

Appendix B

South Cascades Late-Successional Reserve Assessment

Chapters 3, 4, and 5

CHAPTER 3: EXISTING CONDITIONS

CONTEXT OF THE SOUTH CASCADES LSR NETWORK

INTRODUCTION

The South Cascade LSRs are part of a regional network designed in association with other land allocations (riparian reserves, National Parks, Wildernesses, botanical areas, etc.) to provide functional late seral habitat, including long-term dispersal and migratory pathways.

In a regional perspective, the south Cascades provide a link and are a north-south transition area between the Sierra Nevada Mountains of northern California and the northern Cascade Mountains of Oregon and Washington. The Siskiyou Mountains run generally east-west, and provide connectivity between the coastal and inland south Cascade mountain areas. The Columbia and Klamath Rivers, the only major rivers which significantly breach the Cascade and Coast ranges, allow mixing of inland and coastal species and genetic varieties. These links allow movement of species and genetic material north and south and east and west in response to changes in climate such as occurred during the ice ages and the xerothermic period. These links are still important in the evolutionary process and health of the Pacific Northwest flora and fauna.

The habitat within the South Cascades LSRs serves as source areas for spotted owls and other late-successional and old growth dependent species. LSR 222 is the largest contiguous Reserve within the range of the northern spotted owl. Since species depend on habitat, a variety of habitats present over time and space provides for a broad range of species, including rare and sensitive species and those associated with late seral stages. Successional and disturbance processes have provided a varied seral stage mix and a functional landscape pattern. However, the effects of fire, the most influential process, have been altered and will likely continue to be modified well into the future.

Management will focus on the amount and distribution of late seral habitat, number and size of trees, both live and dead, down woody material on the forest floor and in streams, and canopy density, continuity, and layering. Over decades, the needs of indicator species will be determined. In the meantime, elements of older forests will be maintained and created.

PHYSIOGRAPHIC PROVINCES

The Umpqua, Rogue River, and that portion of the Willamette National Forest within LSR 222, along with the Roseburg and Medford Districts of the BLM, are climatically different from the Willamette National Forest north of LSR 222, the Eugene District of the BLM, and forests farther north in the Western Cascade Oregon Province.

This climatic difference may be explained by geography. In southwestern Oregon, the Siskiyou Mountains occur adjacent to the coast, with peaks up to 7000 feet. These peaks effectively block marine influences and allow high growing season temperatures, frequent frosts, high evaporative demand, and lower precipitation. The impacts are especially felt on the Rogue River NF and the southern districts of the Umpqua NF. The coastal mountain peaks north of

Port Orford and west of Cottage Grove are barely 4000 feet in elevation and allow the inflow of moderating, moist marine air. For example, in 1982, the temperatures for June, July, and August, averaged 2 degrees higher in Prospect, compared to Dorena, and the number of days between the last spring frost and the first fall frost was 106 and 160, respectively. The average annual precipitation in Dorena was 51 inches, compared with 44 inches in Prospect. The climate in southwest Oregon is Mediterranean. This break in climate occurs along the Calapooya Divide. Essentially all of the Rogue River and Siskiyou National Forests, the Medford District of the BLM, and all of the Umpqua National Forest except for the Cottage Grove Ranger District, reflect this climate. This is characteristic of the Klamath Province. The portion of the LSR 222 to the east of the Calapooya Divide (in the Willamette National Forest) appears to be in a rain shadow, and also exhibits the vegetation characteristics of a drier climate.

These climatic differences are reflected in limited tree growth, reduced canopy cover in mature forests (average of 55 percent in southwest Oregon vs. 70 percent in western Oregon), and fire regime differences that have been documented with fire history studies. Southwest Oregon fires occur with higher frequency and lower intensity compared with fire regimes in western Oregon. Levels of down wood appear to be less in southwest Oregon, suggesting higher rates of decomposition compared with areas to the north and greater consumption by fire.

Ecological processes on the Rogue River NF, Medford and Roseburg Districts of the BLM, and the North Umpqua, Diamond Lake, and Tiller Ranger Districts of the Umpqua NF, are more closely aligned with those of the Siskiyou NF, and these areas fall more appropriately into the Klamath Province and allied Mediterranean ecosystems.

The existing condition section on insects and diseases also suggests that incidence and severity in the South Cascades LSRs represents more closely the conditions found in the Eastern Oregon Cascades and Oregon and California Klamath Provinces.

PAST LAND USES

Vegetative structure, function, and pattern in the South Cascades LSRs have been influenced by humans. The most important of these human influences are fire management, including both the deliberate setting of fires by Indians and post-1900s fire suppression activities, and timber harvest.

Several major Indian groups were present in the larger geographic area where the South Cascades LSRs occur: they include the Upper Umpqua, Upland Takelma, Klamath, the southern Molala, and possibly the Shasta peoples. Major economies of these groups were based on hunting and gathering in the meadows, forests, and marshlands, and the fisheries of the Klamath Basin, Umpqua, and Rogue Rivers. Anadromous fish supplemented their diets. Trout were fished from the lakes and streams. A variety of large and small game were hunted. Plant food sources included acorns, camas bulbs, serviceberry, blackberry, and sugar pine seeds, and the inner bark of ponderosa pine. One of the most important plant food sources were the extensive huckleberry patches along the Rogue-Umpqua divide and in the high Cascades. The huckleberry fields were perpetuated by the almost yearly setting of ground fires. While other uses of fire by Indians are less well documented than in other areas, it is believed that these peoples used fire to maintain travel corridors and maintain open understories to enhance hunting and gathering activities.

Early Euro-American residents of the Rogue and Umpqua Valleys viewed the forests of the South Cascades as barriers to settlement and concentrated their efforts on developing transportation routes through them. Hudson Bay Company trappers used trails built and maintained by Indians. Military roads linking the east and west sides of Oregon were built and improved. Discovery of gold in the John Day River country of northeastern Oregon led to the building of a road through the northern portion of the area in 1864. After eventually falling to disuse, this route would become the Diamond Lake Road in the early twentieth century.

The building of travel routes opened the area to grazing, lumbering, and settlement. Large herds of sheep used the area, especially in the time prior to and at the turn of the century. One of the major duties of those hired to work on the Crater National Forest, created in 1907, was the administration of grazing regulations. Cattle were also grazed on forested lands, especially at lower elevations. Large sugar pines provided lumber for the booming mining area near Jacksonville, Oregon. The thriving fruit orchard industry in the Rogue Valley increased the area population, increasing the demand for drinking and irrigation water, and for wood products. Several irrigation pipelines were constructed from Cascades lakes and springs to the valley floor. Many small lumber mills were in operation and railroads were built into the southern portion of the area to move logs and lumber to the mills and population centers.

Extensive areas of timber harvest occurred as early as the 1920s within the LSR network. Access to railheads slowed harvest rates until the 1950s but as the demand for wood products increased, roadbuilding increased, and many areas were entered for harvest. Clearcut harvest created small patches of early seral conditions throughout much of the LSRs. Currently, early seral conditions in the LSRs range from 19 to 36 percent. Selective cutting of individual trees continued to occur on many sites; species composition shifted as a result of partial harvest, extensive road networks were built, and ground disturbance was often intense on some sites.

Large forest fires in the early 1900s led to increased emphasis by government agencies on fire suppression. By the 1940s, with access to the forest increased, and fire fighting techniques improved, fire suppression was highly effective. Excluding fire from stands within the LSRs has resulted in altered stand composition and structure.

Road improvements also opened the area for recreation. People visited, camped at, and developed the mineral springs found in the southern portion of the area. Farther north, huckleberry picking became an important pastime for residents of the Rogue and Umpqua Valleys; hundreds of people would camp during the late summer at “resorts” established in the area between 1910 and the 1930s. Campgrounds were established and facilities were built to cater to the recreationists who used the area directly or who passed through on their way to Crater Lake National Park.

The introduction of an exotic fungus also influenced human activities in the area. White pine blister rust was established in western white pine and sugar pine stands in the South Cascades LSRs by the early 1920s. Union Creek became the center for a massive effort at eradicating *Ribes*, the gooseberry or currant bushes that are the alternate host for the introduced fungus white pine blister rust. Hundreds of men were employed during the 1930s and 1940s to grub out the bushes on the steep, brushy slopes of the Cascades in this area.

PRESENT LAND USES

Table 6 presents a summary of present land uses within each LSR. It is organized by LSR, administrative unit, and the ROD section, "Multiple Use Activities Other Than Silviculture" (ROD C-16). It can be used as an overview, and to compare how individual units are currently treating these topics.

The information was collected with visits to specialists on individual units, during the period from December 1996 through January 1997. Resource specialists were asked about present land uses, and whether there were any known inconsistencies with LSR objectives. None of the current uses were judged by these specialists to have adverse effects on LSR objectives. However, current land uses, particularly firewood harvest and mushroom permits, should continue to be examined for consistency with standards and guidelines and LSR objectives.

Some management activities in LSRs or riparian reserves may seem to conflict with objectives if they are analyzed only at the site scale, or in the short term. Analysis of management actions should include both the short term and long term temporal scale, and the site and landscape spatial scales in order to assess consistency with LSR or riparian reserve objectives. See also the section, "Treatments and Criteria for Multiple Use Activities Other than Silviculture", later in this document.

Current land use	LSR 224 Medford BLM	LSR 225 Rogue River NF	LSR 226 Rogue River NF	LSR 227 Winema/ Rogue River NF
Road Construction & Maintenance	Improvements are planned by Fed. Highway Admin. On Elk Cr. Road. Does impact LSR riparian.	Wild & Scenic River plans include road closure recommendations. Some roads closed to ORV use for resource objectives. Motorcycle ORV trail not in conflict with LSR.	Access and Travel Mgmt planning on-going.	No Access and Travel Mgmt plans in place. Road closure recommendations are in watershed analyses.
Fuelwood gathering	No new permits being issued.	Personal use only. ⁷	Yes. ⁷	None except by campers. ⁷
American Indian Uses	None known.	Huckleberry agreement exists along Rogue-Umpqua Divide. Indian concern about Quartz Mt. Mining.	NA.	Vision quest sites. No huckleberry fields.
Mining	None, except incidental expansion of rock pits less than 2 acres.	Foster Cr. Surplus Mine includes 2 small sites and 5 ac. Open pit. Not in conflict with LSR objectives. Current rock pit use.	None, but some rock pits.	Several gravel pits.
Developments	See below.	Renial lookout. See Rec. uses. Also a dumpsite.	2 Guard stations, lookout Campgrounds.	Pelican Butte proposed ski area; Developed campgrounds at Lake Woods and Fournmile. Rec. residences. 3 organization camps, resort at Lake of the Woods. Grew Meadow dam, Cascade Canal.
Land Exchanges	None.	None.	None.	None.
Habitat Improvement Projects	Thinning around Sugar Pine. Pond improvements for Turtles.	Underburning pine to reduce needle mat for better forage for owl and big game.	None planned.	Some water developments, density management, underburning for bald eagles. Thinning for big pine health

⁷ Needs to be examined for consistency. There are standards and guidelines that specify where fuelwood gathering is appropriate, ROD, C-16.

