BEAR COUNTRY

## LANDSCAPE ANALYSIS and DESIGN

### FINAL



Klamath National Forest  
Salmon River Ranger District

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# BEAR COUNTRY LANDSCAPE ANALYSIS AND DESIGN

## INTRODUCTION

The Bear Country landscape is located on the Salmon River Ranger District, Klamath National Forest. The legal description is T10N,R12W,MDM, Sections 7-29, 32-36, T10N,R11W,MDM, Sections 6-8, 16-18, 20, 21, 28, 29, and 32, T9N,R12W,MDM, Sections 1-4, 9, and 10, and T10N,R8E,HM, Sections 16-21.

The landscape is approximately 18,900 acres in size. It includes all of the Negro Creek, O'Farrill Gulch, Indian Creek, and Black Bear watersheds, and a portion of the South Fork Salmon River watershed. It is bounded by the South Fork of the Salmon River to the south, Picayune Ridge to the north, and McDowell Ridge to the east. It has been heavily impacted by both wildfires and timber harvesting. In 1977 the Hog Fire intensely burned the western portion, and again in 1987 a larger portion was burned by the Glasgow Fire.

The landscape has a diverse range of soil and geologic rock types. The landscape contains widespread areas of gentle to moderately steep terrain (0-65% slope gradient) intermixed with steep mountain slopes and inner gorges (>65% slope). Much of the more gentle terrain is dominated by dormant landslide deposits (5648 acres or 30% of the landscape). The landslide deposits or slump-earthflow terrain typically displays bench-slope and hummocky topography. Several perennial streams and rivers occur in the landscape including: Negro, O'Farrill, Indian and Black Bear Creek, and the South Fork Salmon River. In addition, there are several smaller tributaries of importance.

The current landscape pattern was significantly affected by wildfire and to a lesser degree, timber harvesting. Gold mining activities in the late 1880s created the need for timber harvesting; during this era, timber harvesting was confined to the immediate needs of the local population. As the demand for wood products increased in the 1950s and 1960s, extensive harvesting began within this landscape. Harvest methods that were used include clearcutting, overstory removal, and partial cutting.

Wildfires which occurred during 1977 and 1987 were the result of lightning ignitions. These fires were very large in size, primarily due to the lack of fuel reduction following timber harvest activities. In addition, there were large amounts of vegetation and existing fuel ladders created by fire exclusion within the landscape over the prior 60-70 years.

There are several parcels of private property scattered throughout the landscape; most are year-round private residences. The common names for these private property parcels are: Godfrey Ranch, Blue Ridge Ranch, and Black Bear.

Active mining has taken place within the landscape over the past 100 years. Private property parcels involved in this activity are those previously identified plus the Negro Hill and Stanshaw Mines.

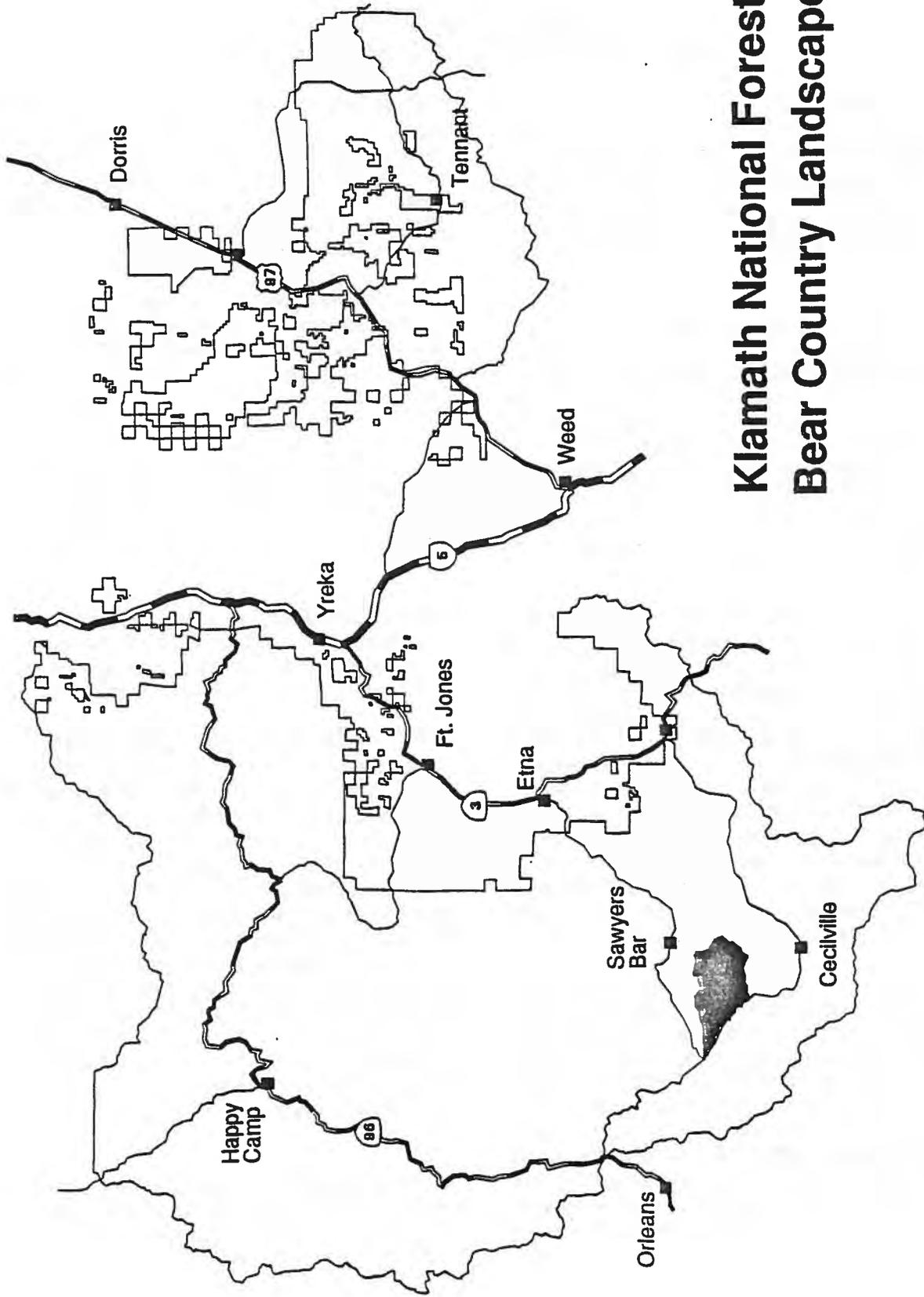
The area is easily accessible from the South Fork of the Salmon River. It is very popular for deer hunting and is used quite heavily in the fall. The South Fork of the Salmon River is designated as a Wild and Scenic River with recreational emphasis.

## STEP 1 - LANDSCAPE ELEMENTS

There are three distinct components identified within the landscape. The wide variation among these components is due in large part to the occurrence of wildfires over the majority of the landscape. The three components identified are the **Burn Zone, Timber Zone, and River Zone**; each with its own set of matrix, patches, and corridors. The Burn Zone includes areas burned by the Hog and Glasgow Fires, the Timber Zone is the eastern segment which is generally timbered and not heavily impacted by fire, and the River Zone is the area along the South Fork of the Salmon River corridor that burned, but not to the intensity of the Burn Zone. The River Zone was burned by low to moderate intensity wildfire, leaving vegetation relatively intact.

The following section will describe the matrix and patches identified for each of the three distinct areas (see *Vegetative Structures* for definitions and *Figure 2 - Matrix and Patch Map*).

FIGURE 1 - VICINITY MAP

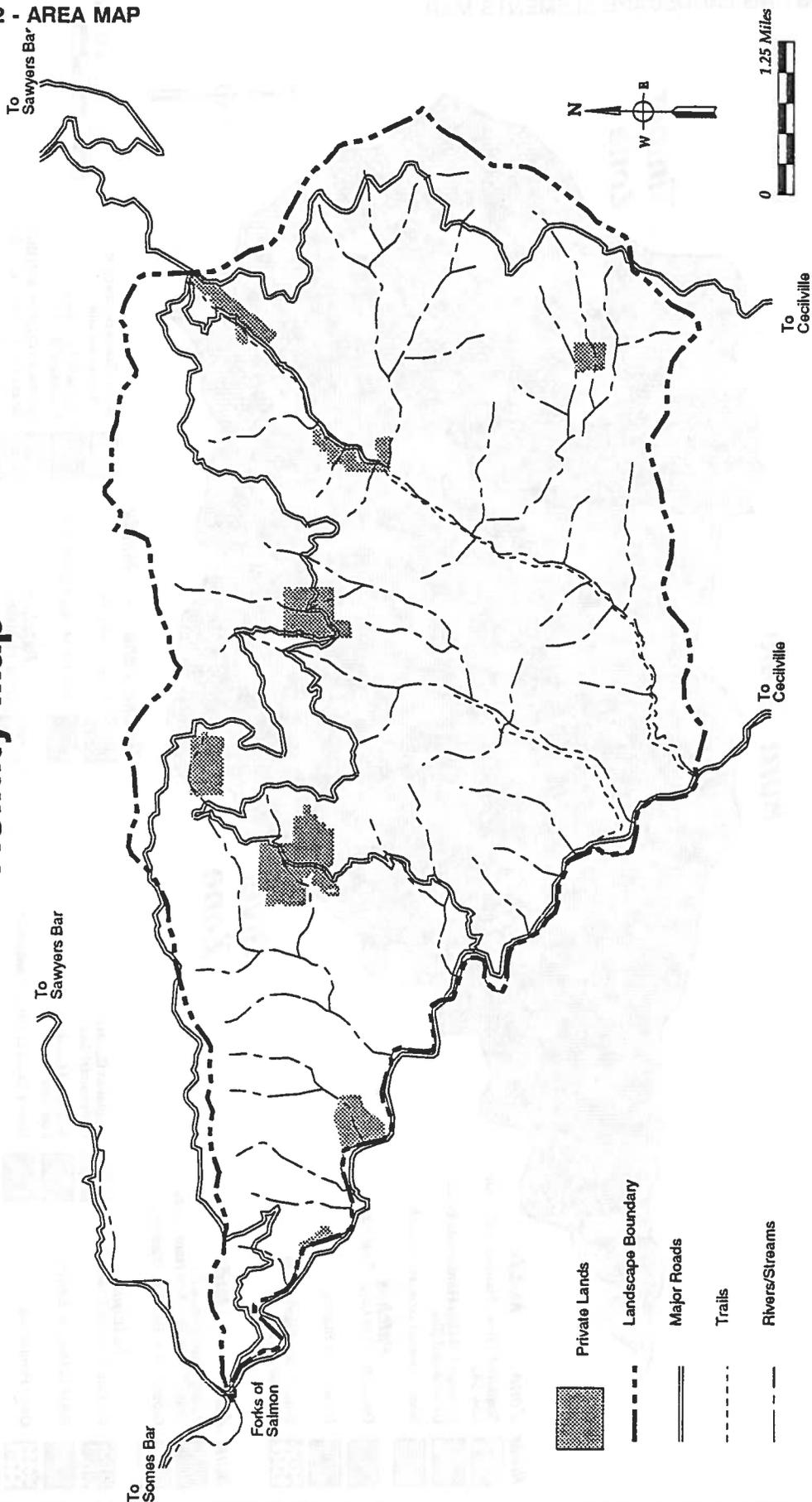


# Klamath National Forest Bear Country Landscape

October 12, 1993

FIGURE 2 - AREA MAP

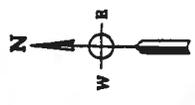
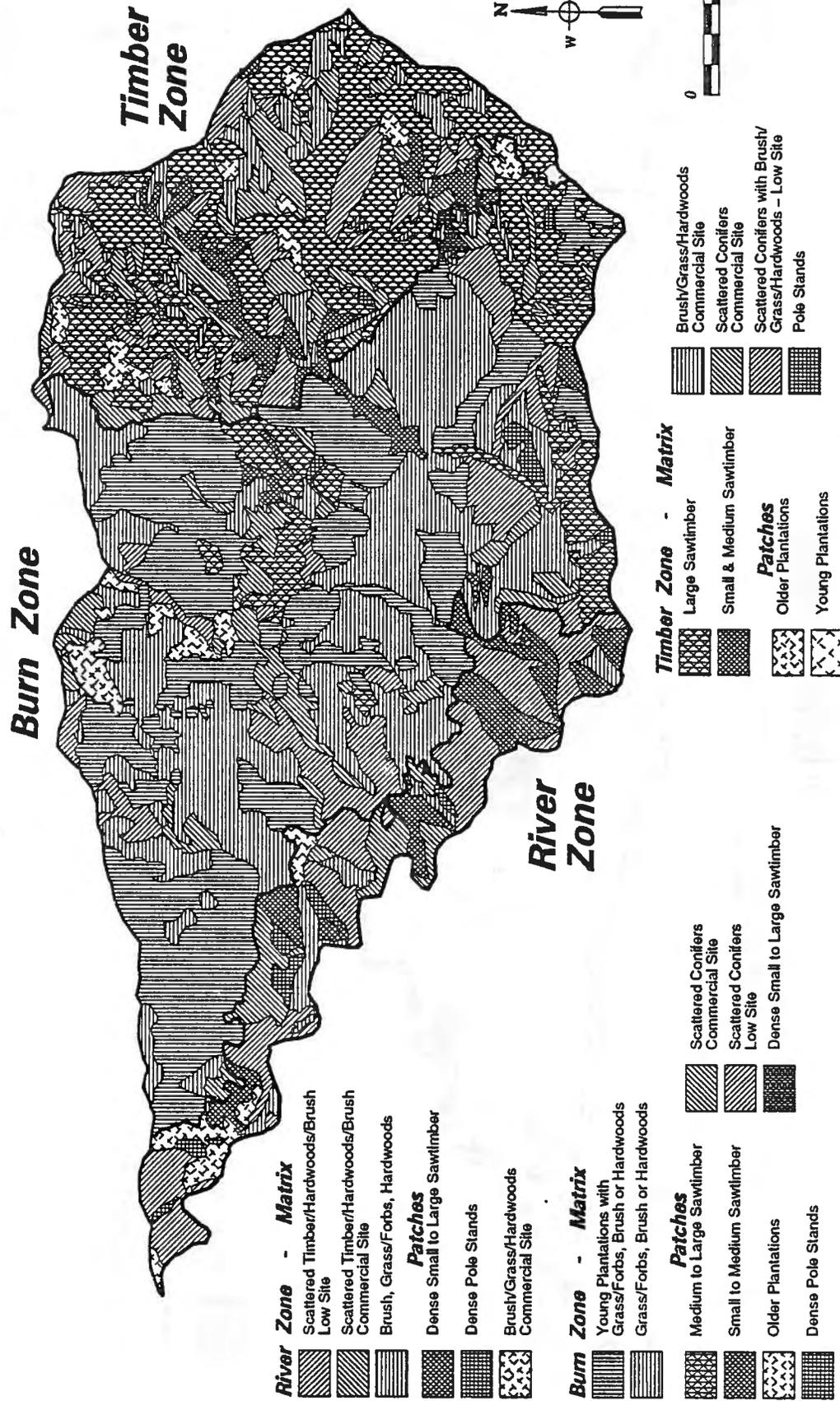
# Bear Country Landscape Vicinity Map



October 12, 1993

FIGURE 3 - EXISTING LANDSCAPE ELEMENTS MAP

# Bear Country Landscape Elements Existing Landscape Elements



October 13, 1993

## **BURN ZONE**

### **Matrix**

- Young Plantations
- Brush, Grass/Forb, and/or Hardwood Stands

### **Patches**

- Old and Young Sawtimber Stands
- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (commercial site)
- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (low site)
- Dense Pole Stands and Older Plantations

## **TIMBER ZONE**

### **Matrix**

- Old and Young Sawtimber Stands

### **Patches**

- Dense Pole Stands and Older Plantations
- Young Plantations
- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (commercial site)
- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (low site)
- Brush, Grass/Forb, and/or Hardwood Stands

## **RIVER ZONE**

### **Matrix**

- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (commercial site)
- Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods (low site)
- Brush, Grass/Forb, and/or Hardwood Stands

### **Patches**

- Old and Young Sawtimber Stands
- Dense Pole Stands

## **CORRIDORS**

Three primary corridors were identified within the landscape; roads, trail, and riparian.

**Roads** - These were identified because of their ability to move humans within and in and out of the landscape. All of the roads are one-lane dirt roads. The primary use is for private land access and recreational activities such as hunting. Roads also provide a travel corridor for various species of wildlife to move throughout the landscape. The primary roads that travel throughout, and provide access in and out of the landscape are: 39N28 (recreational), 39N30 (private access and recreational), 39N23 (recreational), and 1E001 (private access).