Current land use	LSR 224 Medford BLM	LSR 225 Rogue River NF	LSR 226 Rogue River NF	LSR 227 Winema/ Rogue River NF
Range Management	Entire LSR is transitional range (6 allotments), proposing fencing along riparian areas, in cooperation with private timber co. Burt Peak fire, 3000 ac., 1987.	Crater, Alkalai, and Hammocker grazing allotments—reducing cows in north part; increasing 10 percent in south. No recent fires of note.	2-3 Allotments, most of LSR has grazing. No recent fires of note.	Allotment south of Lake-of-the-Woods covers about 10 percent of the area. Hepsie Fire, 42 acres on Rogue River, LSR 227, 1996.
Fire Suppression, Prevention (Recent Significant Fires)	Madrone burls, Sugar pine shake burls.	Commercial mushroom permits exist—an issue with Crater Park. Also commercial bough permits. Hammocker CG. Trail to Crater Falls. Snow park site.	Christmas tree permits, mushrooms, boughs. Rogue is part of 4 forest mushroom permit. See Developments.	Christmas tree permits, mushrooms. Winema is part of 4 forest mushroom permit system. Lake of the Woods Rec. Area. Summer and winter Rec. trails.
Special forest products ⁸	not applicable.	Anderson evaluation plantation. Fisher research on-going in RNA. Monitoring Peregrine site, owl monitoring. Carleon research in EUJ contract.	Ongoing long-term timber PNW monitoring. Bessie Shelter area. 2 or 3 evaluation plantations, and 1 seed orchard. Fisher research on-going. Owl regional monitoring.	One seed orchard and a Western larch provenance test site. Select trees located throughout the LSR. Spotted owl (F. Wagner, OSU; G. Syster, BLM; Great gray owl surveys, AROS root rot; fire history, large woody material studies. Herpetile study adjacent to LSR.
Recreation Uses	Progeny sites need thinning in 10-15 yrs. Need to be able to clear around 30 "plus" trees.	Horse race event. Cross country trail race.	One small dam (South Fork), for power. Bessie Shelter used by permit holders.	Klamath RD averages 8 short-term event permits/yr.
Research	Proposed dam for flood control on Elk Cr. is half-built, currently on hold due to fish blockage issue. Two 250KV power lines go through LSR. See Elk Cr. WA	Tansy ragwort, spotted knapweed.	Spotted knapweed possibly. Nonnative species are outcompeting native grasses and plants.	Toadflax, knapweed, and St. Johns wort.
Rights-of-Way, Contracted Rights, Easements, Special Use Permits				
Nonnative Species				

⁸ Activities need to be evaluated for effects on LSR objectives, see ROD C-18.

INDIVIDUAL LSR CONTEXT

LSR 224

This LSR is made up primarily of Medford Bureau of Land Management lands with a small component of land on the Rogue River National Forest. The elevation ranges approximately from 1500 feet to over 4000 feet. Lands not capable of supporting late seral conditions comprise a small, but unknown percent of the area.

Existing Conditions

This area has approximately 43.3 percent of the land in late seral conditions, but only a very small percent in interior habitat. Most of the late seral stands are in the White Fir Series. Forty-nine percent is considered nesting, roosting, or foraging habitat (Table 8).

Species

Elk Creek supports populations of coho and chinook salmon and steelhead. This LSR presently supports 30 northern spotted owl activity centers. Only 6 activity centers have greater than 40 percent of their home range as suitable owl habitat. Other animals of interest include the Fisher. Plant species of interest include Baker's Cypress, and Pygmy monkey-flower. Habitat diversity is increased at the lower elevations by oak woodlands and dry meadows; rocky bluffs are present at the highest elevations.

Surrounding Ownership and Land Allocations

Adjacent lands include Forest Service and Bureau of Land Management matrix lands to the west, south, and east. To the north, the Rogue River National Forest is allocated to LSR. Several sections of Rogue River National Forest land are located inside the LSR, yet designated as matrix land. Other ownership's include commercial forest land (Boise Cascade), private land and county lands.

Connections

Important to this LSR is Elk Creek, which serves as a connection between the Rogue River and the upper elevations of the area. The northern boundary of this LSR is adjacent to the southern boundary of LSR 222, extending the transition connection between the southern Mediterranean climate and the mesic climate characteristic of the area north of 222. Older forest habitat connections are often broken by early seral patches. The area between LSR 224 and LSR 223 to the west is part of an area that was identified by the Interagency Scientific Committee (Thomas, 1990) as an area of concern wherein Northern Spotted Owl dispersal capabilities should be a management priority.

Connectivity "hotspots" become apparent when viewing larger scale maps. The distribution and juxtaposition of seral stages within the BLM administered "checkerboard" land is perhaps not good enough to allow the LSRs to fully function as habitat reserves for the full array of late successional species known to exist in the assessment area. These areas are not necessarily currently incapable of providing for dispersal of species such as spotted owls, but due to the relatively high percentage of early seral stands, movement of less mobile species across these areas is probably precluded.

Geology and Climate

This LSR is characterized by mountainous terrain with long rounded ridgetops, steep slopes, and moderate to high stream gradients. Climate is Mediterranean, with cool moist winters, and hot, dry summers with extended periods of drought. Growing conditions are slowed by low precipitation during the summer.

EXISTING VEGETATION

PLANT SERIES

Plant series is a major stratification of habitat. Series are named after the dominant climax plant species. For example, the Western Hemlock Plant Series will grow to be dominated by large western hemlock if undisturbed by fire, floods, slides, etc. Series is an expression of site potential and provides the basis to determine the desired future condition of late seral plant communities. The Series have characteristic disturbance regimes and associated patch dynamics. Series also provide information on specific structures and species composition.

Forests of the South Cascades LSR Network are comprised of at least ten series (Table 9). The most common are Western Hemlock (42 percent of area), White Fir (24 percent of area), and Douglas-fir (12 percent of area) (McCrimmon and Atzet 1990). Less well represented series are Silver Fir, Shasta Red Fir, Mountain Hemlock, Western Redcedar, Oregon White Oak, Lodgepole Pine, and Ponderosa Pine.

The LSR network in this assessment spans a wide range of environments, and this is reflected by the many plant series that are represented (Map 3). The northern portion of LSR 222 is predominantly Western Hemlock Series, reflecting a cool, moist climate. Western Redcedar Series is present in the wettest areas. The Silver Fir Series occurs at the highest elevations. East of the Calapooya Divide a rain shadow appears to exist; here, as well as in other dry areas, the Oregon White Oak Series and Douglas-fir Series occur in small pockets. In the southern portion of LSR 222, and LSR 224 the Western Hemlock Series is replaced by the White Fir Series. Douglas-Fir Series becomes more dominant and the Oregon White Oak Series occurs more frequently. In LSR 227, Douglas-fir predominates at the low elevations and transitions to White Fir Series as the elevation increases. Along the crest of the Cascades and eastward, the Shasta Red Fir Series becomes dominant, with pockets of Lodgepole Pine and Mountain Hemlock Series east of the Cascades. LSR 226 is predominantly a mix of White Fir and Western Hemlock Series to the north, and White Fir Series in the south. Shasta Red Fir Series becomes dominant as elevation increases, and Mountain Hemlock Series occurs at the highest elevations. LSR 225 is similar to LSR 226; a mix of Western Hemlock and White Fir Series predominates at the lower elevations, with Shasta Red Fir Series occurring at higher elevations, and Mountain Hemlock Series at the highest elevations (See Map 3).

CHAPTER 4: DESIRED FUTURE CONDITIONS

INTRODUCTION

Late-Successional Reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem (ROD, C-11). This assessment makes the assumption that if the structural components are in place, the ecological processes and functions associated with late-successional forest ecosystems will continue. These structural components include large trees, multiple-canopy stands, snags, down wood, logs in streams, and small openings.

Time is an important element in the health of the late-successional forest. For example, where areas of large trees, snags, and down wood are lacking due to past practices, the LSR allocation, allowing as it will the growth of forest stands over time, will tend to increase those components. Nevertheless, the overall goal for Late-successional Reserves as stated in the ROD takes an active managerial stance to “protect and enhance” the Reserves.

The desired future conditions described in this assessment will not be attained for many decades, or possibly more than a century. The amount of treatments proposed for exemption from further REO review, or the amount of projected treatments overall, are not intended to represent the long term activity levels needed to reach desired future conditions. The natural growth and evolution of forest stands and habitat over time will be a major factor in attaining desired conditions. Projected amounts of treatment are intended to represent a conservative management approach based on the limits of existing data and experience in managing for late-successional conditions.

Two desired future conditions were developed by the South Cascades LSR Assessment team that follow directly from the overall goal and the existing conditions: one for the amount of late seral forest, and one for the amount of high fire risk fuels. These were judged to be specific, measurable, and directly related to LSR objectives.

DESIRED FUTURE CONDITION FOR LATE SERAL VEGETATION

Terrestrial areas in LSRs 222, 225, 226, and the western portion of 227 have a desired condition of 75 percent late seral vegetation. This drops to 55 percent in LSR 224, and 50 percent in the eastern portion of LSR 227.

Riparian reserves in these LSRs have a desired condition of 75 percent late seral vegetation. There may be riparian reserves adjacent to smaller, intermittent streams that cannot maintain this level of late seral vegetation due to fire regimes and site character (e.g. LSR 224). Administrative units should address this issue during the watershed analysis process.

Stands include large trees, snags, canopy gaps, patchy understory for developing multiple canopy layers, large woody material, and future understory trees. While the percentage of late seral vegetation is the measurable objective, the following are also included as components of the desired condition:

Vegetation structure and pattern are diverse

Forest vegetation structure and pattern are diverse. Patch size, plant species composition, and other late successional characteristics meet the habitat requirements for late successional associated species. Forest and riparian reserve vegetation structure and pattern contribute to landscape level land management objectives.

Habitat for early/mid successional species is maintained

Habitat for early and mid-successional species is maintained when LSR populations of those species are important for viability of the species over a broader geographic area, or if any of those species should be locally endemic to these LSRs. This is appropriate for special habitats, such as meadows, or where development of habitat for late-successional species is not substantially delayed. Otherwise, most early/mid successional species habitat is expected to be maintained outside of LSRs.