**Trail** - One trail was identified as providing the transport of humans through part of the land-

scape. This trail is located along Black Bear Creek and is used primarily for access to the Black Bear Ranch.

**Riparian** - Riparian corridors are important for connecting various parts of the matrix or patches within the landscape. A distinctive role of these corridors is to allow movement of wildlife species throughout the landscape. Another critical component of a healthy riparian corridor is the ability to provide cool water temperatures for important anadromous fisheries. Only one major riparian area remains as a viable corridor following the 1987 fires; Black Bear drainage and two of its associated tributaries, Argus and Callahan Gulches. A large portion of this riparian zone is still intact, allowing wildlife to use this as a route of transport that provides thermal cover, forage, and hiding cover.

## **VEGETATIVE STRUCTURES**

The following general descriptions are for vegetative structures established and defined as matrix or patches within the three areas previously identified.

**Old and Young Sawtimber Stands (3N, 3G, 4N, and 4G)** - Older sawtimber stands contain trees generally greater than 21" DBH. Crown closure is greater than 70%. There are scattered openings within this part of the matrix. These stands also contain large amounts of invading tolerant conifer species; primarily white fir (WF). Average stand ages range between 150-250 years. Older stands are less stable than younger stands. Decadence will quickly set in and older stands will begin to fall apart. Encroachment of tolerant species and the buildup of natural fuels due to the lack of repeated fires make these stand types very susceptible to destruction from wildfires.

Younger sawtimber stands contain trees generally between 11-21" DBH. Crown closure is between 40-70%. There are fewer openings within stands of this timber size class. Shade tolerant species are beginning to invade stands as well. Average stand ages range from 50-150 years. In addition, build-up of fuel concentrations over the last 75-100 years have put these stands at risk from wildlife.

**Dense Pole Stands and Older Plantations** - Stands generally contain trees between 4-11" DBH. Crown closure is usually >40%. Most of these stands contain few openings. Ground vegeta-

tion is beginning to disappear from the stand as it gets shaded out by conifers. The dominant species within these stands is ponderosa pine with minor amounts of incense-cedar and Douglas-fir. Average stand ages range from 20-75 years. Natural fuel accumulations are not high. Most of the fuel is made-up of needles and branch materials. There is a risk of crown fire as most branches are still alive at ground level. Some stands have received mechanical thinning treatments with very little slash treatment. These stands are at very high risk to loss from wildfire.

**Young Plantations** - These stands are made-up of trees ranging from 1-20 years of age. Most young plantations in this part of the landscape have been planted since the 1987 fire. There is a considerable amount of vegetation associated with these plantations. Grass, forb, brush, and hardwood species are quite prevalent in these areas. Some of the plantations found within the old Hog Fire have been heavily encroached with starthistle. The plantations that have a high abundance of grass and forbs are at high risk to loss from wildfires. Those with just hardwoods or brush are at a lower risk due to their young and healthy nature.

**Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods** (commercial site) - These stands contain scattered conifers of all species. Crown closure is usually less than 20%. The understory can be made-up of grass/forbs, brush, or hardwoods, or a combination of any of these. Deerbrush is the dominant brush species found within these patches; manzanita and buckbrush also play an important role within the landscape. Willows are found along the riparian zones. Black oak, live oak, white oak, and madrone are the primary hardwood species. The land area is capable of growing dense stands of conifers. The scattered situation is due to either remnant trees from the 1977 and 1987 fires, or from past harvest practices where most of the overstory was removed. In either case, these stands currently contain fewer conifers than the site can support. Generally, the remaining trees in the fire area are experiencing health problems due to abundant fire scars and insect attacks. The remaining trees within the old harvest units are comprised of intermediate and suppressed trees from the original stand. These trees have very poor crown ratios and will not grow into large trees for quite sometime, if at all.

**Scattered Conifers with Grass/Forb, Brush, and/or Hardwoods** (low site) - These stands also contain scattered conifers of all species. Crown closure is usually less than 20%. They are not capable of growing dense conifer stands due to site quality. In most cases, they also do not have the potential to grow stands with a crown closure of greater than 40%. They will always be associated with an understory of grass/forbs, brush, and/or hardwoods. In many cases, the understory vegetation will be the dominant component. The dominant brush species are deerbrush and buckbrush, with minor amounts of manzanita. The primary hardwood species are live oak and white oak with minor components of black oak and madrone. Depending upon the location of these stands within the landscape, the age of the current understory vegetation may either be very young and healthy or old and decadent. The stands within the fire area usually contain a younger age class of grass/forbs, brush, or hardwoods. The stands outside the burn area contain older age classes of this understory vegetation, in some cases it may be quite decadent.

**Grass/Forb, Brush, and/or Hardwood Stands** - These are stands that are made-up exclusively of either a grass/forb complex, brush, hardwoods, or a mixture of any of these. They are located on areas incapable of supporting very many conifers. Site potential for the conifers is generally very low. If conifers are found scattered within this type it is usually ponderosa pine. Crown closure is generally less than 5%. The dominant brush species is buckbrush, with minor components of deerbrush. The primary hardwood species are live oak and white oak. There are a few stands of this patch type, within the burn area, that have a high site potential for conifer stocking, but have not been reforested. These are in the minority within the landscape. This patch type is usually associated with shallow rocky soils.

## STEP 2 - LANDSCAPE FLOWS

There are ten key flows identified for this landscape. The analysis team determined these flows to be critical within the landscape for the future and that these flows are likely to be affected by human activities or can have a direct affect on human activities.

**Fire** - Fire can and has occurred over the entire landscape. The presence of certain vegetative

structures are more conducive to high intensity, destructive fires. Attributes such as crown closure and surface-to-crown fuel characteristics are very important for this process. High levels of crown closure, dead and down material, and the presence of a continuous fuel ladder create a high risk for a stand replacing crown fire. Areas within the landscape that contain large amounts of standing dead material remaining from the 1987 fire are also high risk for a damaging wildfire. The more homogeneous the fuel or vegetation the greater the risk of a fire being able to carry across the landscape. Areas with few breaks or changes in fuel types are more susceptible to destructive fires. High concentrations of human created down fuels or naturally created fuels, caused by the lack of fire, are another area of concern within the landscape. The fire flow can occur anytime between late spring and late fall. Most fires are caused by lightning, but there is a risk for man caused fires from the adjacent private property and by recreational users.

**Humans, Private** - This flow is generally confined to private properties located within the landscape and road systems used to access them. There is use on the trail that accesses Black Bear from the South Fork of the Salmon River. This flow is also dependent upon water from the landscape for domestic use. This water is retrieved from the primary creeks found within the watershed. This flow is dependent upon the transportation systems that access their holdings and also upon access routes to the water sources. Movement by this flow is generally confined to the access routes and occurs both into and out of the landscape. This flow occurs year-round in the landscape.

**Humans, Recreation** - Within the landscape, the flow of humans engaged in recreational opportunities are reliant upon two primary uses. One use involves day trips along the Salmon River corridor; fishing is confined to the river corridor. The other recreational use, hunting, can occur anywhere within the landscape. The river use activities are primarily dependent upon water flows and fish numbers within the Salmon River. Hunting use is more concentrated to those areas containing early seral vegetation that is in close proximity to cover. Most of the human recreation use is confined to the road systems found within and adjacent to the landscape. It is seasonal in nature with this use occurring during the regulated fishing and hunting seasons.

**Humans, Commodities** - Two primary types of commodity use occur within the landscape. The first is mining. This activity generally occurs along the river corridor and to a lesser degree in the watershed uplands. The second type involves Forest based activities. This involves both commodity production and the jobs associated with all the activities that may occur within the landscape. Examples of these Forest based activities include: timber harvesting, timber stand improvement work, watershed restoration, wildlife habitat improvement, reforestation, mushroom harvesting, etc. The human commodity flow is not dependant upon a particular landscape element, as activities can occur within any of the identified elements. This flow is usually tied to the existing transportation system in the landscape. Timing of this flow is generally from spring to late fall.

**Landslides and Surface Erosion** - Landslides and surface erosion are critical flows in the landscape because of their role in the creation of the landforms we see today and because of their past and potential future impacts on water quality.

Large, complex, multi-lobed slump-earthflow deposits occur throughout the landscape. The larger landslide deposits were formed hundreds to thousands of years ago as major mass failures off of Blue Ridge. Active landslides which were initiated within this century, occur mainly in steep inner gorges or within the dormant landslide deposits. Most of the active landslides are either associated with roads or occur in areas burned by recent wildfires. They were probably initiated due to combinations of factors including loss of root support and changes in slope hydrology. Areas of potential future landsliding include areas burned by wildfire dominated by sparse early seral stage vegetation.

Accelerated rates of surface erosion have recently occurred due to the loss of soil cover from recent catastrophic wildfire. Surface erosion occurs throughout the entire landscape but is greatest in areas burned by the Hog Fire of 1977 and the Glasgow Fire of 1987. Surface erosion rates are dependent on the degree and type of vegetative cover, slope, and soil type. Higher erosion rates occur where there is less vegetative cover, the slopes are steeper, and derived from diverse parent materials including: metasedimentary and metavolcanic rocks; dioritic rock (granitic in character); serpentinite and peridotite. Most of the soils

have a high erosion hazard, while the soils derived from dioritic rock have a very high erosion hazard.

Soil and rock from mass wasting (landslides) and surface erosion processes flow downslope, towards riparian zones and stream channels, thereby having a direct effect on water quality. Initiation of landslides, landslide movement and surface erosion generally occurs during the wetter months of the year, November through March, but may also happen during heavy storm events at any time of the year.

**Water** - Water is an important flow in the landscape and is derived from three major sources and associated processes. The first is water input into the system from precipitation in the form of rain and snow. Snow fall generally occurs above the 3,000 foot elevation during the winter months, and persists above the 4,000 to 4,500 foot elevation zone. The second source of water is that confined to stream and river corridors. Water from perennial and intermittent streams is derived from both surface and subsurface flow. The third important source of water is groundwater which emerges as springs and seeps throughout the landscape. Springs and seeps are commonly associated with serpentinite with other rock types. The wet areas associated with springs provide an important source of water for wildlife. The quantity and quality of water flowing from springs and streams is dependent on the quantity, type, and distribution of surface vegetation. Evapotranspiration from abundant vegetation reduces the quantity of surface water discharging into the system. Quality of water is also influenced by vegetation which acts as filter to reduce the amount of sediment reaching streams. The water flow in this landscape is directed towards the South Fork Salmon River and is present year-round.

**Anadromous Fish** - Anadromous fish are found within the South Fork of the Salmon River and a steelhead population is found within Bear Creek. The anadromous fish populations are reliant upon water flows within the South Fork of the Salmon River. Riparian vegetation along landscape streams is very important in maintaining adequate temperatures to water being delivered to the South Fork of the Salmon River. Fish populations flow both up and down the river corridor. There are some fish present all year within the river. The adults are generally found between July and February with the young present year-round.

**Deer** - Populations are found throughout the landscape. They generally favor early seral stage vegetation (grass/forbs, brush, and hardwoods) for foraging. Later seral stages (older conifer stands with canopy closure) are preferred for hiding, movement, and some foraging. Deer move within and out of the landscape. General movements involve a migration to the north and east during summer months and to the south and west during winter months. Deer are found within the landscape year-round but populations are higher during winter and spring months.

**Spotted Owls** - Spotted owls are found within the eastern portion of the landscape. Habitat in this location consists of older dense conifer stands. This portion of the landscape has also been designated as a spotted owl Habitat Conservation Area (HCA). Spotted owls generally favor older seral vegetation with a considerable amount of decadence present. The area identified as the matrix for the timbered portion of the landscape is the preferred habitat. Most owl movement tends to be to the east, out of the landscape. This area has the most contiguous stands of preferred habitat and has known nest sites. The owls are generally found year-round within this portion of the landscape.

**Furbearers** - Furbearers are generally confined to the eastern portion of the landscape but are also found within the Black Bear drainage. They prefer older seral vegetation with a dense canopy cover. Habitat preference also includes streams with abundant cover. These species have large home ranges and move in and out of the landscape. Movement occurs throughout the landscape and in and out in all directions. Furbearers can be found within the landscape any time of year.

**Starthistle** - Starthistle is currently found within the western portion of the burn area. It is dependent upon early seral vegetation, usually a grass/forb complex. This flow was inadvertently introduced following the 1977 burn as part of the rehabilitation efforts for the landscape. It is quite competitive with some of the native species of vegetation found within the landscape. Due to its competitive nature, it is also a hindrance to reforestation efforts currently on-going. This flow is presently spreading to the east within the burned portion of the landscape. It exists year-round, but is most active in the spring and summer months.

### STEP 3 - INTERACTIONS

This step discusses some important ecological interactions that occur between existing structures found within the landscape and critical flows previously identified. The discussion of the interactions between flows and existing structures will attempt to create an understanding of how this landscape functions as an ecological system. The discussion will be couched in terms of ecological functions; capturing, cycling, production, storage, and output.

Some of the previous flows identified have been combined due to similarities of interactions that occur between the existing vegetative structures. The spotted owl and furbearer flows have been combined due to the closeness of habitat requirements and preferences. Surface erosion and land-

slides have also been combined because of similar vegetative characteristics.

The current vegetative patterns found within the landscape have created distinct use patterns for some of the flows, primarily deer, furbearers, and spotted owls. In some cases, the current pattern is restricting movement and limiting thermal and hiding cover. The continuity of early seral stages (homogeneous landscape pattern) within such a large part of the landscape does have an impact on species that are more dependent upon latter seral stages or landscapes that have a mixture of seral stages. Riparian vegetation is also lacking in some of the major drainages. This situation has an influence on surface erosion, landslides, and wildlife movement.

The following table will attempt to highlight the primary interactions occurring within the landscape.

**TABLE 1 - INTERACTIONS (Fire, Humans)**

ELEMENTS	FLOWS	
	FIRE	HUMANS: A. Private; B. Recreation; and C. Commodity
<b>Conifer Stands (3N,3G,4N,4G)</b>	G stands and stands with high concentrations of understory, primarily comprised of white fir, tend to have more intense fires and crown fires. Where there is an increase in dead and down material, there will be a tendency for more intense fires.	A. Visual preference - provides some fire protection to inholdings if stands contain small amounts of understory (storage); B. Visual preference - (capture), undeveloped hunter camps present - (capture); and C. Harvest of timber products, firewood, and alternative products, i.e., mushrooms (capture, output)
<b>Older Plantations/ Dense Pole Stands</b>	A) Thinned and untreated - there is a high risk to losing the stand. B) Not thinned - there is a moderate risk to losing the stand. Fires in this case will generally cause moderate loss to an existing stand.	A. No real interaction (NRI); B. Hunting opportunities (capture, output); and C. Poles, bushes, biomass, and employment opportunities (capture, output)
<b>Young Plantations (Grass/Forb, Brush, Hardwood)</b>	Plantations that have high concentrations of grass are at high risk for loss - brush/hardwood dominated plantations have low risk for loss. The earlier a plantation is released for establishment, there is less risk in terms of fire loss.	A. NRI; B. Hunting opportunities (capture, output); and C. Grazing potential and reclamation/restoration employment opportunities (capture, output)
<b>Scattered Conifer - Commercial Site</b>	Not much risk unless there is an abundance of remaining dead material (standing or down) or high concentrations of grass exist.	A. NRI; B. Hunting opportunities (capture, output); and C. Grazing potential, firewood, reclamation/restoration employment opportunities (capture, output)
<b>Scattered Conifer - Low Site</b>	Same as Scattered Conifer - Commercial Site	Same as Scattered Conifer - Commercial Site
<b>Grass/Forb, Brush, Hardwoods</b>	Very high risk where there is fuel remaining from past fire or from mechanical disturbances. Where grass is present, future fire risk is high.	A. Same as Scattered Conifer - Commercial Site, except firewood opportunities are more limited.