Connectivity exists between and within watersheds

Connectivity of terrestrial, riparian, and aquatic conditions is promoted between and within watersheds. Late seral vegetation provides connected and resilient watershed processes within and between watersheds. Within watersheds, the terrestrial, riparian and aquatic system are connected. Aquatic systems consist of a diversity of species, populations, and communities that may be uniquely adapted to these specific structures and processes.

LSRs offer protection for all stream types, and provide core areas of high quality stream habitat. Figure 14 describes general riparian and stream conditions in properly functioning watersheds (See Appendix A).

Snags and down wood levels maintain species diversity

Levels of snags and down wood are high enough, variable enough, and change enough, in time and space, to maintain site productivity and species diversity in terrestrial, riparian, and aquatic communities. Abundance and distribution of snags and down wood ameliorates changes in habitat condition and climatic anomalies.

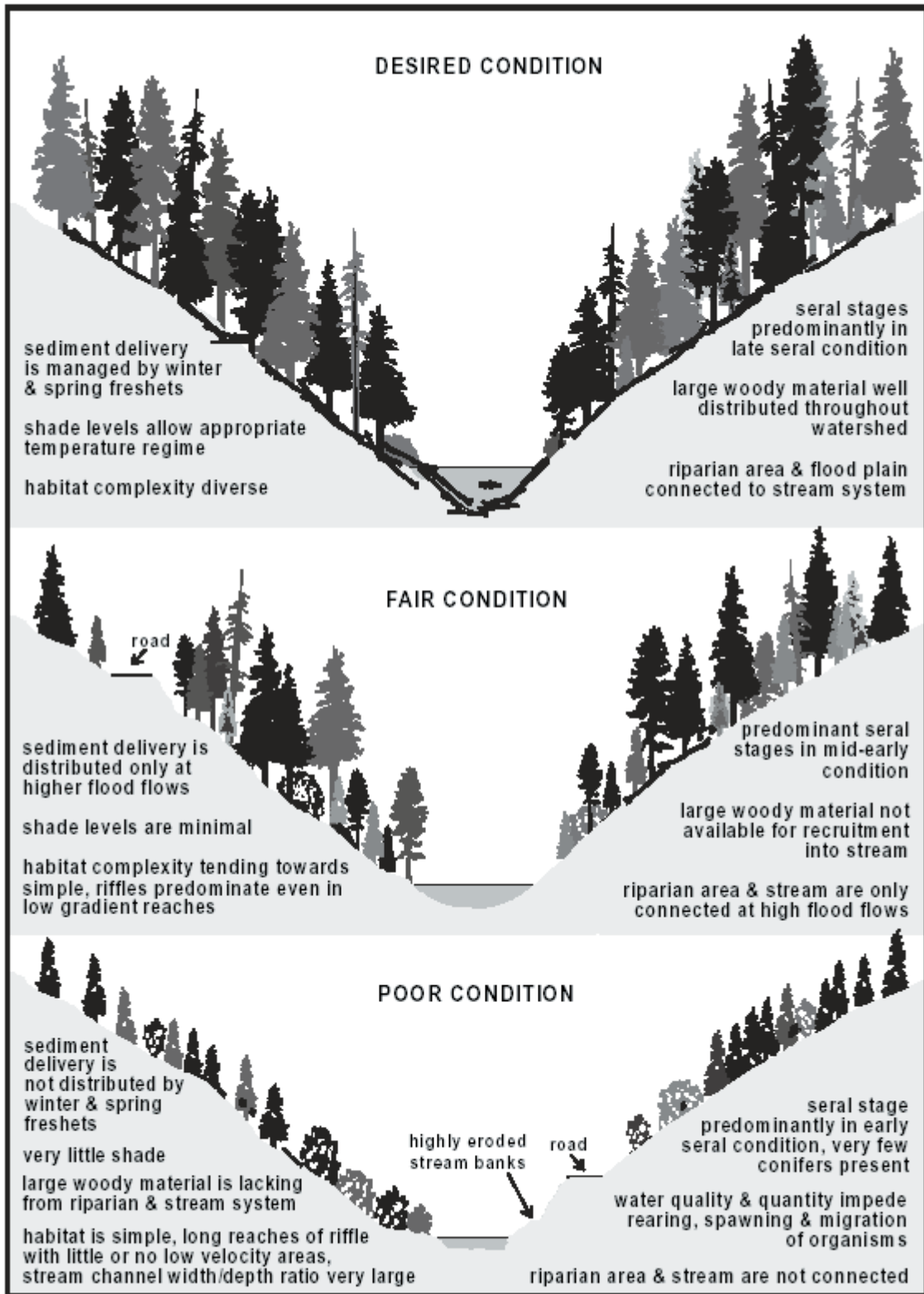
Terrestrial habitats maintain healthy, source populations of late seral and old growth associated species

Patch size, amount of interior habitat, plant species composition, and other late seral characteristics offer core areas of high quality habitat. High amounts of source and refuge habitats for late seral and old growth associated species are found throughout the landscape.

Wet area habitats maintain high levels of source populations

Aquatic and terrestrial habitats of native species dependent on wet areas are restored and maintained. Structures and processes are in place to maintain high levels of source populations (ROD, B-11).

Figure 14: Riparian Conditions



RATIONALE FOR LATE SERAL DFC

Historic amounts of late seral habitat have been estimated for southwestern Oregon, and range from 40 to 70 percent (REAP, 1994). The assessment team assumes that late seral processes were functioning in this range. These estimates are for the total landscape. Since harvest will now be concentrated in non-LSR areas, these areas will contain substantial amounts of early and mid-seral forest. Further, the focus of LSRs is to enhance late seral habitat. Therefore, the high end of the historic range is recommended as a DFC for these LSRs. The Visual Dynamics Development Tool (VDDT) was used to verify the estimates of sustainable late seral vegetation in these LSRs (Appendix H). Those results show that the DFCs listed above are reasonable for each LSR overall. However, there is a wide range of sustainability within each LSR. The numbers are used to compare LSRs and watersheds. They are not to be used for every stand or area.

INDICATORS FOR LATE SERAL DFC

Percentage of capable, terrestrial LSR acres in late seral condition.

Percentage of capable, riparian reserve LSR acres in late seral condition.

Indicators will be displayed by LSR and fifth field watershed. Data source for both is the seral map produced from a satellite vegetation size/structure pixel layer for Forest Service lands and the Forest Operations Inventory and MICROSTORMS for BLM lands. See Appendix D for classification assumptions.

DESIRED FUTURE CONDITION FOR HIGH FIRE RISK FUELS

No more than 28 percent of LSR acres are in high fire risk condition at any one time. Stands that develop after fire include large trees, snags, canopy gaps, patchy understory for developing multiple canopy layers, large woody material, and future understory trees. While the percentage of high risk fuels is the measurable objective, the following is included as part of the desired condition:

Features of the natural disturbance regime are maintained

Fire return intervals, stratified by geographic area and aspect, should approximate those found in Table 22, and be representative of natural disturbance regimes, to the extent practicable.

Wildfires, when they occur, are low to moderate intensity over about 75 percent of the area. Features of the natural disturbance regime operate at levels that maintain species, habitat diversity, and encompass less than natural levels of stand replacement events.

Large blocks of late seral habitat have fire risk levels that approximate those prior to the advent of fire exclusion.

CHAPTER 5: TREATMENT CRITERIA AND NEEDS

TREATMENTS AND CRITERIA TO REDUCE RISKS OF LARGE-SCALE DISTURBANCE

INTRODUCTION

Prescribed burning is considered a silvicultural treatment, and may be beneficial to the creation of late-successional forest conditions (ROD, C-12). Prescribed fire, or other risk management activities, should occur first in the high risk areas. There are four categories of activities to lower risk and reintroduce fire into South Cascades LSRs (TABLE 53):

- Reduce large scale fire risk with the creation of shaded fuel breaks;
- Reduce the amounts of high risk fuels in stands under 80 years old;
- Reduce the amounts of high risk fuels in stands over 80 years old;
- Reduce moisture competition for large pine in stands over 80 years old.

REDUCE LARGE FIRE RISK WITH FUEL BREAKS

Objective

The objective is to protect large blocks of late seral habitat from, and minimize the risk of, large scale fire; while minimizing treatment risk to that habitat. Another objective is to increase the ability to safely and effectively conduct initial attack fire control activities. It is not the intent of fuel breaks to remove all LWM. The objective is to focus on the reduction of smaller fuels and to create conditions that lower the intensity of fire approaching the fuel break.

Negative short-term effects to late-successional forest-related species are outweighed by the long-term benefits to such species and will not lessen short-term functionality of the LSR as a whole.

Agencies having an interest in LSR projects proposed under these criteria should continue to be given the opportunity to participate in project development.

Timber volume production is only incidental to these objectives and is not, in itself, one of the objectives of the treatment. Creation or retention of habitat for early successional forest-related species is not a treatment objective.

Appropriate Treatments

Young stand thinning, density management, and/or prescribed fire are all appropriate activities to meet fuel break objectives.

Landscape Criteria and Priorities

Fuel break treatments will occur first in the high fire risk areas. Two components, fuel models and fire behavior, have been combined to help determine where that risk is high. Map 8 displays these high risk areas. Verification of high risk fuels will be needed in the watershed preattack, or equivalent plan.

The fuel breaks are intended to break the high risk area into 4000-6000 acre blocks, thus

reducing the risk of a large scale incident burning even larger watersheds. Figure 17 shows the intended size of blocks to protect across the landscape. It is not intended as an exact display of actual locations. Watershed level or project preattack, or equivalent plans will propose actual locations.

Fire behavior is the most important component. Fire occurrence may vary over time due to changes in lightning and recreation patterns. Due to this changing pattern, and practical treatment operations, treatment should not be precluded in areas of low-moderate risk if fire behavior is indicated as high.

Implementation of fuel breaks within late seral stands would result in habitat degradation within the fuel breaks and increase the amount of edge in cases where the fuel breaks go through intact stands. This impact would not be as great in cases where the fuel breaks go along existing edges of intact stands. Therefore, avoid locations which would split large blocks of late seral habitat. Place fuel breaks only along the edges of significantly large patches of late seral habitat/suitable NRF where a high risk of large scale loss exists.

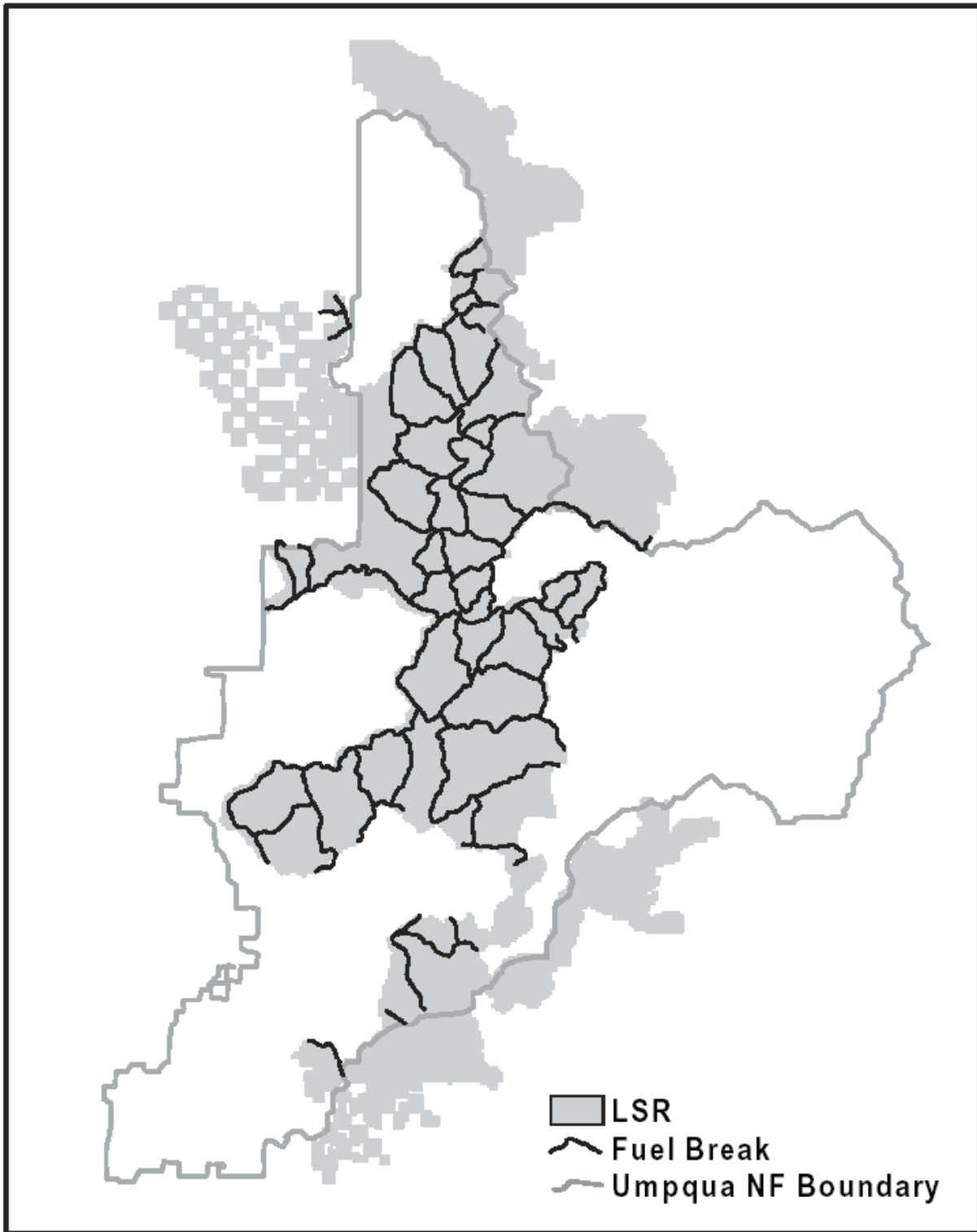
Attempt to locate fuel breaks on the landscape near concentrations of early or mid-seral stands. Where spotted owl dispersal habitat is heavily dependent on concentrations of mid seral stands that are also candidates for fuel break treatment, do not concentrate these treatments in time, but spread out these treatments to minimize possible short-term impacts to dispersal habitat.

Give priority to treatment near the rural interface and high density recreation areas.

Give priority to treatment in or near recent stand replacement events. See also the Salvage section.

See also section on Treatment Amounts for “between watershed” priorities and additional consideration of tradeoffs between treatment and late seral habitat.

Figure 17: Landscape Fuel Break Locations (Example: Umpqua National Forest within LSR)



Stand Criteria

Fuel Break Width

The fuel breaks should be approximately 400 feet (horizontal distance) wide and located on defensible ground, such as roads and ridgetops. For practical reasons, fuel break treatments may go through pockets of less than high fire risk. Figures 10-12 display the desired stand condition after treatment.

Interlacing Crowns and Understory Trees

Where there are interlacing crowns, remove only those green trees needed to eliminate the interlacing. Thin understory to a spacing of not less than six feet between crowns.

Prescribed Burning

Where fuel breaks are created using young stand thinning or density management, follow those treatments with prescribed burning within the fuel break.

LWM Guidelines

LWM guidelines in fuel breaks are determined by levels of acceptable fuel risk. Leave LWM in the following ranges:

- in 0-9" diameter material, leave 2-10 tons per acre;
- in 9-20" diameter material, leave 10-15 tons per acre; and,
- in 21"+ diameter material, leave 5-10 tons per acre, for a total of 17-35 tons per acre, where this material does not compromise the integrity of the fuel break.

Brush Piles

For connectivity, provide dispersed, variable spaced small piles (3-5 feet high and 6-10 feet in diameter) where they do not compromise the integrity of the fuel break. Hand-piling small (<9") fuels into well-dispersed brush piles will provide habitat for various small mammals, birds, reptiles, amphibians, arthropods, fungi, mosses, lichens, bacteria and viruses. A wide variety of life forms respond favorably to the presence of concentrations of woody debris; hiding, denning and nesting cover, as well as foraging opportunities are afforded there. Providing those habitat values via the management of dispersed brush piles in ridge top fuel breaks greatly increases the probability that many of the species associated with late seral forests will be able to successfully negotiate and cross, if not forage, or even place a den or nest there.

Snags and Stumps for Bats

Since large snags are the best habitat, do not cut them all. Meet fuel break requirements, yet leave some of the largest snags. It has recently been learned through radio-tracking studies that several species of forest-dwelling bats utilize large snags on ridges. They are apparently drawn to these structures because of the favorable temperature regimes afforded within. Snags on ridges, especially the larger, taller ones intercept significantly greater amounts of solar radiation than do similar sized snags on lower slope positions. The larger a snag is the more solar radiation it can directly intercept and the lower its surface area-to-volume ratio is, which results in a slower rate of heat loss. These larger ridge top snags can provide thermally advantageous roosting and maternity colony sites that smaller ridge top and similar-sized but lower slope position snags cannot.

When cutting snags or trees on ridgetops, cut stumps as high as reasonably possible. It has also been recently learned that stumps with adequate amounts of thick bark (usually Douglas-fir) located where they are exposed to direct sunlight, can provide roosting sites for bats. Thermal advantages similar to those seen in ridge top snags seem to be present in these stumps. It is the crevices within and behind the thick bark that the bats are using. The taller a stump, the more it offers the same type of niches as do the snags. Hence, the recommendation that any large trees or snags needing to be felled get cut off as high above ground as is reasonably possible.

Emphasizing the retention of the largest snags available, where the snag does not compromise the fuel break integrity, as well as sawing trees and snags far above the ground, will greatly decrease the negative affects the establishment of these fuel breaks might otherwise have on forest-dwelling bats.

Large Hardwoods

Emphasize the retention of large hardwoods in ridge top fuel breaks. The retention of large hardwoods in ridge top fuel breaks is emphasized because of their general longevity and propensity to form cavities. Numerous forest-dwelling species directly and indirectly depend on natural cavities in trees; many of those species are not only associated with late seral forests, but play integral roles in forest ecology. Where the cavity-prone large hardwoods are present, or are likely to be present in the future if smaller hardwoods on site are retained, emphasize their retention.

Nonnative Plants and Noxious Weeds

Avoid direct and indirect introduction of nonnative plants and noxious weeds. If it is determined that it will be beneficial to establish vegetation on a fuel break, use only local, native seed sources.

Ground-breaking equipment used in the preparation and maintenance of these fuel breaks should be thoroughly washed, outside of the LSR, before being brought to the work site.

Fire Management Plan

The Fire Management Plan included in this assessment provides additional criteria for fire and fuel related activities.