**TABLE 1 - INTERACTIONS (Fire, Humans, Landslides & Surface Erosion, Water)**

ELEMENTS	FLOWS	
	FIRE	HUMANS: A. Private; B. Recreation; and C. Commodity
Roads and Trails	Provides access routes and control points	A. Access to and from inholdings (capture, output); B. Access to recreational opportunities (capture); and C. Access for commercial-use and employment (capture, output)
	LANDSLIDES & SURFACE EROSION	WATER
Conifer Stands (3N,3G,4N,4G)	Provides for a low risk of landslides and surface erosion. Risk slightly increased during wet periods, on steeper slopes, in shallow soils with high erosion hazard. (Storage and cycling.)	Provides a shading factor along streams. Allows for more infiltration, more snowpack retention. Greater organic input into the streams. Provides more even distribution of water throughout the year. (Cycling, output, capture, and production.) There is more evapotranspiration with the tree cover (Capture). Provides for cooler stream temperatures (Production).
Older Plantations/ Dense Pole Stands	Low risk of landslides and surface erosion. Risk is slightly increased during wet periods on steeper slopes, in shallow soils with high erosions hazard. (Storage and cycling.)	Provides a shading factor and allows for infiltration. (Cycling, output, and production.) Less snowpack retention and organic input into the streams than conifer stands provide. There is still an even distribution of water throughout the year (Output). Less evapotranspiration than the conifer stands as trees are smaller and water temperatures may be a little higher (Production).
Young Plantations (Grass/Forb, Brush, Hardwood)	Medium to high risk of landslides and surface erosion in areas burned at high to moderate burn severity in the 1977 and 1987 wildfires. Risk is related to geomorphic terrane type, soil type, subsurface hydrology, and slope steepness. (Storage, output, and cycling.)	No shading, more overland flow, and less snow retention. There is peak discharge of water during storm events. (Output and cycling.) High water temperatures due to the lack of shading (Production).
Scattered Conifer - Commercial Site	Same as Young Plantations. Risk is low in areas burned at low intensity.	Same as Young Plantations, except there may be organic input in areas where standing material is left. (Cycling, production, and storage.)
Scattered Conifer - Low Site	Same as Young Plantations. Risk is low in areas burned at low intensity.	Same as Scattered Conifer - Commercial Site
Grass/Forb, Brush, Hardwoods	Same as Young Plantations	Same as Scattered Conifer - Commercial Site.
Roads and Trails	Risk of landslide and erosion potential will vary by soil type, road construction method, and subsequent maintenance. Higher risk associated with active and dormant landslide deposits and channel crossings. (Storage and output.)	Potential sediment source, tend to channel water, and there is less infiltration and more peak discharge. (Cycling and output.)

**TABLE 1 - INTERACTIONS (Anadromous Fish, Deer, Spotted Owl & Furbearers, Starthistle)**

ELEMENTS	FLOWS	
	ANADROMOUS FISH	DEER
<b>Conifer Stands (3N,3G,4N,4G)</b>	Provides good prey base for fish, otherwise interactions same as that identified in the water section. (Capture, production, cycling, storage, and output.)	Important cover for hiding, shelter, and thermal cover. Used during winter and summer storms. Provides a minor amount of foraging, generally during the spring. (Capture, production, cycling, storage, and output.)
<b>Older Plantations/ Dense Pole Stands</b>	Same as Conifer Stands	Similar to conifer stands. Provides a little more forage. Provides winter cover. (Capture, production, cycling, and storage.)
<b>Young Plantations (Grass/Forb, Brush, Hardwood)</b>	Warmer water temperatures, otherwise the same as water, landslides, and surface erosion sections. (Output and cycling.)	Used as primary forage areas. (Capture, cycling, and output.) Can also be considered harassment because of hunting pressure (Output).
<b>Scattered Conifer - Commercial Site</b>	Same as Young Plantations.	Same as Young Plantations.
<b>Scattered Conifer - Low Site</b>	Same as Young Plantations.	Same as Young Plantations.
<b>Grass/Forb, Brush, Hardwoods</b>	Same as Young Plantations.	Same as Young Plantations.
<b>Roads and Trails</b>	Same as water, landslides, and surface erosion.	Harassment due to hunting access (Output). Provides a travel corridor for deer. (Capture, cycling, and output.)
	<b>A) SPOTTED OWL; B) FURBEARERS</b>	<b>STAR THISTLE</b>
<b>Conifer Stands (3N,3G,4N,4G)</b>	A) Primary habitat for nesting, foraging, and roosting. (Capture, production, cycling, storage, and output.); B) Primary habitat for denning and foraging. (Capture, production, cycling, storage, and output.)	Non-existent. Too shaded for establishment.
<b>Older Plantations/ Dense Pole Stands</b>	A) May forage along the edges of this element (Cycling); B) Used for foraging. (Cycling, output, and capture.)	Non-existent. Too shaded for establishment.
<b>Young Plantations (Grass/Forb, Brush, Hardwood)</b>	Poor habitat for both.	High potential for spread. It is a very heavy competition with seedlings that are trying to get established. (Capture, production cycling, and output.)
<b>Scattered Conifer - Commercial Site</b>	Poor habitat for both.	High potential for spread. Once it is established, prior to the trees, it is fiercely competitive. Seedling establishment becomes very unlikely. (Capture, production, cycling, and output.)
<b>Scattered Conifer - Low Site</b>	Poor habitat for both.	Same as Scattered Conifer - Commercial Site
<b>Grass/Forb, Brush, Hardwoods</b>	Poor habitat for both.	Same as Scattered Conifer - Commercial Site.
<b>Roads and Trails</b>	A and B harassment and disturbances to due vehicle access. B) provides a travel corridor. (Capture, cycling, and output.)	Great path for spread. Good habitat and high potential for establishment. (Capture, production, cycling, storage, and output.)

## **STEP 4 - DISTURBANCES, PAST PATTERNS, AND TRENDS**

### **DISTURBANCES**

Two primary disturbances were identified as playing an important role in helping shape the landscape character in the past; fire and landslides.

Fire has played a considerable role in maintaining the ecosystem in terms of forest health. In the past, it maintained basal area levels of conifer stands that minimized inter-tree stress and associated insects and disease problems.

The more southerly exposures and drier sites tended to burn more intense. In these conditions, fire would get into the crowns in some locations or drop down to the ground in others. This would create a mosaic of vegetative sizes and age classes within the landscape. These south slopes were usually in a more open condition. Block sizes on the south slopes were larger than those on the north slopes. Slope position in relation to fire origination was important in determining the size of the openings that would be created. The lower on the slope a fire started, the larger the opening that was created.

Large slump-earthflows and their associated landslide deposits that occurred in the past have helped to create broad patches over the landscape. The dormant landslide deposits display typical hummocky topography and are associated with some of the thicker, more well-developed, and productive soils found in the landscape. Interspersed throughout the landscape are smaller patches and lenses of serpentinite rock and associated soils formed from ultramafic rocks. The serpentinite bodies are sparsely vegetated and have fewer conifers than other areas. Serpentinite soils are not highly productive for commercial timber due to chemical imbalances. Some of the serpentinite bodies within the dormant landslides may be relics of old landslide failure planes. The active streams of the landscape have cut inner gorges through the old landslide deposits.

The entire analysis team agreed that fire played a very significant role in shaping current and past patterns and ecosystem interactions and functions. The team attempted to look at the fire history beyond the 80 years of suppression records; assumptions made were a collaborative effort of the entire team. The team utilized aerial photos from 1944 to the present, comparisons between the

1932 to 1993 lookout photos, and studied the fire history research Carl Skinner is doing on the Happy Camp Ranger District.

The team briefly attempted to describe what the fire regime might have been for this area over the last century. This area has seen many changes in the climatic regime over the past century. Annual precipitation data for the Salmon River Basin from 1904 to the present indicate that 1911-1937 was a dry period, 1938-1975 a wet period, and 1976-1992 a dry period. Lightning fires have been the major ignition source within this landscape over time. Also, historical records do show that cultural burning was still occurring even in the late 1800s. Based on the slope and aspect of most of the landscape, the number of lightning fires recorded, and the cultural burning history, the team felt comfortable stating that the historical fire return interval for most of this landscape was within a range of 7-20 years.

Given the fire suppression resources in earlier days, it is presumed that a large number of low intensity ground fires occurred. Fuel loadings during this time were still relatively low. Lightning fires could burn for a couple of days before crews reached an area. Low intensity ground fires may have encompassed a number of acres before suppression crews arrived, with many of the fires going out on their own. Also, records show that the limited suppression crews were only utilized on the larger (1,000s of acres) fires.

As fire suppression activities became more effective, acres burned became less and less. Also, cultural burning was no longer a component within the landscape. This allowed for the natural fuels, both live and dead, to increase dramatically over the next several decades. As biomass of live vegetation increased, amounts of dead material built up, fuel ladders were created, and fire suppression became much more difficult. During the last twenty years, large amounts of acreage have burned by high intensity fires with almost complete consumption of the live and dead fuels. This has created very large areas of homogeneous early seral vegetation. The team felt comfortable in stating that landscape patterns presently found do not resemble those found naturally prior to the inception of fire suppression.

Following the discussion on fire history and fire regimes the team attempted to identify what the range of seral stages might have been prior to fire

suppression. This was done by not only using fire history but considered soils, aspect, and slope as well. It must be remembered that looking at past patterns is not a means for establishing desired condition. It is done to put the past in perspective and to give a feel for what implications past interactions and associations may have on any desired condition established for the future.

**PAST PATTERNS**

During the analysis for this step, several seral stage descriptions were established and used for categorizing past ranges. They are described as follows:

**Pioneering/Early** - Pioneering is characterized as a grass/forb, seedling stage. Early is characterized as saplings. These are either conifer, hardwoods, or brush, or a combination of all. This seral stage category generally contains newly established stands where senescent stands have fallen apart, or where mid to late seral stands have been cycled back due to a disturbance of some kind.

**Middle** - These stands are characterized as pole size conifers or healthy brush or hardwoods. Younger stands are a mixture of all three components, or just contain an individual component. This seral stage is described as healthy stands with very little dead component.

**Late** - These stands are comprised of large size brush, hardwood, or conifers. Once again, it can contain a mixture of all three components or be a pure stand. It includes open pine stands that may have an understory of younger age class brush or hardwoods. Late is described as when the primary component has attained full size with minimal decadence present.

**Senescent** - Here the stand has basically attained its fullest growth potential. Portions of the stand are beginning to transition back to earlier seral stages. The predominant vegetation (brush, hardwoods, or conifers) is in a state of decay.

**Serpentinite Rock Outcrops** - Due to the ultramafic soils and low site potential these areas do not fit into any previously described seral stage descriptions. Serpentine areas are described separately as they can be tied to a specific location on-the-ground.

When looking at slope, aspect, elevational zones, and climatic regimes, the landscape was divided

into two zones, West Side and East Side, for describing past patterns and structures. A transition zone appears somewhere around the 5,000 foot elevation. The area above this zone receives more snowpack and moisture. There is also a definite slope break and a change in the aspect character. The eastern portion levels off to a more gentle slope which may have received lesser fire impacts to vegetation historically. The continuous south aspect is also not as prevalent. The existing Bacon Rind Road separates the west side from the east side.

**TABLE 2 - RANGE OF VARIABILITY FOR PAST CONDITIONS**

SERAL STAGE	WEST SIDE	EAST SIDE
Pioneering /Early	5-15%	0-10%
Middle	30-40%	20-40%
Late	40-60%	40-60%
Senescent	5-15%	5-15%

**WEST SIDE**

General characterizations follow:

- Due to frequent low intensity fires, the grass/forb and brush stands likely cycled from the middle seral stage to early more often than conifer stands. The conifer stands probably tended to make a more linear progression to the late and senescent stages.
- The late seral stage includes stands of dense conifer cover and stands of open pine. The denser stands are found on north facing aspects or within riparian areas in this portion of the landscape. The more open stands are found on south facing slopes out of riparian areas. These stands also contain grass/forb, brush, or hardwoods in the understory. It is unlikely that this understory component was always a late seral stage along with the conifer component. The conifers were probably maintained in a late seral stage as open stands with repeated fire, whereas the brush or hardwood component would have been regularly brought back to an earlier phase.
- It was hypothesized that senescent stands throughout most of this portion of the landscape consisted of scattered large trees with a brush understory. The overstory conifer trees would

have signs of decadence with dead tops and dying branches. North slopes and riparian areas contained denser conifer stands that would contain senescent stands. Decadence would be prevalent with dead and down material becoming more obvious.

- Fire disturbance created larger openings on the south facing slopes. The edges were more distinct and the lines stayed fairly constant as they were perpetuated through disturbance. Patterns were more predictable on the south slopes.

## EAST SIDE

General characterizations follow:

- Generally the stocking levels and crown densities were much lower in the past than what is currently found. Densities and stocking levels are higher in this portion when compared to the west side.
- The pioneering/early seral stage is confined to smaller openings or patch sizes as compared to the west side.
- The middle stage has a heavier conifer component and less brush. More hardwoods are found within the stands than those of the west side. Hardwoods are likely to be dominant on the rockier, low sites. It is probable that more hardwoods existed in the past than is currently found. The existing higher crown closure tends to shade out many hardwoods.
- A different stand structure existed in the past than what is currently found. Past stands were more open with very little understory present. Crown closure probably ranged between 40-70%. They were definitely denser than those of the west side. Some of the late stands may have had a white fir understory, but much less than what is found today. More oaks and madrones were present within the stands. Many stands probably cycled from late to pioneering phase without ever achieving senescence.
- Senescent stands were probably less in amount, and in smaller patches than today. They were generally confined to north slopes and riparian areas.

## STEP 5 - LINKAGES

Several linkages are identified as important transport items into and out of the landscape. Critical

habitat components are identified in adjacent landscapes for deer, spotted owls, furbearers, and anadromous fish. A key linkage was also identified for fire; vegetative patterns in and out of the landscape are very conducive to fire spread.

There is a major linkage to the east of the landscape for spotted owl dispersal. The existing HCA extends into the adjacent landscape where habitat types are very similar. This area is consequential to providing other foraging opportunities for furbearers as high quality habitat exists to the east of this landscape.

The South Fork of the Salmon River is an important linkage for anadromous fish above and below this landscape. Water quality and quantity is significant to the yearly fish migrations that occur in the river corridor.

Deer migration is an important component within and adjacent to this landscape. Deer movement in the summer is to the east and north, out of the landscape, up to the higher elevations located in adjacent landscapes. The return migration in the fall and winter is opposite, with the animals coming back into the landscape from the east and north. There is a lesser degree of movement into the landscape from the southwest in the winter.

Due to the high concentrations of fuel and vegetation between the burned portion of the landscape and the timbered portion, there is a high probability for the fire flow to escape and move out of the landscape to the east into the existing HCA.

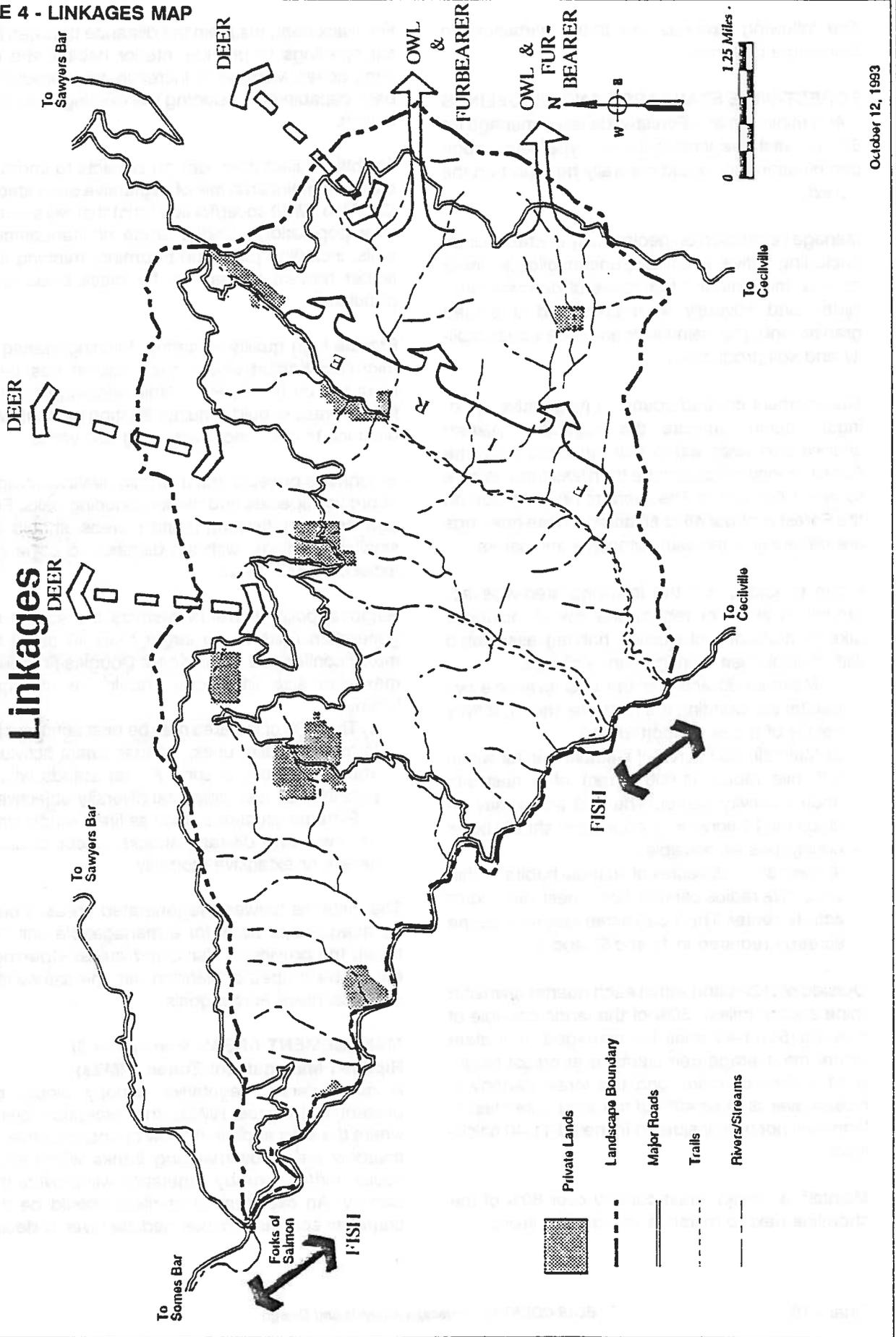
## STEP 6 - LANDSCAPE PATTERNS AND DIRECTION FROM THE DRAFT FOREST PLAN

This step identifies patterns and direction that deals with the different components within the landscape. Information from the draft *Standards and Guidelines, Desired Condition Statement, and Goals and Objectives* were used for each management area within the landscape. A portion of this step is designed to see the applicability of stated standards and guidelines for designated management areas within the landscape. From the information gathered, using Forest level decisions, objectives for design were then established.