Figure 18: Desired Stand Conditions Following Fuel Break Treatment

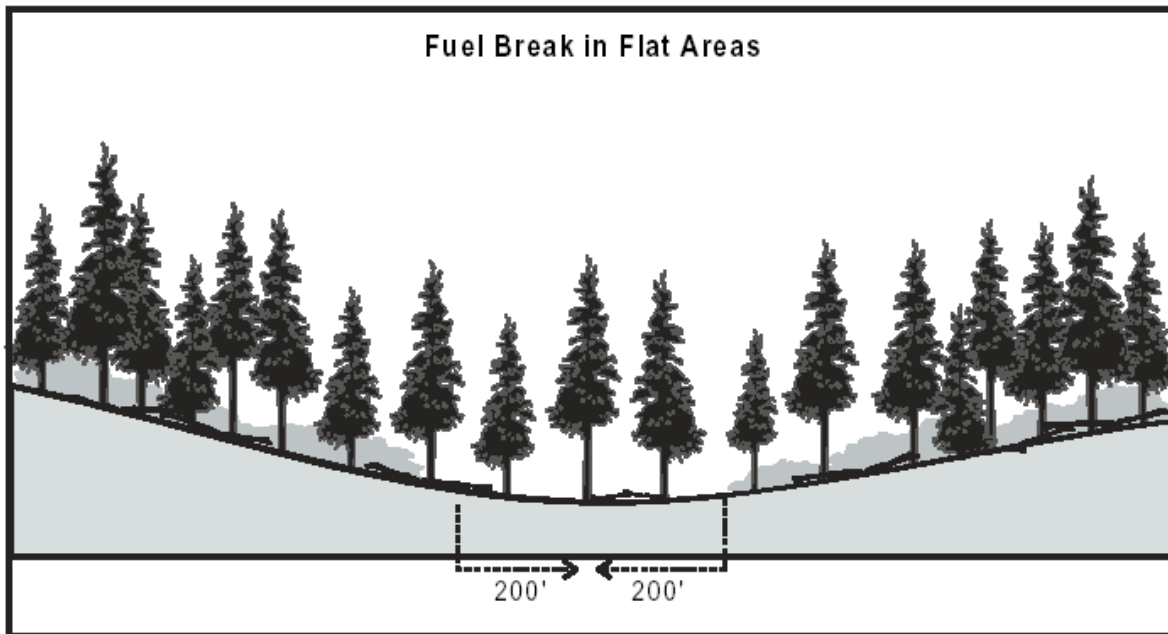
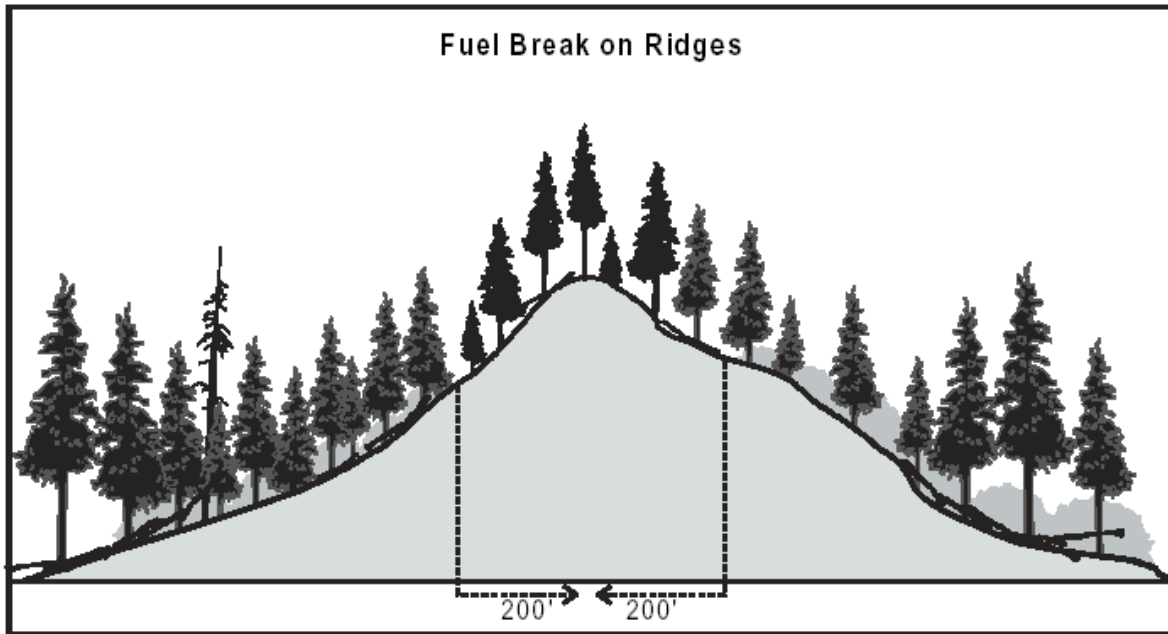


Figure 19: Desired Stand Conditions Example 2



Figure 20: Desired Stand Conditions Example 3



Treatment Amounts and Implementation Schedule

Estimate of Maximum Treatment Area

An estimate of the maximum extent of fuel break treatments on the LSR landscape was assessed by a GIS procedure. The size of blocks to protect by fuel breaks was considered by the core team to be roughly equivalent to the sub-basin layer on the Umpqua National Forest, about 6,000 acres (Figure 17). These watersheds are smaller than the fifth-field watersheds (HUC5), and larger than HUC6 watersheds. The watershed boundaries are generally on ridgetops, where most of the fuel breaks are expected to be placed. In addition, fuel breaks are most feasible along existing roads. Therefore, 200' buffers were placed along each side of sub-basin watershed boundaries, and intersected with roads, high fire risk areas, late seral vegetation, and suitable owl habitat. This results in a very high estimate, since funding levels, access, and other ecological and practical project considerations will necessarily limit the amount of this treatment. However, it does provide a first estimate of the maximum amount that might be done for the purposes of estimating potential impacts of the treatment. The results from the Umpqua are extrapolated to the rest of the LSR network proportional to LSR size (Table 45).

The amounts in Table 45 are exempted from further REO for a period of five years. For tracking purposes, these amounts are displayed by LSR administrative unit. If proposed treatments would exceed the amount listed by individual LSR administrative unit, coordination with other units in that LSR will be needed to assure that the amount listed as exempt from REO review is not exceeded for that LSR as a whole.

Table 45: Estimate of Maximum Fuel Break Treatments

LSR	LSR Total Acres	Maximum Treatment Acres	Amount Per Year Exempt from Further REO Review
222, Eugene BLM	21,200	800	50
222, Roseburg BLM	25,500	900	50
222, Umpqua NF	342,800	13,100	700
222, Willamette NF	93,300	3,600	180
222, Rogue River NF	25,200	1,000	50
224, Medford BLM	21,500	800	50
225, Rogue River NF	39,800	1,500	75
226, Rogue River NF	49,800	1,900	100
227, Rogue River NF	52,800	2,000	195
227, Winema NF	48,800	1,900	41
Total	720,700	27,500	1450

Treatment Habitat Impacts

There are approximately 16,000 acres within a 400 foot wide strip centered on the ridges which delineate the recognized subbasins on the Umpqua portion of LSR 222. Full implementation of the fuel break prescription in all high and moderate fire risk acres in that strip would result in a total of approximately 13,500 acres being treated. Of that 13,500 acres of moderate and high fire risk, 7500 acres are currently considered to be suitable NRF habitat (3.6 percent of all NRF in the Umpqua portion of LSR 222), and 5200 acres are classified as late seral (3.5 percent of all late seral stands in the Umpqua portion of LSR 222). Implementation of the fuel break prescriptions in late seral stands would result in habitat degradation within the fuel breaks and it would increase the amount of edge in cases where the fuel breaks go through intact stands. This impact would not be as great in cases where the fuel breaks go along existing edges of intact stands. In addition, rather than constructing a large network in only a few years, spreading the construction of fuel breaks over time would lessen the impact.

Research conducted within and adjacent to the South Cascades LSR network indicates that spotted owls avoid suitable NRF that has been “degraded”. This effect appears to last for decades. Because of the potential to degrade 3-4 percent of the currently suitable NRF (at least within the Umpqua NF portion of LSR 222) and, because fragmentation of late seral stands is a regionally recognized concern, it is recommended that fuel breaks not be located where large blocks of late seral stands would be split. Also, it is recommended that fuel breaks only be placed along the edges of significantly large patches of late seral habitat/suitable NRF where a high risk of large scale loss exists.

The overall extent of the impact to current amounts of NRF and late seral stands that would result from full implementation of the fuel break concept as proposed on the Umpqua portion of LSR 222 is difficult to estimate because the information required for the analysis was not readily available from the other administrative units. Because of this, the effects of implementing a fuel break proposal similar to the one used in the example for the Umpqua NF portion of LSR 222 could not be evaluated. However, an estimate extrapolated from the Umpqua portion is provided in Table 45.

REDUCE FUEL LOADING IN STANDS UNDER 80 YEARS

Objective

The objective is to make stands less susceptible to large-scale disturbances while accelerating development of late-successional conditions and minimizing treatment risk to late seral habitat.

The objective is to increase the ability to safely and effectively conduct initial attack fire control activities. The objective is to focus on the reduction of smaller fuels.

Prescribed burning is intended to reintroduce fire into the ecosystem in high risk areas on the upper third of slopes with the objective of reducing the risk of large scale stand replacement fires.

With the use of these treatments, fuels across the landscape will begin to approximate amounts typical of pre-fire exclusion conditions, and the potential for large scale disturbance will be reduced.

Negative short-term effects to late-successional forest-related species are outweighed by the long-term benefits to such species and will not lessen short-term functionality of the LSR as a whole.

Agencies having an interest in LSR projects proposed under these criteria should continue to be given the opportunity to participate in project development.

Timber volume production is only incidental to these objectives and is not, in itself, one of the objectives of the treatment. Creation or retention of habitat for early successional forest-related species is not a treatment objective.

Appropriate Treatments

Appropriate treatments to reduce fuel loading include young stand thinning, density management, and/or by the use of prescribed fire.

Landscape Criteria and Priorities

Treat areas of high fire risk fuels or east of the Cascades in LSR 227 (Map 8).

Treat where the highest probability exists of high intensity wildfire spreading into late seral habitat.

Identify high priority blocks for treatment.

Prescribed burning projects should be planned in such a way that present year projects are adjacent to past year accomplishments. In this way, large areas will benefit from the reintroduction of fire. A scattering of small areas would not be as effective.

Priority will be younger stands, dry sites (90-270 degree aspects, upper slopes), plant series with pines, and areas adjacent to fuel breaks.

Treat around, but outside of, owl activity centers to minimize future risk to core from fire disturbance.

Stand Criteria

For young stand thinning, use REO exemption criteria 4/20/95.

For density management, use REO exemption criteria 7/9/96. Per REO exemption letter, avoid thinning where mid-seral stands under 80 years old are, or soon will be, nesting, roosting, and foraging habitat.

See also root disease guidelines, page 138.

For prescribed fire, also follow guidelines from prescribed fire plan.

Use Snag and LWM criteria, page 130.

Treatment Amounts and Implementation Schedule

Of the 192,000 acres of early/mid seral stands estimated to be in high fire risk areas, treat 54,000 acres (upper third of slopes) over a 20 year period, or 2700 acres per year (Table 46).

These amounts are exempt from REO review for a period of five years. For tracking purposes, these are displayed by LSR administrative unit. If proposed treatments would exceed the amount listed by individual LSR administrative unit, coordination with other units in that LSR will be needed to assure that the amount listed as exempt from REO review is not exceeded for that LSR as a whole.

Note: Treatments in this assessment are organized by primary objective. As such, there are significant overlaps between these acres and those identified elsewhere in this assessment. Specifically, there are overlaps with stands under 80 years old identified with a primary objective of density management, and with stands under 80 years old with a density management emphasis in pine stands.

Table 46: Estimate of Fuel Reduction Treatments in Stands Under 80 Years Old

LSR	LSR Total Acres	Early/Mid Seral, High fire Risk	Proposed Treatment Upper Third	Amount Per Year Exempt from Further REO Review
222, Eugene BLM	21,200	7,100	1,600	80
222, Roseburg BLM	25,500	8,200	2,300	115
222, Umpqua NF	342,800	80,500	24,200	1210
222, Willamette NF	93,300	20,600	5,900	295
222, Rogue River NF	25,200	10,200	2,700	135
224, Medford BLM	21,500	9,000	1,700	85
225, Rogue River NF	39,800	14,000	4,000	200
226, Rogue River NF	49,800	15,100	4,000	200
227, Rogue River NF	52,800	13,700	3,900	195
227, Winema NF	48,800	14,000	3,400	⁴²
Total	720,700	192,400	53,700	2515

⁴² See the Winema NF LSRA for treatments, criteria, and REO exemptions.

REDUCE FUEL LOADING IN STANDS OVER 80 YEARS

Objective

The goal of prescribed burning in the LSRs is to:

1. Protect or enhance stand conditions for old growth associated species, and
2. Reduce the risk of large scale, high intensity disturbances.

Prescribed fire is recognized as a valuable tool to meet LSR objectives, especially in southwest Oregon where fire is such an integral part of ecosystems function. With the use of these treatments, fuels across the landscape will begin to approximate amounts typical of pre-fire exclusion conditions, and the potential for large scale disturbance will be reduced. Reducing the potential for large scale disturbance will lower smoke emissions, and reduce the cost of wildfire suppression.

Negative short-term effects to late-successional forest-related species are outweighed by the long-term benefits to such species and will not lessen short-term functionality of the LSR as a whole.

Agencies having an interest in LSR projects proposed under these criteria should continue to be given the opportunity to participate in project development.

Appropriate Treatments

Both management ignited and naturally ignited prescribed fire are appropriate methods.

Landscape Criteria and Priorities

Treat areas of high fire risk fuels or east of the Cascades in LSR 227 (Map 8).

Treat to protect the largest blocks of late seral habitat. Where areas of fire refugia are identified in watershed analyses, fire is not recommended.

Focus treatments in areas furthest removed from known owl sites.

Prescribed burning projects should be planned in such a way that present year projects are adjacent to past year accomplishments. In this way, large areas will benefit from the reintroduction of fire. A scattering of small areas would not be as effective.

Priority will be younger stands, dry sites (90-270 degree aspects, upper slopes), plant series with pines, and areas adjacent to fuel breaks.

Stand Criteria

For prescribed fire, follow guidelines from prescribed fire plan.

Maintain variability within stand. Application of prescribed fire will vary in extent and frequency of application, and intensity of burning. The variability in applications should be related to the fire return intervals for the specific area, current ecosystem needs, and the wildfire risk analysis contained in this assessment.

Treatments will focus on the reduction of smaller fuels. The objective is not elimination of LWM.

Both types of ignition need a project specific prescribed burn plan that meets current agency direction. In addition, a prescribed natural fire plan must be approved prior to the use of naturally ignited prescribed fire.

Prescribed fire operations will implement the same suppression guidelines as wildfire suppression activities to minimize adverse impacts to late-successional habitat.

Prescribed fire projects and prescriptions will be designed to contribute to attainment of aquatic conservation strategy objectives.

Keep as many large trees as possible, i.e. keep the percentage of the burned area below 15 percent in high intensity fire behavior and create snags, canopy gaps, and patchy understory for developing multiple canopy layers, large woody material, and future understory trees.

The stand is at risk due to an overstocked understory, or is in an area where fire exclusion has increased fuel loading to the point of potential extreme fire behavior.

A number of treatments may be utilized to reduce fuel loading and reduce the risk of large scale fire. Underburning could be used where stand densities, presence of ladder fuels, and fire intolerant species don't make it impractical. In cases where underburning is impractical, hand piling of fuels can be used to reduce the risk of stand replacement fire, when high fuel loads are concentrated in contiguous stands. These treatments should be designed to retain an adequate amount of large woody material. The upper third of southerly slopes should receive priority for treatment. Sufficient snags of various species and size should be retained to ensure future recruitment of large woody material.

Treatment Amounts and Implementation Schedule

Of the 189,000 acres of late seral stands estimated to be in high fire risk areas, treat 48,000 acres (upper third of slopes) over a 20 year period, or 2400 acres per year (Table 47)

These amounts are exempt from REO review for a period of five years. For tracking purposes, these are displayed by LSR administrative unit. If proposed treatments would exceed the amount listed by individual LSR administrative unit, coordination with other units in that LSR will be needed to assure that the amount listed as exempt from REO review is not exceeded for that LSR as a whole.

Table 47: Estimate of Fuel Reduction Treatments in Stands Over 80 Years Old

LSR	LSR Total Acres	Late Seral, High Fire Risk	Proposed Treatment upper Third of both North and South Slopes	Amount Per Year Exempt from Further REO Review
222, Eugene BLM	21,200	7,300	1,600	80
222, Roseburg BLM	25,500	11,100	2,400	120
222, Umpqua NF	342,800	110,600	29,200	1460
222, Willamette NF	93,300	24,900	6,400	320
222, Rogue River NF	25,200	5,600	1,400	70
224, Medford BLM	21,500	7,600	1,700	85
225, Rogue River NF	39,800	6,100	1,400	70
226, Rogue River NF	49,800	6,100	1,300	65
227, Rogue River NF	52,800	4,500	1,000	50
227, Winema NF	48,800	5,300	1,300	⁴³
Total	720,700	189,100	47,700	2320

⁴³ See the Winema NF LSRA for treatments, criteria, and exemptions.

RISK MANAGEMENT IN STANDS OVER 80 YEARS WITH PINE

Objectives

The objective of treatments is to reduce moisture competition to favor the native pine species. This will serve to maintain the seral pine component and associated habitat by enhancing the vigor of trees. This will help avoid undesirable losses due to bark beetles. See also applicable objectives in the 7/9/96 REO exemption criteria.

Appropriate Treatments

Remove competing vegetation not exceeding 24” diameter near important dominant and predominant pines.

Landscape Criteria and Priorities

In the South Cascades LSRs, pines will generally be found in low elevations and in the Oregon White Oak Plant Series north of the Rogue-Umpqua Divide, and at mid to low elevations south of the Rogue-Umpqua Divide in the Douglas-fir, Oregon White Oak, and White Fir Plant Series. In some areas, moisture stress related to high stocking levels is placing large numbers of important older pines at risk.

This treatment is particularly important in landscapes where pines provide important, possibly the only, large tree structure (e.g. Oregon White Oak Series). Although this treatment may be done in certain late-seral and old-growth stands, owl home ranges will generally be avoided.

Stand Criteria

Follow applicable portions of the 7/9/96 REO exemption criteria for commercial thinning. For prescribed fire, also use guidelines from the prescribed fire plan.

Follow the “Guidelines to Reduce Risks...” portion of the ROD standards and guidelines (ROD C-12,13). Clear around important dominant and predominant overstory pines where these trees are clearly at risk due to stocking levels (as evidenced at least in part by past mortality), the expected mortality would significantly reduce the functionality of the stand as habitat for late-successional forest related species in the short and long-term, and the mortality is not needed to contribute to a current snag deficit.

Remove competing vegetation, as needed, up to 24” diameter to the drip line plus 20 feet. In those situations where risk of mortality is caused predominantly by trees greater than 24” diameter, individual trees may be killed and left standing.

When not using prescribed fire, leave all snags and LWM, subject to operational safety concerns, unless precluded by criteria under “Reduce Fuel Loading in Stands Over 80 Years” elsewhere in this chapter.

This treatment may also be applied to complex mid-seral stands less than 80 years old where all other conditions above are met.

Treatment Amounts and Implementation Schedule

Table 48 provides an estimate of the maximum amount of candidate acres. For a variety of reasons, many of the estimated 115,500 acres will not be treated. Project level analysis is expected to show that some of these acres will not need additional treatment to maintain late seral characteristics. Some will be in spotted owl territories and be avoided. In addition, significant acres will be dropped from further consideration due to economics, road access, logging systems, non-treatment recommendations in riparian reserves, other standards and guidelines, and REO 7/9/96 criteria.

A conservative, closer estimate of actual treatment is approximately 10 percent of this, or 11,500 gross acres. This amount of treatment would result in a cleared area equivalent of 1,390 acres. These amounts are exempt from further REO review for a period of 5 years. Treatment proposals exceeding this rate remain subject to REO review.

For tracking purposes, these amounts are displayed by LSR administrative unit. If proposed treatments would exceed the amount listed by individual LSR administrative unit, coordination with other units in that LSR will be needed to assure that the amount listed as exempt from REO review is not exceeded for that LSR as a whole.

Table 48: Estimated Late Seral Stands with Ponderosa and Sugar Pine

North of Rogue-Umpqua Divide					
LSR	Administrative Unit	Late Seral acres w/Pine	Approx. number of pine ⁴⁴	Maximum Treatment Acre Estimate ⁴⁵	Cleared Treatment Acres Exempt from REO review
222	Eugene BLM	6,000	7,200	600	60
222	Willamette NF	18,800	22,600	1,800	180
222	Roseburg BLM	6,600	7,900	600	60
222	Umpqua NF	59,600	87,700	6,900	690
Totals		91,000	125,400	9,900	990
South of Rogue-Umpqua Divide					
222	Rogue River NF	4,600	5,600	400	40
224	Medford BLM	8,600	13,700	1,100	110
225	Rogue River NF	2,500	3,000	200	20
226	Rogue River NF	3,600	4,300	300	30
227	Rogue River NF	1,600	2,700	200	20
227	Winema NF	3,600	NE	1,800 ⁴⁶	180
Totals		24,500	29,300	4,000	400

⁴⁴ Estimated at 1.2 pine/acre in TSHE and ABCO; 2 pine/acre in PSME and QUGA.

⁴⁵ Estimate based on 33' radius (13' crown plus 20' from drip line). Thus, 7200 pine @3420 sq. ft/tree equals 565 ac. of clearing, rounded to nearest hundred.

⁴⁶ Winema NF LSRA estimates treatment of about half the total acres.

TREATMENTS AND CRITERIA FOR SALVAGE

INTRODUCTION

This section includes criteria, which, if followed together with the Standards and Guidelines for Salvage found on pages C-13 through C-16 in the ROD, will result in an exemption, for a limited time and amount of treatment, from the necessity of REO review for salvage activities.

As such, these criteria allow only very conservative amounts of salvage. These criteria are not standards and guidelines, and projects meeting LSR salvage standards and guidelines, but not fitting these criteria, should continue to be forwarded to the REO for review.

BACKGROUND

Salvage inside LSRs was recognized as a contentious issue in Forest Ecosystem Management: An Ecological, Economic, and Social Assessment (FEMAT, July 1993). Three prescriptions were considered at that time, from no salvage to salvage with minimal guidelines. Prescription 2, limited salvage in LSRs, was carried forward and incorporated in the ROD.

The advantages were listed in FEMAT:

“Valuable trees that are dead can be used for commercial purposes with the attendant employment and economic benefits. These logs cannot be exported and so must be processed within the region. Increased fire danger or risk to insect and disease resulting from large accumulations of dead trees can be reduced in an economically feasible fashion. Avoided are the perceptions of economic waste if patches of dead trees are not salvaged.” (FEMAT, II-18).