The first portion of the *Draft Forest Plan* analyzed was the *Forest-wide Standards and Guidelines*.

FIGURE 4 - LINKAGES MAP

# Bear Country Landscape Linkages



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The following excerpts are those pertaining to landscape patterns:

### **FOREST-WIDE STANDARDS AND GUIDELINES**

...At a minimum at a Forest-wide level, manage for 5% of each vegetative-timber type/seral stage combination that would naturally be found on the Forest.

Manage vegetation on geologically unstable lands (including active landslides, unconsolidated inner gorges, margins and toe zones of dormant landslides and severely weathered and dissected granitic lands) to maintain or enhance slope stability and soil productivity.

Management created openings (vegetative openings) should simulate the vegetative pattern shapes and sizes within that landscape. On the Forest, opening sizes range from less than an acre to over 1,000 acres. The average opening size on the Forest is about 45 to 50 acres. These openings are generally linear with extensive perimeters,

When possible, use the following step-wise approach to avoid or reduce the risk of incidental take (disturbance of existing habitat) associated with multiple use management activities.

- 1) Maintain 80 acres of the best available owl habitat surrounding the nest site and/or activity center of a pair of spotted owls.
- 2) Maintain 500 acres of suitable habitat within 0.7 mile radius (1,000 acres) of a nest site and/or activity center. The 500 acres may include the 70 acres in 1) above and should be as contiguous as possible.
- 3) Maintain 1,360 acres of suitable habitat within a 1.3 mile radius centered on a nest site and/or activity center. The 1,360 acres may include the acreage required in 1) and 2) above.

Outside of HCAs and within each quarter township (nine square miles), 50% of the lands capable of meeting 50-11-40 shall be managed in a state where the average tree diameter at breast height is 11 inches or more, and the forest canopy is closed over at least 40% of the area. Site class 5 lands will not be considered in the 50-11-40 calculation.

Maintain a closed forest canopy over 80% of the shoreline next to marshes, ponds and lakes.

For black bear, maintain the distance between forest openings to provide interior habitat and escape cover. Manage to increase mast-producing oaks capable of supporting the existing bear population.

For black tailed deer, design projects to improve, create or maintain a mix of vegetative seral stages (30/70 to 50/50 cover/forage ratio) that will support deer populations. Use a range of management tools, including prescribed burning, thinning and timber harvest to manage for black tailed deer populations.

Provide high quality wintering, fawning/rearing or migration habitat where such habitat has been identified by the CDFG. Within wintering habitat, forage areas should simulate existing patches with distance to cover not exceeding 300 yards.

Emphasize projects that maintain health and vigor of browse species and mast-producing oaks. Forage areas in fawning/rearing areas should be smaller openings, with the distance to cover not exceeding 150 yards.

Regional policy currently restricts the size of regeneration units to no larger than 40 acres for mixed conifer and 60 acres for Douglas-fir. These maximum size limitations should be changed when:

- 1) The DFC of the area may be best achieved by larger or smaller units... Management activities should emulate existing Forest stands where possible to meet biological diversity objectives.
- 2) Extreme situations, such as fires, windstorms or insect and disease attacks, occur causing severe or extensive mortality.

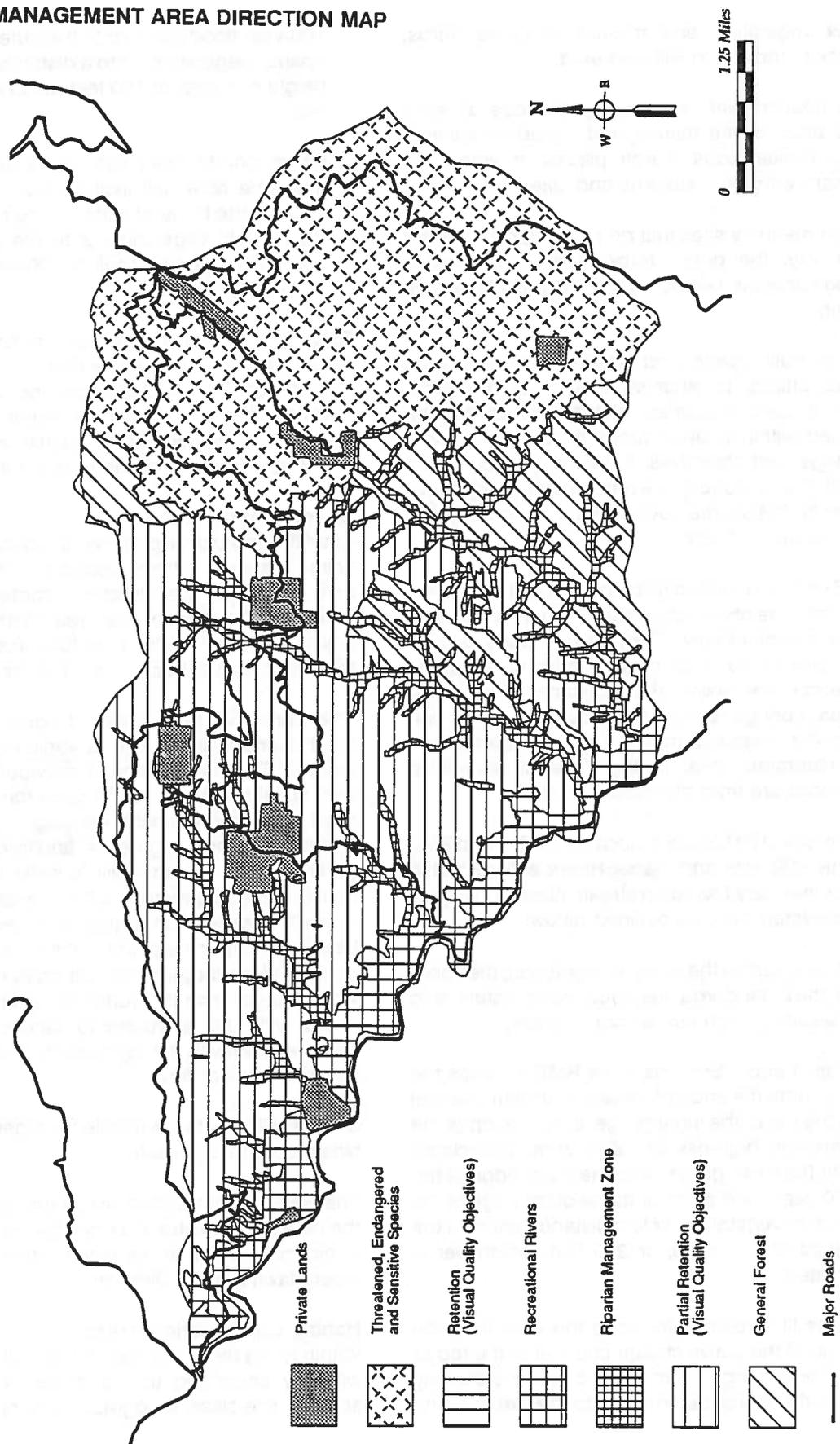
The distance between regenerated areas should be adequate to allow for a manageable unit between the previously harvested areas. Openings should be shaped or blended with the natural terrain to achieve Forest goals.

### **MANAGEMENT AREAS (see Figure 5) Riparian Management Zones (RMZs)**

A multi-layered, vegetative canopy would be present in forested RMZs, the exception being where the soils appear shallow or unproductive. In meadow areas, overhanging banks with herbaceous and/or shrubby vegetation will provide the canopy. An overstory of conifers should be the dominant species. An intermediate layer of decid-

FIGURE 5 - MANAGEMENT AREA DIRECTION MAP

# Bear Country Landscape Management Area Direction



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uous vegetation and mixture of grass, forbs, sedges, and brush will also exist.

The riparian plant community includes all ages and sizes. Some mature and decadent conifers have broken tops. Large pieces of wood are present within the streams and lakes.

In wet meadow sites that do not support a conifer overstory, the grass, forbs, shrubs, and hardwoods species (alder, willow) will provide stream cover.

Locate trails, roads, and facilities outside riparian zones unless no other suitable location is available. Access to riparian related facilities may be located within riparian areas if needed to meet management objectives. Salvage may occur as a result of a catastrophic event. Manage vegetative cover for basal area cover greater or equal to 250 square feet per acre.

RMZ widths on streams are the horizontal distance on each side of the active stream channel carrying water at bankfull flows. They include side channels and backwaters which may not carry water during seasonal low flows. RMZ distances for lakes, ponds, springs, seeps, meadows and small wetlands are measured from the edge of the seasonally saturated soils. In the case of reservoirs, distances are from the maximum pool.

Two types of RMZs are proposed, RMZ 1 and RMZ 2. The RMZ size and management actions within RMZs may vary based on stream class and aquatic ecosystem type as outlined below:

**RMZ 1** - Includes the riparian vegetation, the floodplain, the inner gorge, the aquatic ecosystem, and the extremely high risk landslide areas.

**Class I and II Streams** --The RMZ includes the area from the edge of the active stream channel to the top of the inner gorge, or to the top of the extremely high-risk landslide areas associated with the inner gorge, or to the outer edge of the 100-year flood plain, or to the outer edge of the riparian vegetation, or to a distance equal to the height of two trees, or 200 feet, whichever is greatest.

**Class III Streams** --Includes the area from the edge of the active stream channel to the top of the inner gorge, or to the top of the extremely high-risk landslide areas, or to the extent of the

100-year flood plain, or to the outer edge of the riparian vegetation, or to a distance equal to the height of 1 tree, or 100 feet, whichever is greatest.

Lakes, ponds, reservoirs, and wetlands greater than one acre, will include the area from the edge of the body of water to the outer edge of the riparian vegetation or to the extent of the seasonally saturated soil, or 100 feet, whichever distance is greater.

**RMZ 2** - Those areas surrounding Class IV streams and other wetlands that are less than one acre in size. The RMZ includes the area from the water's edge to a distance equal to one tree height, or to the edge of the riparian vegetation, or 100 feet, whichever distance is greatest.

### **General Forest Zone**

Emulate ecological processes, stand, and landscape patterns where possible. Within harvest units, maintain the structure, composition, and ecological function of the area. Where possible, adjust planting levels to reduce precommercial thinning and fuel hazard costs in the future.

These areas will be a mosaic of vigorously growing forest stands made up of a variety of vegetative species. The composition of individual stands will vary considerably depending on forest type and seral stage development. Although openings with hardwoods, shrubs, grasses, and forbs will be apparent, forest stands will consist primarily of conifers. Stand structure will be variable. In some areas the conifer component of the vegetation will be sparse. Other areas will maintain many components of older, larger trees. Generally the forest will look younger than the surrounding areas, but will blend with the surrounding landscape. Stand sizes will vary with the topography and patterns of the surrounding area.

Stands will become available for regeneration between 80 and 120 years.

The General Forest zone will be managed to meet the designated Visual Quality Objective (VQO). As a minimum, manage the lands within the area to meet Maximum Modification.

### **Habitat Conservation Areas**

Within HCAs the characteristics of individual areas will vary according to the dominant vegetative species, site class, topography and other site fac-

tors. Under optimum conditions, well dispersed and continuous areas of multi-layered forests will be common. The overstory trees would be large diameter, tall and have obvious signs of decadence. Snags will be common and fallen trees visible on the ground. Within true fir habitats or where hardwoods occur, mid-seral stage forested areas will provide suitable habitat as well. Although overstory trees will be smaller and stands may be less dense, important structural elements, such as snags and nesting platforms, will be present.

Manage HCAs to meet the designated VQO. Within the HCA itself, manage for a minimum VQO of Partial Retention.

#### **Partial Retention**

This management area had the least amount of direction in terms of tying desired condition to landscape pattern descriptions from the *Draft Forest Plan*. It left the most room for discretion.

Maintain the area in a nearly natural appearing, forested setting. Management activities will be visually subordinate to the character of the landscape.

Manage the area primarily for forested, mid to late seral stage (3A,3BC, 4BC) habitat. Management activities should promote the growth of closed canopy forest with scattered openings due to management activities or natural activities. \*(It was noted by the landscape analysis team that this guideline was not consistent with some of the natural processes, functions, and land capabilities within portions of the landscape. It could be incompatible with the desired condition that is stated for parts of this management area).

#### **Recreational River**

Design management activities to meet Retention VQO within the recreational river corridor. Place special emphasis on the scenic qualities along rivers with outstandingly remarkable scenic values.

Middleground areas, visible from the recreational river corridor, should be managed to meet a Partial Retention VQO.

#### **Retention**

Maintain the area in a natural, or nearly natural appearing (Retention VQO), forested setting. Veg-

etative or ground disturbing management activities will repeat the form, line, color and texture that represent characteristics of the landscape. Changes in qualities of size, amount, intensity, direction, pattern, etc. would not be evident to the average forest visitor.

## **STEP 7 - LANDSCAPE PATTERN**

### **OBJECTIVES** (see Figure 6)

This step attempts to narratively describe objectives regarding landscape pattern and endeavors to put the desired condition for the landscape in words. Several questions were answered to further identify future objectives for the landscape.

**QUESTION 1:** What are some rare, unusual, critical, or unique landscape elements we want to protect or enhance?

#### **ANSWER:**

The remaining patches of timber within the burned portion of the landscape. There is a need to maintain conifer corridors for wildlife cover and movement, as well as providing diversity within this portion of the landscape.

The sensitive plant populations associated with serpentine and ultramafic soils require protection.

There is a need for protection or enhancement of critical riparian areas within the landscape. The enhancement work is necessary due to impacts from the wildfires of 1977 and 1987. The key riparian areas are:

- Black Bear - protection
- Callahan - protection
- Argus - protection and enhancement
- Murphy - protection and enhancement
- Indian - protection and enhancement
- Negro - enhancement

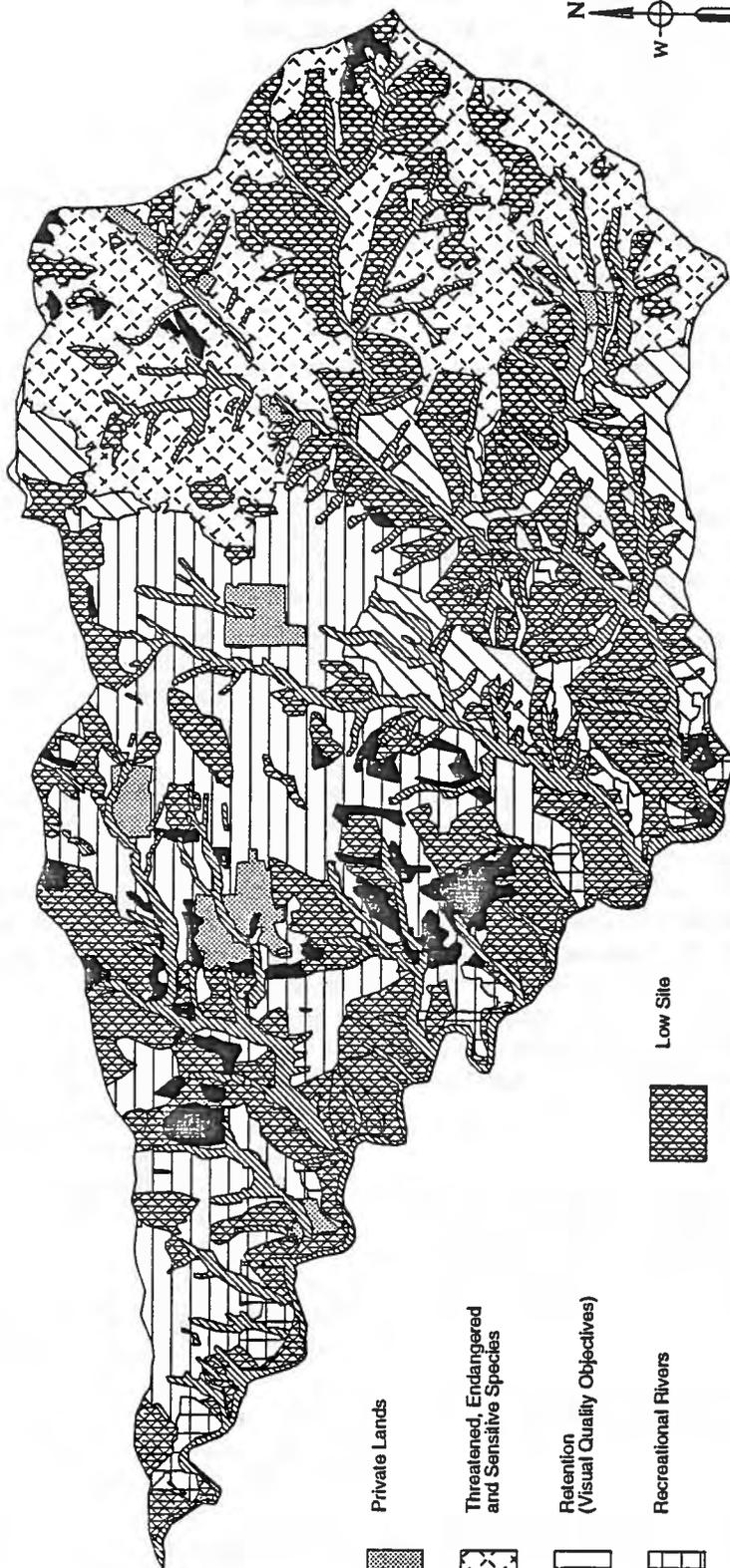
There are several small wetlands at the heads of O'Farrill, Henry Bell, Indian, and Negro Creeks that need enhancement work as well.