The disadvantages were also described:

“There is potential risk to watersheds from roads and soil disturbance associated with salvage operations. If hypotheses about effects of management prove incorrect, salvaged areas may be adversely affected in terms of their short and long-term contributions to the achievement of Late-Successional Reserves. Certain segments of the public will be distrustful of agency motives whenever salvage is allowed inside a Reserve, particularly when such salvage occurs in portions of the Reserve that contain (or contained) trees considered to be true ‘old growth’ or ‘ancient forest’.” (FEMAT, II-18).

The ROD provides direction for salvage and states, “Salvage guidelines are intended to prevent negative effects on late-successional habitat, while permitting some commercial wood volume removal.” (ROD C-13). The core team has not found a biological rationale for salvage. The following approaches and criteria for salvage are meant to minimize effects to late-successional species. The decision to salvage must be based on site-specific conditions, with the understanding that salvage operations should not diminish late-successional habitat suitability now or in the future. Standards and Guidelines for salvage are found on pages C-13 through C-16 in the ROD.

It is hoped that the following approaches, criteria, and process considerations will eliminate the need for each interdisciplinary team to reconsider the philosophical debate concerning whether salvage is generically appropriate in LSR allocation, and instead concentrate on if and where salvage helps meet Plan and LSR objectives for a given stand replacement event.

TWO APPROACHES TO SALVAGE

In this assessment, criteria for two conservative approaches to the salvage of dead wood are recommended:

- an Area Salvage Approach that suggests a landscape perspective to determine leave needs for large dead wood, and,
- a Fire Risk Reduction Approach through the use of fuel breaks after stand replacement events.

These are considered by the core team to be complementary approaches after large stand replacement events. They may be effectively used together in such a project. After small stand replacement events, they are considered to be alternative approaches. The use of both approaches on any one acre, conducted in subsequent years, could raise an issue of cumulative effects due to repeated entry.

AREA SALVAGE APPROACH

The following are background, rationale, criteria, and examples for this approach.

Background

This LSR assessment shows that approximately 20 to 36 percent of the South Cascades LSR network currently supports early seral vegetation. Most of these acres are in plantations, which are generally low in down wood and snags because of management objectives and activities prior to the allocation to LSR. Increasing the dead wood in these managed early and mid-seral portions of the landscape will be accomplished primarily during density management thinning treatments in those stands needing such, and with the mortality process over time.

Where stand replacing events convert late seral stands to early seral stands, the issue of where and how much of the dead material to leave is presented.

Since the early seral portion of the landscape is generally low in dead wood, there is more early seral on the landscape than desired, and because the natural process following stand replacing events leaves much higher levels of dead wood than management practices have left in the past, the area salvage approach focuses on retaining most of the dead wood input following stand replacing events, while taking a landscape look to determine snag needs for a given site. Salvage decisions must also recognize the increased risk of reburn following stand replacing events, and that adjoining late seral stands likely have increased fuel levels because of fire exclusion over the past 60 years.

In the natural process, stand replacing fire events add large amounts of dead wood to the system (Spies, Franklin, and Thomas, 1988). A conservative approach to salvage needs to recognize the contribution of these peak events, and leave a substantial portion of that material in place to provide for habitat needs through early, mid-seral, and into late-seral stages. A review of the research on decay rates of snags and down wood suggests that much of the material 16 inches or greater in diameter would remain on a site (unless a subsequent reburn occurs) until the next forest stand could begin to input this size of material again.

Overview of the Area Salvage Approach

The ROD clearly indicates that “typical levels”, not all material, need to be left (ROD, C-15). It suggests salvage is appropriate to remove those levels, or concentrations, above typical. The problem then is to define typical levels for this LSR network. Although we do not know of numerous plots measuring added dead wood immediately following stand replacing events in these LSRs, we suggest that there are data available. The live tree data from ecology plots can be used to define “typical levels”, since this live biomass represents that material available to stand replacing events in the near future. Since fire exclusion has resulted in additional dead wood primarily in the smaller size classes, and because the smaller size classes are typically consumed in the stand-replacing portions of fire, we can use the larger diameter live tree data from ecology plots to represent “typical” levels of additional dead wood following stand replacing events (Table 49 and Table 50).

In this approach, median density within the high intensity (>10 acre, <40% canopy) portions of stand replacement events are compared to the median live trees/acre for the applicable plant series. Median density, and not the mean, is suggested to represent “typical” levels, due to the sometimes non-normal distribution across the unmanaged landscape.

Where density in the stand replacement area exceeds the live tree density of the plant series, a salvage opportunity generally exists, since the density exceeds the “typical” density of the plant series across the landscape.

The amount of dead wood removal is then defined by the difference between the density in the stand replacement area and the density of the “typical” levels of dead wood following stand replacement events, determined from the landscape plant series information. For example, if the density of the stand replacement area were 20% above that of the typical density, that amount could be removed, leaving the typical density after treatment. Since reducing snag density on each acre would be operationally hazardous, small patch clearcuts or group selection cuts are used, limited to 20% of the stand replacement area.

Likewise, where density in the stand replacement area is lower than the “typical” density of the plant series across the landscape, salvage is not generally indicated. However, since the decision to salvage is not determined solely by this “compare the numbers” procedure, but by additional landscape and site factors, exceptions to both cases are expected. Examples are provided.

Objectives

1. The purpose of these criteria are to provide an approach to salvage for the South Cascades

LSR network that is responsive to the ROD standards and guidelines; one that maintains most of the large amounts of dead wood that are contributed to the landscape following stand replacement events; and one that results in an exemption from further REO review for conservative amounts of salvage.

2. These criteria apply within the entire South Cascades LSR network. They may not always apply to a given project. It may be more appropriate to seek REO review at the time of project development where specific vegetation types, local issues, or objectives do not fit within these criteria, or where silvicultural prescriptions are needed other than as described below.

3. Exempted salvage must still comply with all pertinent S&Gs in the ROD and with other statutory and regulatory requirements (e.g. National Forest Management Act, Federal Land

Management Policy Act, National Environmental Policy Act, Endangered Species Act, Clean Water Act). Interagency cooperation, monitoring, and adaptive management are key components of the ROD and were key assumptions underlying the development of these criteria. Agencies having an interest in LSR projects proposed under these criteria should continue to be given the opportunity to participate in project development. Additionally, field units are strongly encouraged to engage in intergovernmental consultation when developing projects.

4. Creation or retention of habitat for early successional forest-related species is not a treatment objective.

Landscape Decision Process Criteria for Area Salvage

Summarize Candidate Stands

1. Determine the stand replacement (>10 acres and <40% canopy closure) area(s) of the event.
2. Sample to determine the median density of live trees and newly created dead wood in the replacement area(s) of the event, by plant series. Where the stand replacement event includes allocations other than LSR, sample the entire LSR portion of the stand replacement area.

Compare to Reference Conditions

3. To get an initial indication of salvage treatment opportunity, compare the median density in each Plant Series of the stand replacement area(s) to the median density of the “typical” levels, for each Plant Series in Table 49 or Table 50.

If the median density, by Plant Series in the potential treatment area is higher than the median of that Series from the table, then the initial indication is that a salvage opportunity exists. Likewise, if the density in the stand replacement area(s) is less dense than the median from the tables, it would suggest that salvage is not initially indicated for that Plant Series.

Consider Additional Factors

4. Regardless of what is initially determined in step 3, consider additional landscape and other site factors when deciding whether or not to salvage. Consider the location and concentrations of dead wood as it relates to slope position, aspect, fire history and risk, specific wildlife needs, adjoining allocations, access, logging systems and costs, reforestation and restoration opportunities, etc.

Decide about Salvage Treatment

5. Line officer makes a project decision after consideration of all the issues, consistent with all applicable standards and guidelines.

Treatment Standards for Area Salvage

1. Due to the safety concerns associated with operations within snag patches, use small patch clearcuts or group selection type harvests, rather than a partial harvest spread across the stand replacement area.
2. To enhance connectivity for certain small mammals and other species, keep treatment patch size small. For example, ten, five acre units are preferable to one, fifty acre unit.
3. Use the following table to determine the maximum salvage treatment area:

Where replacement area density is above reference density by this percentage,	Then remove no more than this percentage of the total stand replacement acres in LSR.
0-10%	10%
11%	11%
12%	12%
13%	13%
14%	14%
15%	15%
16%	16%
17%	17%
18%	18%
19%	19%
20% or greater	20%
Where replacement area density is below reference density by any percentage, then remove no more than 10% of the total stand replacement acres in LSR.	

4. Vary the size of material left in the stand replacement area (ie. do not remove only few acres of the largest diameter material, or large acres of the smallest diameter material). Keeping in mind the variability of natural stands, maintain variability within the stand replacement area. Maintain approximately 10 percent of the area in patches of the highest pre-treatment density, and 10 percent of the area in patches of the lowest pre-treatment density.
5. The retained wood should be in various sized patches in environments where it is most likely to persist, for example, in riparian areas, bottom thirds of slopes, and on north and east aspects.
6. Within the limits of acceptable fire risk, in areas capable of northern spotted owl habitat (ie. not Lodgepole Pine Series), and where no dead wood biomass created by the stand replacement event is 16 inches dbh or greater, leave 13-15 percent cover in 4" diameter and larger dead wood to meet the habitat needs of the small mammal prey base. Leave mostly the larger diameter material, keeping in mind the objective (Carey, A.B., and M. L. Johnson, 1995). Retain existing piles, and/or pile some of the remaining down logs to enhance site conditions.
7. To the extent practicable, leave and protect from disturbance, all snags and LWM that were present prior to the stand replacement event.

8. Impacts to LWM decay classes III, IV, and V during salvage harvest will negatively effect habitat quality. These pieces still function as refuge habitat for some late successional species. Use yarding techniques to minimize disturbance to this LWM.

9. Reforestation using genetically selected trees may not always provide the greatest benefits to old-growth development and stand heterogeneity. Consider allowing natural seeding where seed sources are present.

10. Roads influence habitat fragmentation, can change the character of favorable disturbances, and provide corridors for spread of undesirable species. Road construction is not recommended with the exception of short, temporary native surface roads which can be obliterated within the same operating season. Where road construction is needed, these roads should be obliterated prior to the end of the project. Road construction within Riparian Reserves should follow watershed analysis recommendations and Riparian Reserve standards and guidelines.

Approach is Conservative

This approach is conservative in at least three ways:

- Use of the median as a reference will generally result in no more than half of the stand replacement areas being salvaged.
- Where densities exceed the reference median by more than 20%, the area of salvage is limited to a maximum of 20%. In the other case, where densities are lower than the median of the reference plant series, and other factors still lead the decision maker to salvage, these criteria limit the salvage to 10% of the stand replacement area.
- These criteria limit the REO exemption to five years, and to a cumulative, maximum salvage treatment area of 1% of LSR, by administrative unit.