Protection measures to reduce sedimentation and enhance stability are necessary for Zane's landing, located in the Negro Creek watershed.

There is a need to protect or enhance road networks that access private property. Also, a need to

FIGURE 6 - DESIRED CONDITION MAP

# Bear Country Landscape Desired Condition



- Private Lands
- Threatened, Endangered and Sensitive Species
- Retention (Visual Quality Objectives)
- Recreational Rivers
- Partial Retention (Visual Quality Objectives)
- General Forest
- Low Site
- Serpentine Outcrops
- Riparian Areas

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maintain road networks that will meet administrative, fire, and recreation requirements exists

Enhance Blue Ridge lookout as an administrative or recreational facility.

The protection of the older plantations that survived the 1987 fires is very important.

Protection of the newly established plantations within the landscape is necessary.

Protect the habitat qualities of the HCA and maintain current interior habitat conditions. The intent is to maintain habitat characteristics necessary to keep owl pairs in place.

Enhance large diameter hardwood stands. There is a very small component existing within the current landscape and it provides a very valuable piece of diversity. The intent is to protect the existing stands in the short term until new hardwood stands are being established from the pioneering/early seral stages.

**QUESTION 2:** Are there patches or areas of the matrix between which connectivity should be maintained?

**ANSWER:**

**Where:** From east side of the burned portion of the matrix through Blue Ridge Ranch to Godfrey Ranch and through Graham's Gulch.

**What:** A connective corridor of middle to late seral stage vegetation.

**Why:** To provide for deer migration and dispersal of other late seral associated wildlife species.

**Where:** Blue Ridge to Godfrey Ranch through Section 16 towards Blue Ridge Lookout.

**What:** A connective corridor of middle to late seral stage vegetation.

**Why:** Provide for deer migration and cover in and out of the landscape.

**Where:** Along the entire length of Picayune Ridge.

**What:** A connective corridor of middle to late seral stage vegetation. This will have to be linked with the north facing slope of the adjacent landscape. The south facing slope within the Bear Country landscape does not have the potential to provide for a continuous canopy cover along the ridge line. The north slope has more potential for providing the bulk of the vegetative corridor.

**Why:** Provide of deer migration and linkage between adjacent landscapes.

**QUESTION 3:** What may be missing that should be introduced or restored?

**ANSWER:**

A connection of the corridors previously addressed.

Patch sizes of late seral vegetation and larger structured stands needs to be increased in the burn portion of the landscape.

The visual quality impacted by fires and past management activities require restoration within the burned portion of the landscape by allowing vegetation to visually screen the roads, active plantation management to encourage conifer growth, vegetative management practices that will increase connectivity of similar patches, and management activities that will promote younger stands to transition into mid and late seral stages in a quicker time frame.

There is a need to restore robust riparian stands and vegetation, primarily in the burned portion of the landscape. There is a need to restore the species diversity and increase the health and connectivity of the riparian corridors.

Restore vegetation within the entire landscape that has been impacted by the fires of 1977 and 1987. The key is to revegetate the landscape to reduce sedimentation. Emphasis is to be placed on the smaller landslides to promote stability and the remainder of the landscape to provide for vegetative capability and resilience to future fire cycles.

On the west side of the landscape it is desirable to restore fuel loads to a more normal, logical level (near normal in pioneer/early seral stages was defined as typically light fuel loads). Emphasis is on burned areas that were not previously treated, specifically standing dead pole patches remaining from the Glasgow Fire.

On the east side of the landscape the desire is to restore fuel loading and ladder fuels to levels that existed prior to fire suppression. The primary objective is to reduce crown fire potential within this portion of the landscape. Need to key into south, southwest, and southeast slopes to reduce the fuel ladder situation. Need to specifically concentrate on areas with white fir understory.

Restore disturbed areas with native plant communities. This may involve the treatment of starthistle and non-native grasses.

**QUESTION 4:** To what extent, and where, do we want to emulate certain elements of natural landscape patterns?

**ANSWER:**  
Within the burned portion of the landscape it is desirable to recreate a more varied age/structural vegetation pattern.

Within the timbered portion of the landscape it is desirable to recreate a more natural pattern with any openings that may occur or be created. This will be done by reducing fuel loadings and ladder fuels to pre-fire suppression levels.

An attempt to emulate natural patterns along the transition zone between the Partial Retention management area and the HCA management area should happen in order to reduce or prevent abrupt contrasts in vegetative character.

**QUESTION 5:** Are there areas of the landscape where it is desirable to minimize fragmentation?

**ANSWER:**  
Within the HCA management area, it is desirable to maintain most of the vegetation for species dependant on late seral stage habitat. There is a need for a higher percentage of late seral stage vegetation in a less fragmented condition within this portion of the landscape.

The west side of the landscape is currently unfragmented, but the vegetation is dominated by early seral stage. The analysis team determined the current situation not to be "normal" in that the early seral stage vegetation normally would be more fragmented than it currently is. It was also felt that the current situation does not promote resiliency to the ecosystem. It is very vulnerable to a disturbance factor. By creating a large area of homogeneous stands we would be creating future problems with systems that are not resilient to future fire processes. A more resilient ecosystem for this portion of the landscape would contain a more fragmented situation that would reduce the large homogeneous stands that have similar age/structural attributes. The analysis team also looked at the impossible economic realities of trying to move this large area into a later seral stage all at one time.

**QUESTION 6:** Are there areas where a high degree of edge and contrast is desirable?

**ANSWER:**  
No.

**QUESTION 7:** Are there areas where gradual changes are preferred?

**ANSWER:**  
The edge between the Partial Retention management area and the HCA management area need to maintain gradual edges changes. Abrupt or contrasting edges should be avoided.

By meeting objectives within the Partial Retention management area, gradual edge changes should occur.

**QUESTION 8:** What kinds, sizes, shapes, and arrangements of patches/corridors/matrix are desirable in different parts of the landscape?

**ANSWER:**  
Answers follow and are given by individual management areas.

**Threatened and Endangered Species Habitat Areas - Northern Spotted Owl Desired Condition**

The desired condition is to reduce the natural range of mid-seral component and increase the range of senescent component. There is a need to strategically position senescent stands in order to insure their stability and allow them to perpetuate over time within this portion of the landscape. This would involve looking at north facing slopes and riparian areas for the placement and maintenance of senescent stands.

**TABLE 3 - DESIRED RANGE T&E HABITAT AREA, Northern Spotted Owl**

SERAL STAGE	PAST	PRESENT	DESIRED
Pioneering /Early	0-5%	12%	0-5%
Middle	20-40%	4%	15-30%
Late	40-60%	84% *	40-60%
Senescent	5-15%		10-20%

\* There was no breakdown between late and senescent in the existing condition. Ground verification will need to be accomplished to accurately identify the senescent stands.

**--Low Site Capability**

*Pioneer/Early Seral* - dominated by grass forb complex with brush/hardwood seedlings beginning to invade the stands. Hardwoods would generally be scattered; dominant species would be canyon live

oak or Oregon white oak. Brush species would be dominated by those that are adapted to shallower soils and drier, harsher sites. Conifer seedlings and saplings would generally be sparse and made-up primarily of ponderosa pine.

*Mid Seral* - dominated by small diameter hardwoods and shrubs, with scattered conifers. Vegetation is generally healthy with very little coarse woody material and minor presence of decadence within the stands.

*Late Seral* - scattered (<10 trees per acre) larger conifers having full crowns associated with brush or hardwoods. Stands are predominantly occupied by hardwoods; live oak and Oregon white oak are predominant hardwood species, although black oak may be present in small amounts. The stands are fairly open with a grass component still present. They are healthy but some snags may be present with a slight increase in coarse woody material, but levels still remain quite low. Decadence within the stand is also low.

*Senescent* - scattered conifers with broken tops associated with large hardwoods or brush. A healthy brush component exists as a result of repeated underburns. There would still be patches of decadent brush due to the uneven burn pattern that naturally occurs. Snags and down logs would be present.

#### --High Site Capability

*Pioneer/Early Seral* - areas contain grass/forbs, brush and hardwood seedlings and saplings; abundant amounts of conifer seedlings and saplings. Some stands contain a mixture of all these components whereas other stands can contain a single component. Primary brush species are deer brush and manzanita. Dominant hardwood species are black oak and madrone with minor components of Oregon white oak and live oak. Conifers are a mixture of species heavily weighted towards ponderosa pine and Douglas-fir. Minor amounts of incense-cedar, sugar pine, knobcone pine, and white fir are present. White fir will be more abundant at the higher elevations, especially on north facing slopes.

*Mid Seral* - stands are predominantly a mixture of conifer species, ranging from 75-150 trees per acre with a 40-80% crown closure. Species component will be similar to that described for the pioneer/early stage. A hardwood component also exists within the stands; black oak and madrone

are the primary species. Grasses and forbs are less prevalent and shade tolerant forbs are beginning to appear. Scattered tolerant brush species can be found. Predominant conifers are evident throughout the stands. There are occasional snags and down logs. There are low levels of three inch and less diameter fuels. Duff and ground cover are evident in greater quantities than found in this stage on the low sites. The stands may have holes in the overstory with grass, brush and/or small hardwoods present. These stands tend to have minimal within stand structural diversity. The distinction between these stands and those found on similar sites on the west side of the landscape is that stands in this portion tend to be larger with less stand size diversity (less fragmentation).

*Late Seral* - stands are predominantly a mixture of conifer species, ranging from 40-80 trees per acre with a 40-80% crown closure. These stands appear denser than those on the west side of the landscape. Trees are of a larger diameter and have crown ratios greater than 50%. Hardwoods are still present and of a larger diameter. Shade tolerant forbs and brush species may be present. Shade tolerant tree species, primarily white fir, may be found in draws and on north slopes. Scattered predominant conifers still exist within most of the stands. Snags will be present. The duff layer and coarse woody material concentrations have increased. The holes that were existing in the mid seral stage have been shaded out and have become mid seral patches. The stands have become much more diverse for old-growth dependant wildlife species.

*Senescence* - These stands are generally found on north slopes or within the riparian areas. There are fewer live trees per acre as compared to the late seral stage. Canopy closure in most stands still exceed 60% crown closure, but canopy closure is in a state of decline. Portions of the stands are multi-storied, with the understory consisting of shade tolerant species, primarily white fir with some Douglas-fir. Hardwoods are not quite as evident as they have become shaded out by conifers over time. The predominant overstory trees are showing signs of decadence. More snags are evident. Coarse woody material has increased, some may now be in the form of rotten logs. As the canopy closure is reduced, more holes within the stand become apparent. The grass component and less tolerant brush species start to get established within the holes that are created by the mortality within the stand.

**Riparian Management Zones**

Vegetation provides for 80% stream coverage, where capable. Canopy closure is maintained between 60-80% in order to perpetuate 80% stream shading and vigorous stand conditions. Holes in the corridor are present. Vegetation is multi-layered and multi-aged, with a mixture of conifers, hardwoods, brush, and forbs and grasses. Snags and coarse woody material is present. Site specific analysis will determine the appropriate mix of vegetative components that is needed in various riparian areas.

**Designated and Recommended Recreational Rivers**

The existing patterns are a response to natural processes that have occurred. This is primarily due to the inversion that sets in when wildfires have occurred in the general area. For the most part the present condition is fairly compatible with the desired condition. The only exception being that the conifer stands may be denser than what is consider "natural".

The desired condition emulates current patterns. It is important to maintain healthy, vigorously growing vegetation, including hardwoods and brush, through available silvicultural tools, including prescribed fire. Conifer stands consist of uneven age groups scattered throughout this portion of the landscape. The conifer stands should be fairly open with a maximum canopy closure of 40-60%. Scattered large snags are present. Decadent trees are evident with scattered trees present to provide for recruitment snags. Coarse woody material exists at low levels throughout this part of the landscape.

**Partial Retention Visual Quality Areas**

The following table displays a range of seral stages desired within this portion of the landscape.

**TABLE 4 - PARTIAL RETENTION DESIRED CONDITION**

SERAL STAGE	PAST	PRESENT	DESIRED
Pioneering /Early	5-15%	88%	5-15%
Middle	30-50%	3%	30-40%
Late	40-60%	29% *	40-60%
Senescent	5-15%		5-15%

\* There was no breakdown between late and senescent in the existing condition. Ground verification will need to be accomplished to accurately identify the senescent stands.

It is also desirable to have 50% of the capable lands in a 40% canopy closure with an average stand diameter of 11". This is likely be met in most late and senescent stages on capable lands. A portion of the stands in the middle stage also meet the 50/11/40 criteria.

An additional goal is to provide for a range between 30/70 and 50/50 cover/forage ratio for deer habitat. The major forage source is the pioneer/early seral stage. Open pole and brush stands in the middle seral stage also provide forage. Open stands in late or senescent condition may provide forage value as well.

**SERAL STAGE DESIRED CONDITIONS**

Specific desired conditions are described below for all seral stages. They are broken down by high and low site capability classes.

**--Low Site Capability**

*Early/Pioneer Seral* - dominated by a grass/forb complex with brush/hardwood seedlings beginning to invade the stands. Hardwoods would generally be scattered; dominant species would be canyon live oak or Oregon white oak. Brush species would be dominated by those that are adapted to shallower soils and drier, harsher sites. Conifer seedlings and saplings would generally be sparse and made up primarily of ponderosa pine.

*Mid Seral* - dominated by small diameter hardwoods and shrubs, with scattered conifers. The vegetation is generally healthy with very little coarse woody material and minor presence of decadence within the stands.

*Late Seral* - scattered (<10 trees per acre) larger conifers having full crowns associated with brush or hardwoods. Stands are predominantly occupied by hardwoods: live oak and Oregon white oak are predominant hardwood species, although black oak may be present in small amounts. The stands are fairly open with a grass component still present. They are healthy but some snags may be present with a slight increase in coarse woody material, but levels still remain quite low. Decadence within the stand is also low.

*Senescent* - scattered conifers with broken tops associated with large hardwoods or brush. A

healthy brush component exists as a result of underburns that have occurred. There would still be patches of decadent brush due to the uneven burn pattern that naturally occurs. Snags and down logs would be present.

**--High Site Capability:**

*Pioneer/Early Seral* - areas contain grass/forbs, brush and hardwood seedlings and saplings; abundant amounts of conifer seedlings and saplings. Some stands contain a mixture of all these components whereas other stands may only contain a single component. Primary brush species are deer brush and manzanita. Dominant hardwood species are black oak and madrone with minor components of Oregon white oak and live oak. Conifers are a mixture of species heavily weighted towards ponderosa pine and Douglas-fir. Minor amounts of incense-cedar, sugar pine, and knobcone pine are present. Very little white fir is found.

*Mid Seral* - stands are predominantly a mixture of conifer species, ranging from 75-150 tree per acre with a 40-80% crown closure. A hardwood component also exists within the stands. Hardwoods are comprised primarily of black oak and madrone. Grasses are less prevalent and shade tolerant forbs are beginning to appear. Tolerant brush species can be found scattered throughout the stands. Predominants are evident and are scattered throughout the stands. Occasional snags and down logs are present. Duff and ground cover are evident in greater quantities as compared to this seral stage on low sites. Some of the stands may have holes in the overstory with grass, brush, and/or small hardwoods present. These stands tend to have minimal within stand structural diversity.

*Late Seral* - stands are predominantly a mixture of conifer species, ranging from 20-60 trees per acre with a 30-70% crown closure. Trees are of a larger diameter and have crown ratios greater than 50%. Hardwoods are still present and of a larger diameter. Shade tolerant forbs and brush species may be present. Shade tolerant tree species might be found in draws and on north slopes. Scattered predominant conifers still exist within most of the stands. Snags are present. The duff layer and coarse woody material concentrations have increased. The holes that were existing in the mid

seral stage have been shaded out and have become mid seral patches. The stands have become much more diverse for old-growth dependant wildlife species.

*Senescence* - these stands are generally found on north slopes or within the riparian areas. There are fewer live trees per acre as compared to the late seral stage. Canopy closure is reduced and losing ability to maintain greater than 40% crown closure. Hardwoods are not quite as evident as they have been shaded out by conifers over time. The predominant overstory trees are showing signs of decadence. More snags are evident. Coarse woody material has increased, some may now be in the form of rotten logs. As the canopy closure is reduced, more holes within the stand become apparent. The grass component and less tolerant brush species start to establish themselves within the holes that are created by mortality within the stand.

*Serpentinite Sites* - These areas have sparse vegetation that consists of very scattered conifers and hardwoods. The tree component may contain incense-cedar, ponderosa pine, or digger pine, with patches of live oak. There is a small amount of manzanita present mixed with grasses and endemic forb species. Certain threatened and endangered plant species that are associated with ultramafic soils may be found scattered on these soil types.

**General Forest**

The following table captures the range of desired conditions established for General Forest:

**TABLE 5 - GENERAL FOREST DESIRED CONDITION**

SERAL STAGE	PAST	PRESENT	DESIRED
Pioneering /Early	5-15%	58%	10-20%
Middle	30-50%	3%	20-40%
Late	40-60%	39% *	40-50%
Senescent	5-15%		0-5%

\* There was no breakdown between late and senescent in the existing condition. Ground verification will need to be accomplished to accurately identify the senescent stands.

### **--Low Site Capability**

Descriptions of pioneer/early, middle, late, and senescence will be the same as those described for partial retention.

### **--High Site Capability**

*Pioneer/Early Seral* - areas contain grass/forbs, brush and hardwood seedlings and saplings; abundant amounts of conifer seedlings and saplings. Some stands contain a mixture of all these components whereas other stands may only contain a single component. Primary brush species will be deer brush and manzanita. Dominant hardwood species are black oak and madrone with minor components of Oregon white oak and live oak. Conifers are a mixture of species heavily weighted towards ponderosa pine and Douglas-fir. Minor amounts of incense-cedar, sugar pine, and knobcone pine are present. Very little white fir is found.

*Mid Seral* - stands are predominantly a mixture of conifer species, ranging from 100-175 trees per acre with a 40-80% crown closure. A minimal hardwood component exists within stands. Primary hardwood species are black oak and madrone. Grasses are less prevalent and shade tolerant forbs are appearing. Scattered tolerant brush species can be found. Predominant conifers are evident in some of the stands. There are occasional snags and down logs. Duff and ground cover are evident in greater quantities than this stage on low sites. There are very few holes in the overstory with grass, brush and/or small hardwoods present. These stands tend to have minimal within stand structural diversity. The light to moderate (<3") fuels are kept at the lowest possible level.

*Late Seral* - stands are predominantly a mixture of conifer species, ranging from 50-75 trees per acre and 40-70% crown closure. Trees are of larger diameter and live crown ratio. Occasional hardwoods, black oak and madrone, are still present and of a larger diameter. Shade tolerant forbs and brush species are present. Shade tolerant tree species may be found in draws and on north slopes. Predominants still exists in many of the stands. Snags are present. The duff layer and coarse woody material has increased. There are very few holes in the overstory. The stands are more diverse for wildlife. The three inch fuels are maintained at extremely low levels. Accumulations of coarse woody material over large areas are avoided.

*Senescence* - stands have >60% total canopy closure. Snags and coarse woody material are evident. Stands are multi-layered, especially on north slopes.

### **Lands Adjacent to Private Property**

It was determined that desired condition should be established to lands immediately adjacent to private property. There is a need to minimize visual impacts adjacent to private property as well as provide resource protection through specific vegetative characteristics.

The desired condition is to maintain an open forested condition to mitigate potential for crown fire. A timbered overstory of <70% crown closure is desired with minimal ground and ladder fuels.

A cooperative effort in managing public lands as well as private property should be undertaken. The analysis team felt it would not do much good to maintain conditions which can bring a crown fire down to the ground if the conditions on private property allow it to return to the crowns.

## **STEP 8 - IDENTIFICATION OF POSSIBLE MANAGEMENT PRACTICES**

The objective here is to identify possible management practices (projects) that once accomplished, will start the process for achieving the desired condition for the landscape. Projects are listed by specific resources, but in many instances each project will benefit more than one resource. When this occurs it will be noted. Associated maps display the possible management practices. In some cases management practices are site specific and other cases more broadly located.

### **WILDLIFE HABITAT**

The key possible management practices identified for wildlife habitat include maintaining or improving wildlife travel corridors throughout the landscape, maintaining the integrity of the existing older hardwood stands, and maintaining quality forage within the key deer winter range.

Wildlife corridor projects include protecting the existing remnant stands within the burned portion of the landscape. This is to be done by maintaining adequate thermal and hiding cover, keeping fuel concentrations and ladders to a minimum, and maintaining healthy, vigorously growing stands. Other projects include expanding current corridor

sizes, and growing conifers, creating linkages, where they are currently lacking.

The analysis team felt the designated corridor along Picayune Ridge would be difficult to maintain as a fully closed canopy corridor for the entire ridge within the landscape. This is due to the area's fire history and the soil types found on the south side of the ridge line. The major emphasis should be on maintaining this as a transition into a closed canopy corridor in the adjacent landscape (Picayune). This would provide linkage between the two landscapes and place emphasis on a closed canopy corridor on the north facing aspect.

Design projects for existing older hardwood stands that help perpetuate them for their diversity value until other hardwood stands can be created. The object would be to promote herbaceous growth and acorn production. Reducing current fuel loadings would also be an important goal within some stands. These hardwood stands can be maintained either in a pure hardwood condition or with remnant conifers and brush as a component. The goal is not to create hardwood stands but perpetuate the large diameter hardwoods that presently exist.

Key deer winter forage areas were identified within the landscape. These areas were identified as brush stands on predominantly very low and low site productivity. There will be inclusions of moderate site capability within them. Projects need to occur in these areas that maintain quality forage for wintering deer herds.

#### **RIPARIAN ENHANCEMENT**

Riparian corridors were placed into three categories: 1) Intensely burned - designated high priority for revegetation and enhancement, 2) Moderately burned - opportunities exist for enhancement or protection, and 3) Unburned - management practices that allow protective measures that mitigate potential for future loss due to wildfire.

Ponds and seeps were also identified as needing enhancement or protection measures. These management practices have been identified as ri-

parian enhancement projects, but also have wildlife benefits. They encourage vegetative growth adjacent to wet areas that can furnish shading and hiding cover for wildlife. In some cases, opportunities were identified to remove conifers and restore the integrity of the wet area where encroachment is lowering the water table.

The following were identified as priorities for riparian enhancement projects:

- 1- Murphy Gulch (intensely burned) --high priority for improving water quality for anadromous fish habitat. Other resource benefits include providing for a future wildlife corridor and also a fuels reduction project that will help protect the riparian corridor.
- 2- Indian Creek (intensely burned) --high priority for improving water quality for anadromous fish habitat.
- 3- Unnamed draw near forks (intensely burned) --high priority for improving the riparian area to provide for a future corridor for wildlife movement and migration.
- 4- Negro Creek (intensely burned) --moderate priority for improving water quality. Also important in creating a closed canopy corridor for wildlife movement.
- 5- Henry Bell Gulch (intensely burned) --moderate priority for improving water quality. Also important in creating a closed canopy corridor for wildlife movement.
- 6- O'Farrill Creek (intensely burned) --low priority for the water quality for anadromous fish habitat. Is important in creating a closed canopy corridor for wildlife movement.

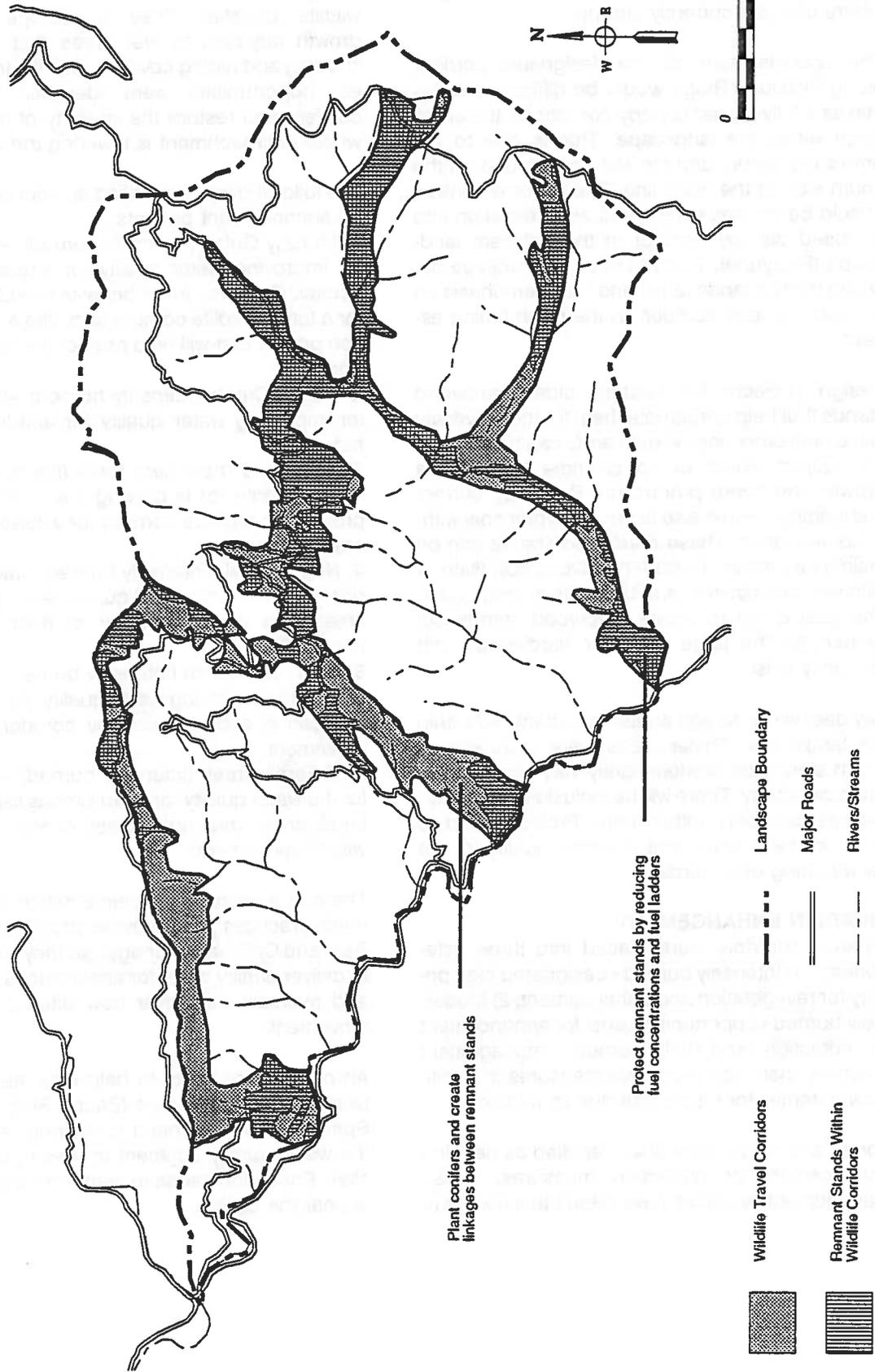
There is a need for implementation of management practices that provide protection to Black Bear and Callahan drainages so they can continue to deliver quality water for anadromous fish habitat and maintain the cover now offered for wildlife movement.

An opportunity exists to help educate the public using the hunter camps (Bacon Rind and Cedar Springs) about the need to maintain and protect the water quality adjacent to these undeveloped sites. Education needs to center on waste disposal near the camps.

**FIGURE 7 - WILDLIFE MANAGEMENT OPPORTUNITIES (Wildlife Travel Corridor Enhancement)**

# Bear Country Landscape

## Wildlife Management Opportunities: Wildlife Travel Corridor Enhancement

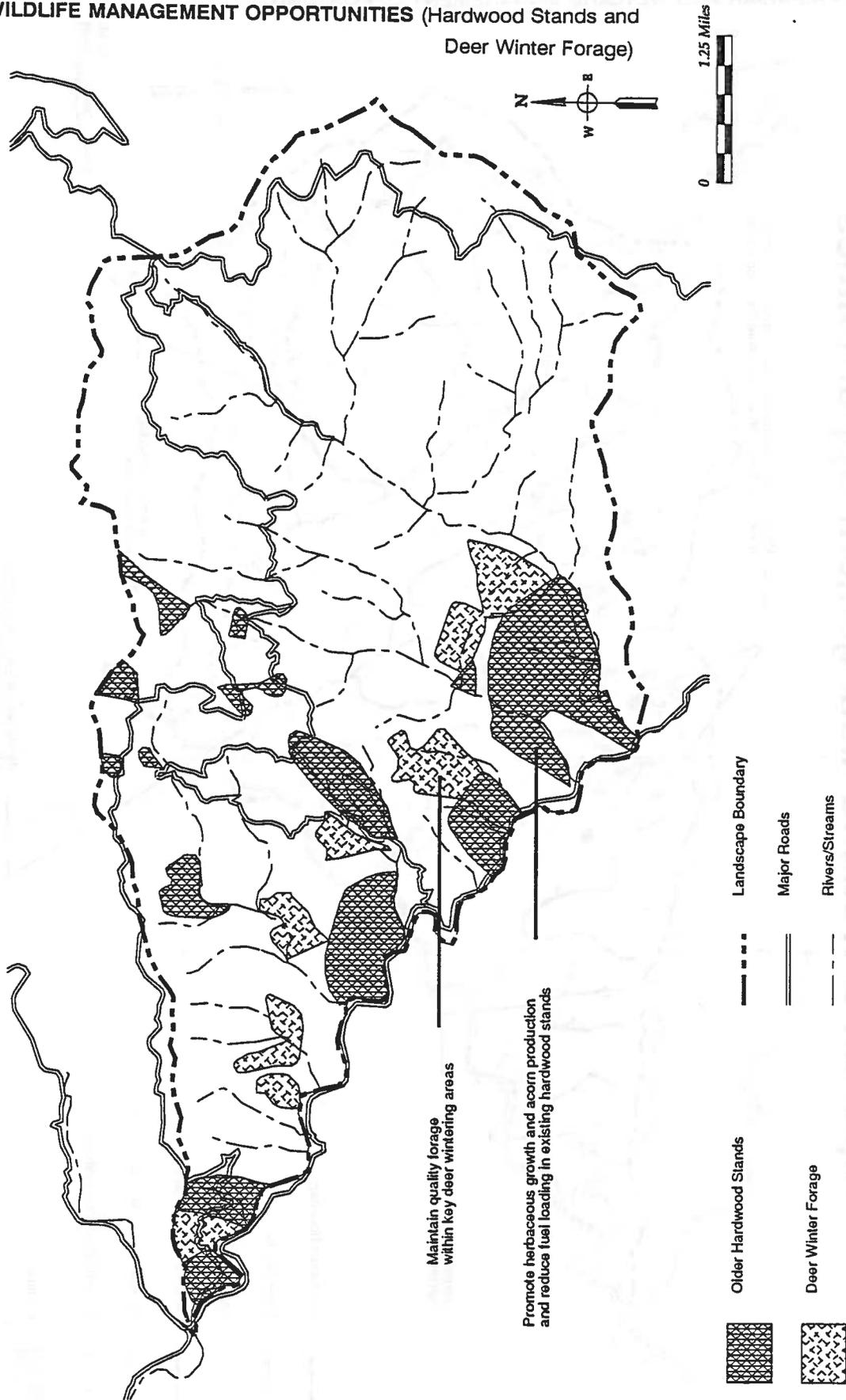


October 13, 1993

# Bear Country Landscape

## Wildlife Management Opportunities: Hardwood Stands and Deer Winter Forage

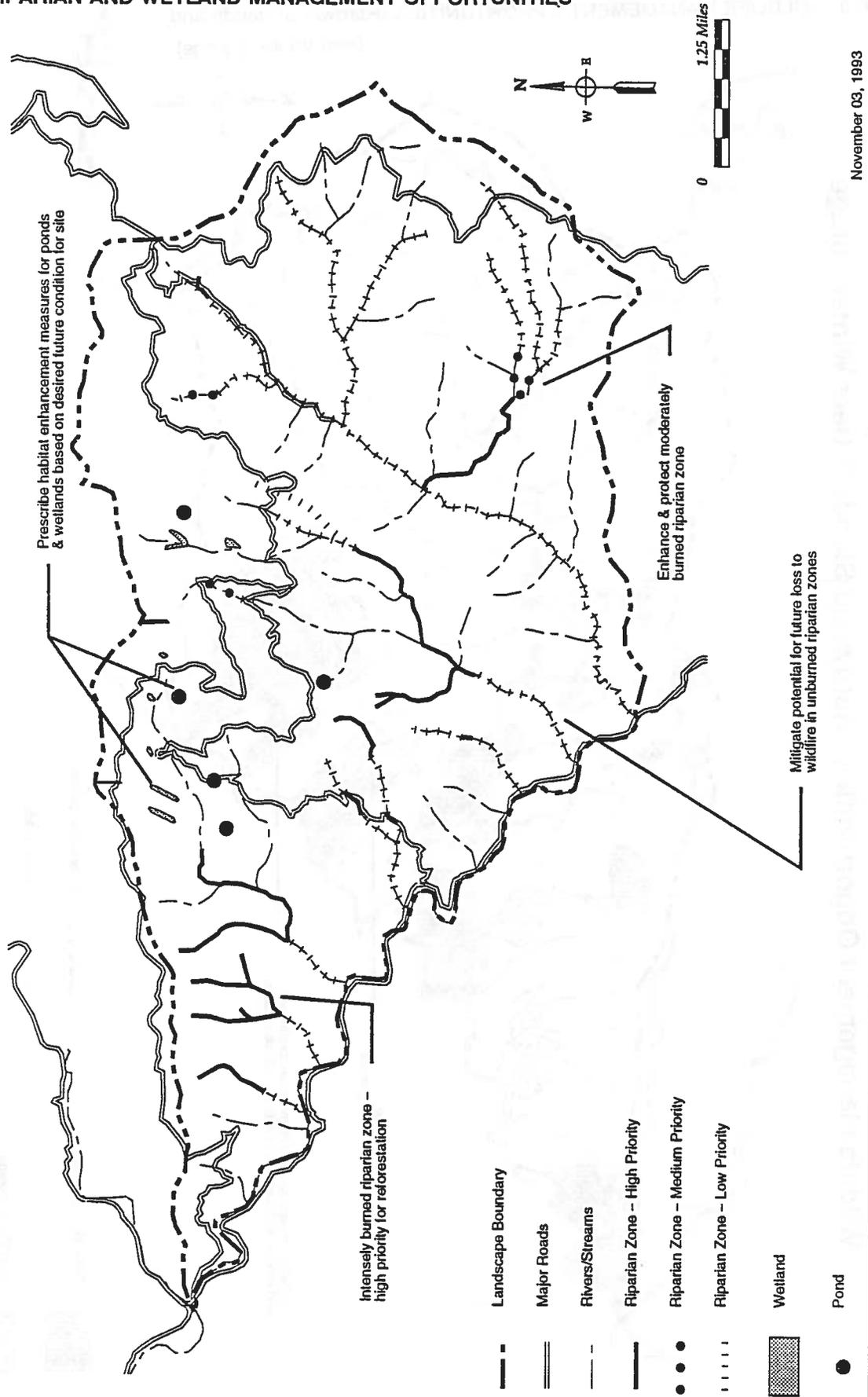
FIGURE 8 - WILDLIFE MANAGEMENT OPPORTUNITIES (Hardwood Stands and Deer Winter Forage)



October 13, 1993

FIGURE 9 - RIPARIAN AND WETLAND MANAGEMENT OPPORTUNITIES

# Bear Country Landscape Riparian & Wetland Management Opportunities



November 03, 1993

## VEGETATIVE ENHANCEMENT

There are several objectives identified for vegetative management opportunities within the landscape. They include the following:

- 1- Increase patch size and connectivity of timbered stands within the burned area by encouraging tree growth in younger stands.
- 2- Maintain stand health and vigor in remnant stands within the burned portion of the landscape.
- 3- Increase the corridor width around Blue Ridge Ranch.
- 4- Increase connectivity from Blue Ridge Ranch through upper Indian into Picayune ridge in order to develop the wildlife corridor.
- 5- Promote health and vigor within the mid and late seral stage stands.
- 6- Establish and promote tree growth on areas designated as having slope stability problems.

On the attached map (*Figure 10*) stands have been identified that meet one or more of the above objectives. Stands identified as priority to increase patch size and connectivity within the burned area were prioritized by site quality. The remnant stands should be analyzed as to their current fuel conditions, both dead and ladder, stocking levels, and amount of current mortality. Actual treatment methods and site specific analysis will be done during the NEPA (National Environmental Policy Act) stage. This map just identifies stands that could possibly require some type of treatment in order to maintain their essential role in this part of the landscape. Existing older plantations were identified as priorities for treatment in order to assist in developing wildlife corridors within the burned portion of the landscape.

## SLOPE STABILIZATION AND SURFACE EROSION REDUCTION OPPORTUNITIES

The areas of most concern for these key flows were identified as inner gorges, active landslides, toe zones, and dormant slides that were burned at a moderate or high intensity. The primary objective is to reestablish deep rooted vegetative growth in the intensely burned areas to help increase slope stability. There are several types of geologic landforms that require some type of treatment. They are listed in priority as: 1) inner gorges, 2) active landslides, 3) toe zones of dormant landslides, and 4) dormant landslides. The inner gorge priority areas are the same as those identified in the ripari-

an enhancement management opportunities. The upper Indian Creek area was identified as being one of the most critical areas in need of vegetative reestablishment.

Three active landslides have been identified as high priority for slope stabilization and erosion control. The highest priority slide is known as the Zane Landing slide, located in the Negro Creek watershed. The second slide is located near Black Bear Creek near the switch back on County Road 1E001. The other slide in need of repair is located on Road 39N36 in the vicinity of LaFayette Point.

Another potential opportunity for reducing surface erosion can be found on Road 39N55A within the Negro Creek drainage.

A couple of areas within the landscape have been identified as having very high road densities. The interaction step identified roads as contributing sediment input to streams from surface erosion, especially when road densities were very high. The analysis team identified roads that could be looked at in terms of providing some type of road management direction, and implementing a project that may reduce the number of road miles within various drainages. See *Figure 11* for road locations that need further assessment. A brief narrative describing priority and road numbers follows:

- 1-Negro Creek drainage is identified as a high priority for reducing road density. Roads that require further analysis within this drainage are 39N55A, 39N30B, 39N30C, and the portion of 39N29 west of the private land.
- 2- Another drainage identified as high priority due to high road densities is Murphy Gulch. Temporary road A, at the end of Road 30N64, is identified as needing further analysis.
- 3- Indian Creek is identified as moderate priority in terms of current road densities. Two spurs off of Road 39N19, the A spur and one with no name, have been identified for further analysis.
- 4- O'Farrill Creek has also been identified as moderate priority. The spur off of 39N30 in the NW 1/4 of Section 20 and a spur off of 39N72 have been earmarked for further study.
- 5- Graham Gulch is identified as low priority, but one temporary road in the SW 1/4 of Section 28 has been identified as needing further analysis.

FIGURE 10 - VEGETATIVE MANAGEMENT OPPORTUNITIES

# Bear Country Landscape Vegetative Management Opportunities

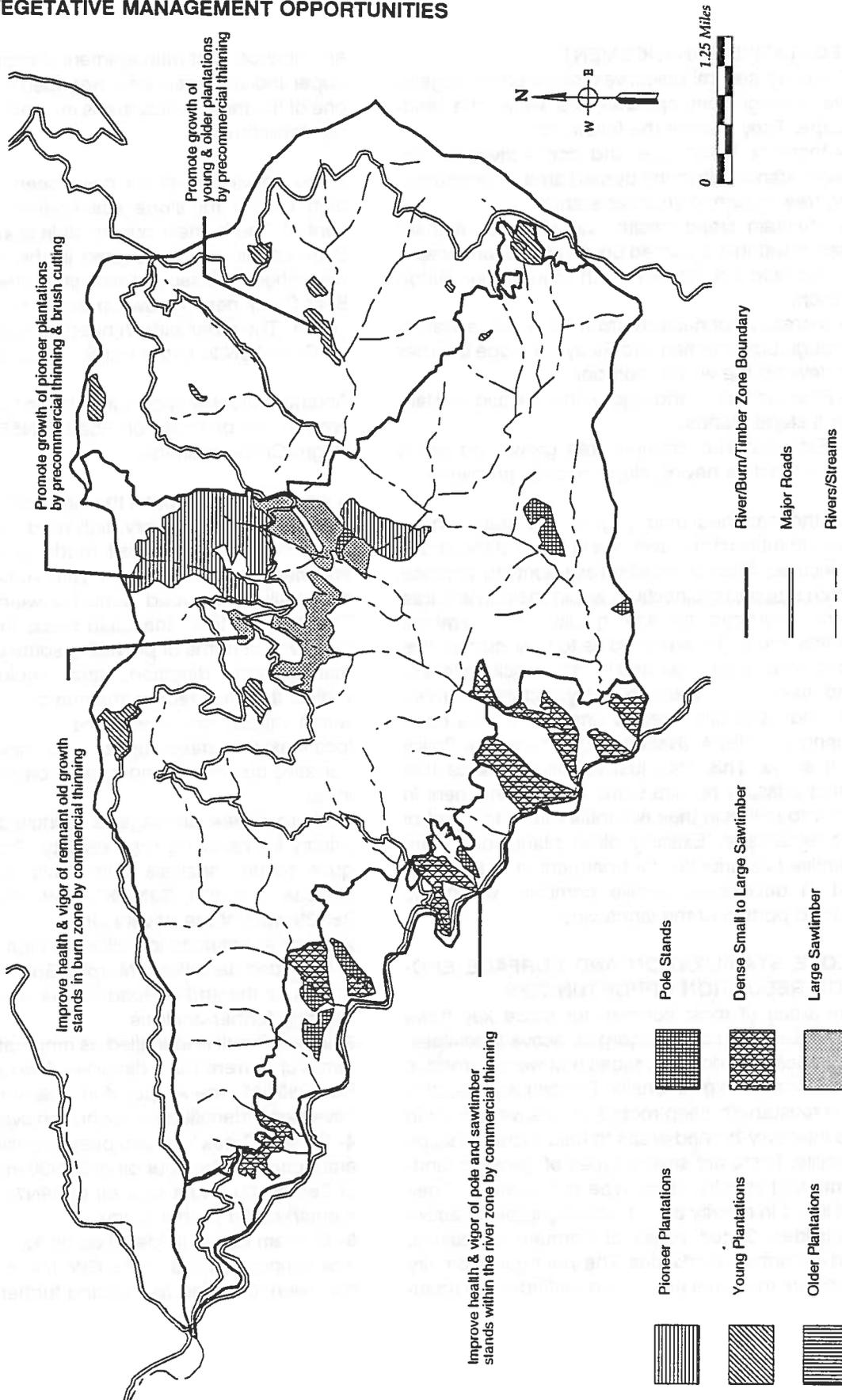
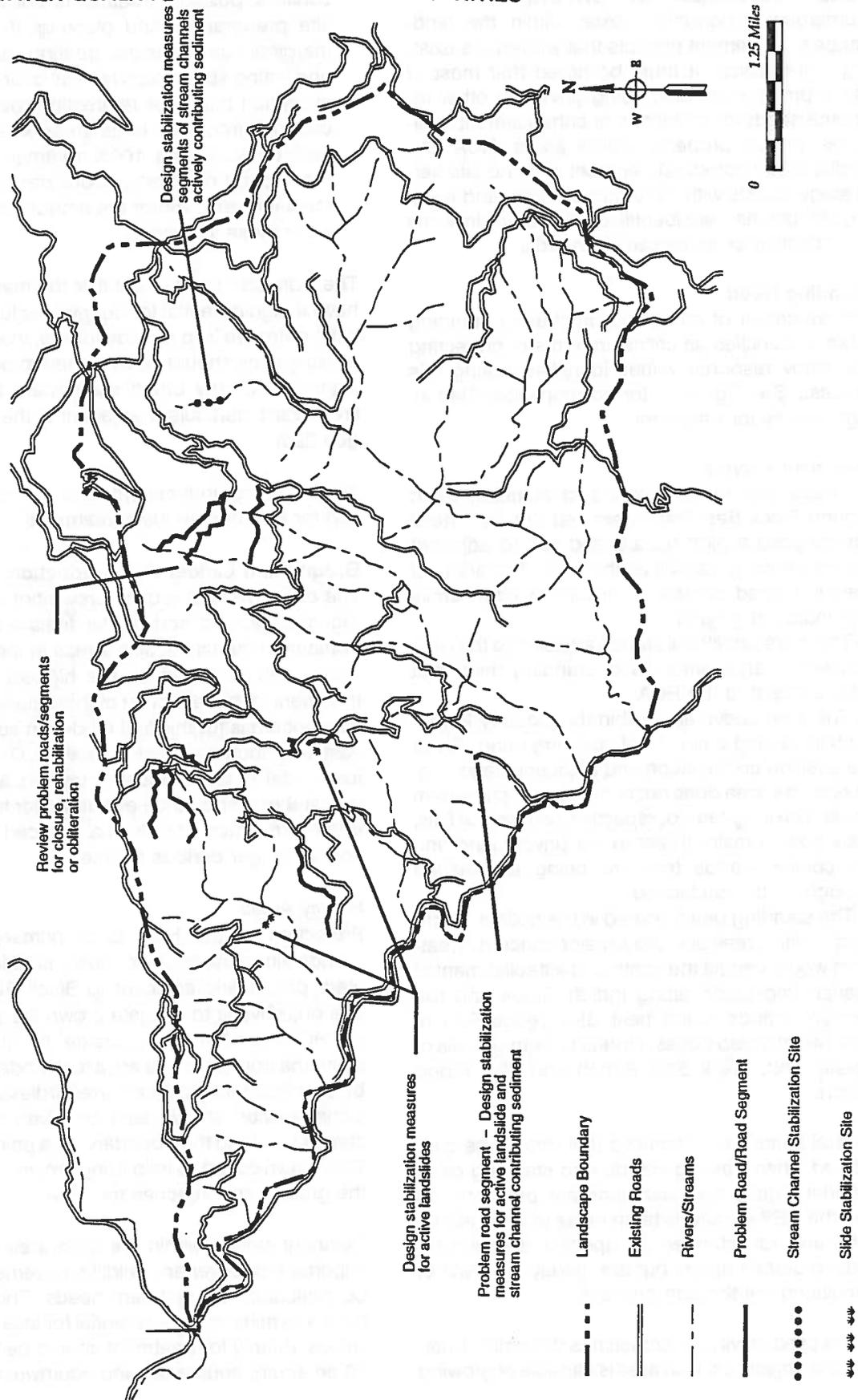


FIGURE 11 - WATER QUALITY IMPROVEMENT OPPORTUNITIES

# Bear Country Landscape Water Quality Improvement Opportunities



November 01, 1993

## FUEL MANAGEMENT OPPORTUNITIES

Numerous opportunities exist within the landscape to implement projects that will reduce existing fuel hazards. It must be noted that most of these projects are also being driven by other resource needs for protection or enhancement measures. Private property, critical areas (HCA and wildlife travel corridors), remnant mid and late seral stage stands within the burned area, and existing plantations were identified as priorities in terms of protection or enhancement needs.

### Standing Dead

The treatment of remaining patches of standing dead is identified as critical in terms of protecting the many resource values identified during this process. See *Figure 12* for polygons identified as high priority for treatment.

#### Treatment Priorities

1- Areas with concentrations of standing dead around Black Bear Ranch are first priority. These stands pose a high hazard and risk to adjacent private property as well as the HCA. The areas of standing dead contain a mixture of commercial and marginal ground.

2- There are additional stands adjacent to the HCA containing large amounts of standing dead that pose a threat to the HCA.

3- The area above and within the Godfrey Ranch contain varying amounts of standing dead. Given the position on the slope and adjacent stand conditions, this area does not pose a major short-term threat. The long-term perspective, as material falls, does pose a major threat to the private land and the conifer stands that are being established throughout the landscape.

4- The standing dead located in the middle reaches of Indian Creek are also a major concern. Treatment would benefit the continued establishment of riparian vegetation along Indian Creek and the remnant stands found near Blue Ridge Ranch. This material also poses a threat to both parcels of private land, Black Bear Ranch and Blue Ridge Ranch.

Several items were identified that should be considered when treating stands with standing dead material. These considerations are presented to give the NEPA analysis team ideas to think about. They are not intended as specific direction for treating certain areas, but are merely a means of stimulating the thought process.

Site productivity will sometimes determine treatment objectives. If an area is capable of growing

conifers, possible treatments could be felling, site preparation, and planting. If the area is marginal site, consider treating just the fuels and letting succession take its course. The only exception might be reforesting the pockets of capable ground. In large areas where no reforestation is planned, 100% treatment of the fuels may not be necessary. Consider varying treatment intensity and/or the amount of area treated in these instances.

The team also pointed out that the marginal areas have a high potential for deer winter forage areas. If the objective is to provide forage, then long term prescriptions should be designed to perpetuate a vigorous, healthy brush component to minimize fire hazard, particularly adjacent to the HCA (polygon 290).

Areas planted under standing snags need evaluation for appropriate fuels treatment.

### Ground and Ladder Fuel Reduction

The objective is to reduce crown fire potential by reducing ground and ladder fuels within critical portions of the landscape. Areas in fuel model 10 have been identified as the highest priority for treatment in the reduction of these fuels. The highest concern is for this fuel model on south, southeast, and southwest facing aspects. Once areas in fuel model 10 are adequately treated, areas in fuel model 8 or 9 should be evaluated for treatment in order to maintain stands in a reduced fuel condition for longer periods of time.

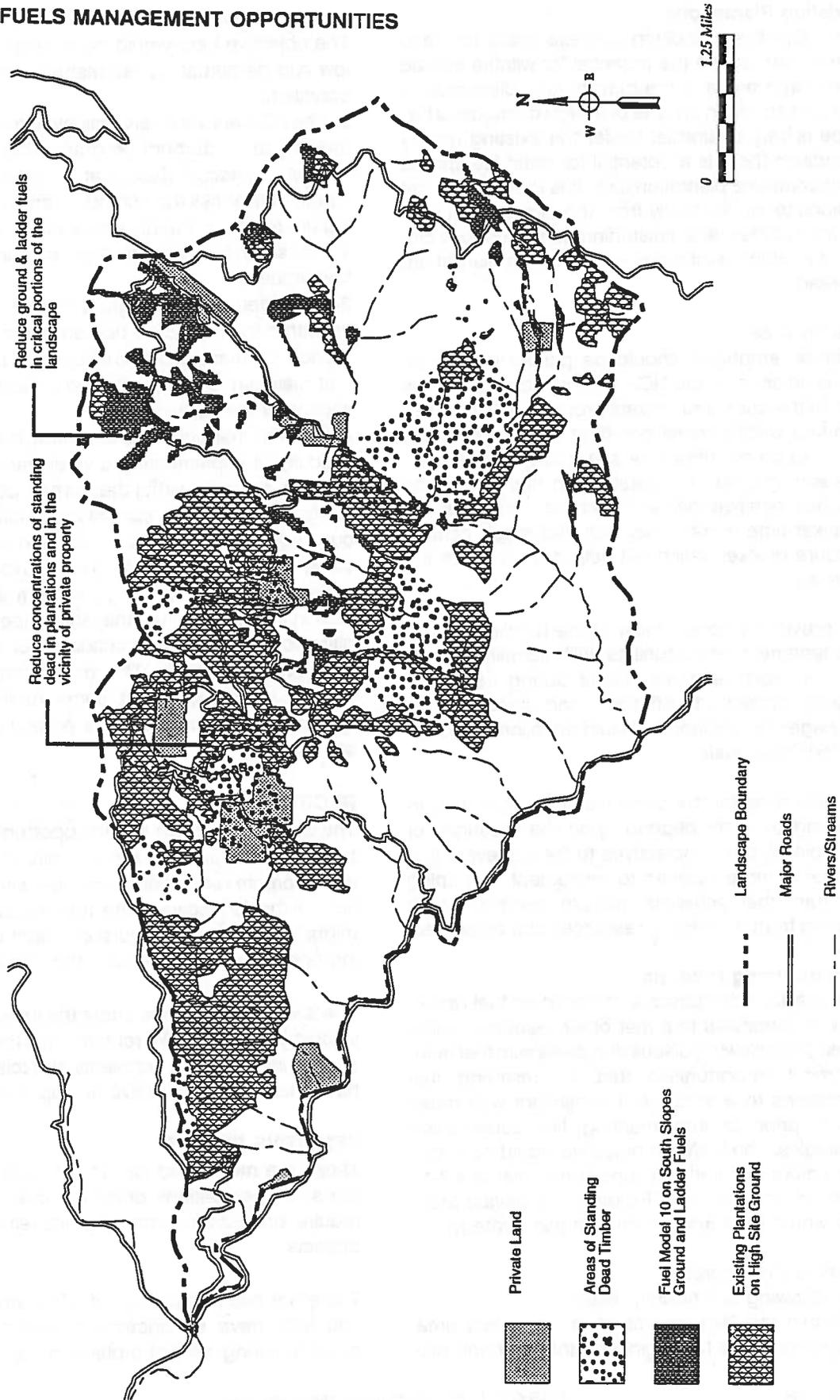
#### Priority Areas

Protection of the HCA is of primary concern. Stands along the HCA boundary should be evaluated, particularly adjacent to Black Bear Ranch. The objective is to mitigate crown fire potential in the HCA from fire starts outside the HCA. Stands along the boundary that are a fuel model 10 should be prioritized for treatment irregardless of aspect. Consideration should also be given to opening stands up along the boundary (to a point less than 70% crown cover) to help bring crown fires back to the ground as it reaches the HCA.

Remnant stands within the burn area, which are important for cover and wildlife movement, should be evaluated for treatment needs. The objective here is to minimize the potential for loss of corridor values. Priority for treatment should be fuel model 10 on south, southeast, and southwest slopes.

FIGURE 12 - FUELS MANAGEMENT OPPORTUNITIES

# Bear Country Landscape Fuels Management Opportunities



November 30, 1993

### Existing Plantations

The objective of looking at these areas for treatment is to reduce the potential for wildfire spread over large areas in the burn matrix. Disruption of fire spread within an area of a large contiguous fuel type is very desirable. Under the existing grassy condition there is a potential for rapid fire spread and complete plantation loss. It is desirable to get stands to move rapidly from the pioneering stage to the middle stage. Hastening conifer canopy closure in older plantations will also help disrupt fire spread.

### Priority Areas

Highest emphasis should be placed on plantations adjacent to the HCA, remnant conifer stands within the burn area, private property, and the designated wildlife travel corridors. Treatment areas need to be prioritized by site quality too. The increased growth of vegetation on high site areas will help achieve the desired stand conditions in a quicker time frame. They will also reach canopy closure quicker which will help disrupt future fire spread.

As previously noted, most of the highlighted fuel management opportunities will actually benefit one or more resource needs during treatment. During project identification and analysis, fuel management concerns should be tailored into the various proposals.

The priorities for the previously described underburning program depend upon the resource, or multiple resource objectives to be achieved. It is probably more realistic to implement a burning program that achieves multiple benefits where monies from a variety of resources can be pooled.

### Underburning Program

The previous discussions centered on fuel reduction opportunities that met other resource objectives. The following discussion deals with fuel management opportunities that try restoring fuel conditions to a level more consistent with those found prior to implementing fire suppression strategies. The fire/fuels objective would be to create a more "natural" fuel condition similar to a 7-15 year fire return interval. Protection of private property would be a major goal with this strategy.

### Areas of Consideration

The following is randomly listed:

1- Within the General Forest management area, priority locations for beginning underburning pro-

grams are those areas having fuel model 8 and 10. The objective here would be to keep the fuel bed low and perpetuate a late mature, closed canopy condition.

2- The HCA area is a very feasible choice for implementing an underburn program. This would keep natural fuel accumulations at a level that provides a much lower risk for a stand or landscape replacing fire to occur. Priority areas within the HCA are south, southeast, and southwest facing slopes in fuel model 10.

3- An underburning program can be easily initiated within the river zone portion of the landscape. Prescribed burning prescriptions can be prepared that maintain or create desired conditions for this section of the landscape.

4- The fire management specialist discussed the difficulty of implementing a wholesale prescribed burning program within the burned portion of the landscape. Given the current condition of continuous, highly flammable fuels, it would be difficult to safely burn large blocks. The District might fare better planning a burning program accomplishable in the future, when the landscape is in a condition to be burned with confidence of successfully achieving objectives. The one opportunity that does exist is looking at some of the remnant stands found throughout this portion of the landscape.

### RECREATION

The Blue Ridge Lookout is an opportunity for either an interpretive site or a rental cabin. The objective is to promote recreational activities within this portion of the landscape. The rental cabin concept might be something to pursue in light of the hunting opportunities that exist within the landscape.

There were discussions about the feasibility of developing mountain bike routes within the area. This sport is increasing in popularity and this area does have the potential for several loop routes.

### SENSITIVE PLANTS

These are mentioned for project planning. There are small populations of *trillium ovatum* that will require protection during the implementation of projects.

There are two populations of *silene marmorensis* that may have enhancement opportunities besides requiring special protection measures.

**STARHISTLE**

No firm management practices are identified to help alleviate the starthistle problems occurring within the landscape. It is recommended that in the future only certified straw be used. Another sug-

gestion is to check the feasibility of introducing a weevil that feeds on starthistle. This will have to be evaluated as an opportunity at a later date.

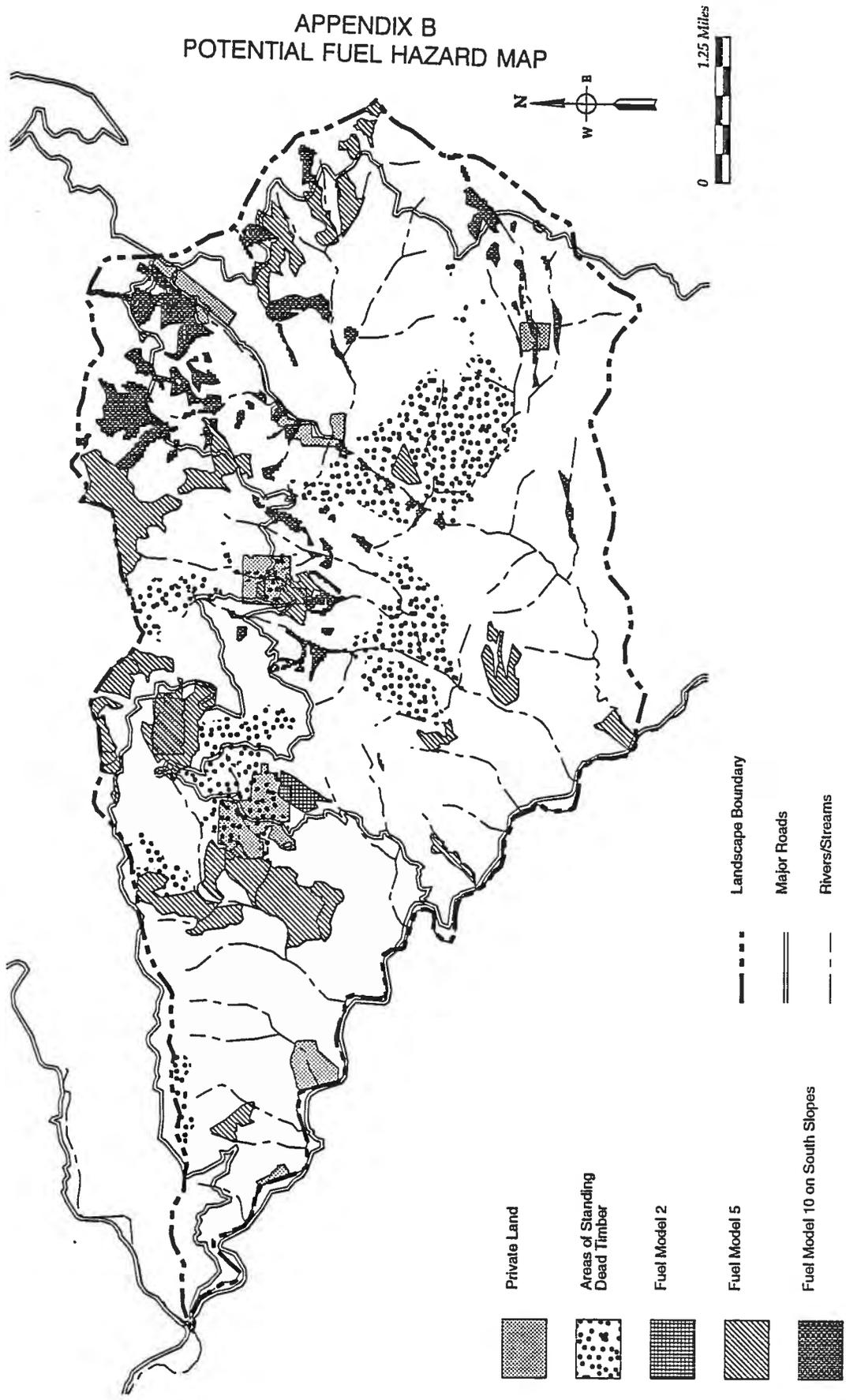
**APPENDIX A  
POTENTIAL MANAGEMENT PRACTICES - BEAR COUNTRY LANDSCAPE**

<b>OPPORTUNITY</b>	<b>RESOURCE OBJECTIVES TO BE MET <i>(Identified by Key Flows)</i></b>
1. Protection of remnant stands within the burned portion and the identified wildlife corridors	Deer, Fire, and Human (commodity)
2. Expansion and linkage of the identified wildlife corridors	Deer, Spotted Owl, Furbearers, Fire, Human (commodity)
3. Perpetuation and protection of existing hardwood stands	Deer, Fire, and Human (recreation)
4. Promoting forage in key deer winter area	Deer, Fire, Human (recreation)
5. Riparian enhancement in Murphy Gulch	Water, Fish, Fire, Landslides, Surface Erosion, Deer, Furbearers, and Spotted Owl
6. Riparian enhancement in Indian Creek	Water, Fish, Fire, Landslides, Humans (commodity), and Surface Erosion
7. Riparian enhancement in unnamed draw	Water, Fire, Landslides, Surface Erosion, Deer, Furbearers, Humans (commodity), and Spotted Owl
8. Riparian enhancement in Negro Creek	Water, Fire, Landslides, Surface Erosion, Deer, Furbearers, Humans (commodity), and Spotted Owl
9. Riparian enhancement in Henry Bell	Water, Fire, Landslides, Surface Erosion, Deer, Furbearers, Humans (commodity), and Spotted Owl
10. Riparian enhancement in O'Farrill Creek	Water, Fish, Fire, Landslides, Surface Erosion, Deer, Furbearers, Humans (commodity), and Spotted Owl
11. Protection measures for Black Bear and Callahan Creeks	Water, Fish, Humans (private), Spotted Owl, Furbearers, Fire, and Deer
12. Education of public at undeveloped camps	Water, Humans (private), Humans (recreation)
13. Increase patch size and promote establishment of conifer stands in burned portion of matrix	Humans (commodity), Deer, Landslides, Spotted Owl, and Furbearers
14. Maintain stand health and vigor in General Forest management area	Humans (commodity), Furbearers, and Spotted Owl
15. Slope stabilization of identified landslides	Landslides, Surface Erosion, Humans (commodity), Water, and Fish
16. Slope stabilization along Road 39N55A	Surface Erosion, Humans (commodity), and Water
17. Road management analysis and implementation to reduce road densities	Surface Erosion, Humans (commodity), Water, and Fish

OPPORTUNITY	RESOURCE OBJECTIVES TO BE MET <i>(Identified by Key Flows)</i>
18. Treatment of standing dead throughout the landscape	Humans (private), Fire, Spotted Owl, Furbearers, Water, Humans (commodity), Landslides, Surface Erosion, and Fish
19. Ground and ladder fuels reduction	Humans (private), Spotted Owls, Furbearers, Deer, Surface Erosion, and Fire
20. Thinning opportunities, pre-commercial and commercial, of older plantations, young plantations, and older conifer stands	Humans (commodity, Fire, Deer, Spotted Owl, Humans (private), and Furbearers
21. Fuel/fire management practices that will attempt to create a return fire interval of 7-15 years	Fire, Humans (private), Deer, Spotted Owls, Furbearers, Fish, Surface Erosion, Landslides, Humans (commodity), and Water
22. Development of Blue Ridge Lookout	Humans (recreation)
23. Analysis of mountain bike routes	Humans (recreation)
24. Protection and/or enhancement of sensitive plant populations	Humans (recreation)

# Bear Country Landscape Potential Fuel Hazard

## APPENDIX B POTENTIAL FUEL HAZARD MAP



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