Examples of Landscape Decision Process for Area Salvage

These examples are not meant to be exhaustive. They attempt to clarify the above process criteria, demonstrate the importance of the interdisciplinary process, clarify that salvage is a treatment decision of a line officer, and highlight the conservative nature of salvage treatments using these criteria. As indicated earlier, these criteria, (and examples) may not apply to all projects, therefore, projects consistent with ROD standards and guidelines, yet not following these criteria, should still be forwarded to REO for review.

Example 1.

Summary of Candidate Stands

A 35 acre fire, all in LSR, created 10 acres of stand replacement area. The stand replacement portion was within the ABCO plant series, in the southern portion of the LSR network. Eleven plots were taken to estimate live tree and newly created dead wood density within the 10 acre stand replacement portion. The median density was 19 per acre, in live trees and newly created snags or LWM. It ranged from 16-23.9" DBH.

Comparison to Reference Condition

Table 50 suggests the median for this DBH range, in the ABCO series, is 24 per acre. The initial indication is that since the candidate stand is under the reference density, no salvage be conducted.

Additional Considerations

The nearby vicinity and surrounding landscape (approximately 10,000 acres) contain a high percentage of previously managed early and mid-seral stands, which contain few snags and little down wood.

Salvage Treatment Conclusion

Salvage is not indicated.

Example 2.

Summary of Candidate Stands

A 50 acre fire, all in LSR, created 10 acres of stand replacement. The stand replacement portion is within the PSME plant series, in the northern portion of the LSR network. The summary of eleven plots within the stand replacement portion showed a median density of 50 snags and live trees/acre, ranging from 20-36 inches DBH.

Comparison to Reference Condition

Table 49 suggests the median density for this DBH range is 38 per acre. Since the candidate stand is 32% more dense than the reference condition, the initial indication is that a salvage opportunity exists that might remove up to 20% of the area, or 2 acres.

Additional Considerations

The nearby vicinity was mostly late seral, which contained snags and LWM consistent with late seral stands.

Salvage Treatment Conclusion

Using these criteria, salvage of up to 2 acres is a treatment opportunity.

Example 3.**Summary of Candidate Stands**

A 5,000 acre fire created 1,000 acres of stand replacement, with 600 acres of that in a Wilderness Area, and 400 acres in LSR. The stand replacement portion was in the northern portion of the LSR network, and included two different plant series, 700 acres in ABCO and 300 acres in PSME.

Thirty plots were taken within the LSR in each plant series. The median density was 42 per acre in ABCO, and 45 per acre in PSME, in stems 16" DBH and greater. The DBH range in both series was from 16"-24" and greater.

Comparison to Reference Condition

Table 49 suggests the median reference density for the ABCO series with diameters greater than 16" is 52 per acre. The candidate stands are 20% less dense than the reference, therefore the initial indication is for no salvage in the ABCO portion.

Table 49 suggests the median reference density for the PSME series with diameters greater than 16" is 49 per acre. The candidate stands are 8% less dense than the reference, therefore the initial indication is for no salvage in the PSME portion.

Additional Considerations

Within the Wilderness, the fire has created significant new inputs of dead wood that will not be salvaged.

Within the LSR, the ABCO potential salvage areas are not in the vicinity of spotted owl nests, have access such that additional road construction would not be required, and includes portions of higher density than the overall median.

Within the LSR, the PSME potential salvage areas are on upper slopes in the high Cascades lightning zone, and require only temporary road construction for access.

Salvage Treatment Conclusion

Since the fire has created significant new inputs of dead wood in Wilderness that will not be salvaged, the decision maker may conclude that salvage is an opportunity, limited to 10% of the ABCO area in LSR. Likewise in the PSME area, the decision maker may conclude that salvage is an appropriate treatment, limited to 10% of the PSME area in LSR.

On the other hand, since the risk of reburn may remain high in the adjacent Wilderness, and reburn may result in significant reduction to the newly created dead wood, the decision maker may conclude that salvage in the LSR is not an appropriate treatment.

Example 4.**Summary of Candidate Stands**

A 5,000 acre fire created 1,000 acres of stand replacement, with 600 acres of that in a Matrix allocation, and 400 acres in LSR. The stand replacement portion was in the northern portion of the LSR network, and included two different plant series, 700 acres in ABCO and 300 acres in PSME.

Thirty plots were taken within the LSR in each plant series. The median density of trees and newly created dead wood was 62 per acre in ABCO, and 59 per acre in PSME, in stems 16" DBH and greater. The DBH range in both series was from 16"-24" and greater.

Comparison to Reference Condition

Table 49 suggests the median reference density for the ABCO series with diameters greater than 16" is 52 per acre. The candidate stands are 19% more dense than the reference, therefore the initial indication is to salvage in the ABCO portion.

Table 49 suggests the median reference density for the PSME series with diameters greater than 16" is 49 per acre. The candidate stands are 20% more dense than the reference, therefore the initial indication is that a salvage opportunity exists in the PSME portion.

Additional Considerations

Within the Matrix, the fire has created significant new inputs of dead wood that are likely to be salvaged.

Within the LSR, the ABCO potential salvage areas are near spotted owl nests, in riparian areas or on the lower third of slopes where lightning fire starts are less frequent, and would require additional road construction.

Within the LSR, the PSME potential salvage areas are on mid-slopes on northerly aspects.

Salvage Treatment Conclusion

Since the fire has created significant new inputs of dead wood in Matrix, where significant amounts of salvage are expected, the decision maker may conclude that salvage within the LSR is not a prudent treatment.

Example 5.

Summary of Candidate Stands

A 150 acre fire, all in LSR, created 100 acres of stand replacement area. The stand replacement area is within the ABCO plant series, in the southern portion of the LSR network.

Fifteen plots were taken to estimate live tree and newly created dead wood density in the 100 acre replacement area. The median density was 27 per acre, all in standing snags. The diameters were all 24 inches DBH, or larger.

Comparison to Reference Condition

Table 50 suggests the median reference density for the ABCO series, southern portion, greater than 24" DBH, is 28 per acre. The initial indication is that since the candidate stand is below the reference density, salvage is not indicated.

Additional Considerations

The stand replacement area is on the upper third of south-facing slopes. The snags have interlacing, dead crowns. It is in the high Cascades lightning zone. The surrounding landscape is largely composed of late seral stands.

Salvage Treatment Conclusion

Even though the density is below the reference condition, the decision maker decides that the risk of reburn is high enough that an area salvage worth considering, limited to 10% of the area, or 10 acres. In addition, the project team considers the addition of fuel breaks within the stand replacement area.

Example 6.

Summary of Candidate Stands

A 75 acre fire, all in LSR, created 25 acres of stand replacement area. This portion was all within the TSHE series, in the northern portion of the LSR network. Eleven plots were taken to estimate the live tree and newly created dead wood density within the 25 acre replacement area. The median density was 76 snags per acre, all larger than 22 inches DBH.

Comparison to Reference Condition

Table 49 suggests the median for this DBH range, in the TSHE series, is 38 snags per acre larger than 22 inches DBH. Since the candidate stand is twice as dense as the reference level, the initial indication is that a salvage opportunity exists, to remove a maximum of 20% of the area, or 5 acres.

Additional Considerations

The candidate stand is near significant amounts of industrial forest land, mostly early seral, without much large wood. The area is not known for high fire starts, and there is not a rural interface fire issue. There are cooperative restoration opportunities that might be partially funded with timber sale proceeds. Spotted owl sites exist in the adjacent, unburned stand.

Salvage Treatment Conclusion

Even though the numbers suggest that a salvage opportunity is warranted, the line officer might conclude that “keeping the pieces” suggests no treatment in this situation.

Table 50: “Typical Levels” of Density In Stand Replacing Areas of Stand Replacement Events, by Plant Series, Southern Portion of LSRA Network (Cascades portion, Rogue River NF Data)

Plant Series	Live and Dead Wood Per Acre by DBH Class.			
	16-19.9”	20-23.9”	24”+	# of plots
Shasta Red Fir, ABMAS				9
median	9	4	23	
mean	13	8	21	
range	0-20	0-29	0-52	
Mountain Hemlock, TSME				17
median	14	14	33	
mean	14	16	31	
range	0-37	0-47	0-60	
White Fir, ABCO				92
median	13	11	28	
mean	16	12	29	
range	0-70	0-47	0-72	
Douglas-fir, PSME				13
median	7	6	16	
mean	19	9	12	
range	0-80	0-37	0-23	
Western Hemlock, TSHE				22
median	12	10	32	
mean	13	12	29	
range	0-43	0-46	0-48	
Oregon White Oak, QUGA⁴⁹				
median	7	6	16	
mean	19	9	12	
range	0-80	0-37	0-23	
Lodgepole Pine, PICO⁵⁰				
median	14	4	4	
Ponderosa Pine, PIPO⁵¹				
median	7	6	16	
mean	19	9	12	
range	0-80	0-37	0-23	

⁴⁹ Data were too limited for this Plant Series. This Series is most closely represented by the Douglas-fir Series, therefore those numbers are used in this table.

⁵⁰ Data were too limited for this Plant Series. Numbers were estimated to reflect the expected values for this Series. For the eastern portion of LSR 227, use guidelines from the Winema NF LSR Assessment.

⁵¹ Data were too limited for this Plant Series. This Series is most closely represented by the Douglas-fir Series, therefore those numbers are used in this table. For the eastern portion of LSR 227, use guidelines from the Winema NF LSR Assessment.

FUEL BREAK SALVAGE APPROACH

This approach focuses on reducing the increased fire risk associated with the large amounts of dry, dead fuels present after stand replacement events. It is intended to be used in addition to the fuel break network suggested in the section, “Treatments and Criteria to Reduce Risk of Large Scale Fire”. The objective is to reduce the continuous area of high risk fuels by strategic placement of fuel breaks within the high intensity (stand replacement) portions of large fires. It may be used to help mitigate the increased long term fire risk associated with leaving the large amounts of snags associated with the area salvage approach. TABLE 53 summarizes the treatment and criteria. The criteria are those listed on page 151, “Reduce Large Fire Risk with Fuel Breaks.” Figure 21 presents an example.

Figure 21: Fuel Breaks After Stand Replacement Fire



POTENTIAL SALVAGE TREATMENT AREAS (1996)

The Umpqua, Willamette, and Rogue River National Forest portions of the South Cascades LSR network experienced lightning-caused fires in 1996 (Table 51 and Figure 11). These are the current potential salvage areas within the South Cascades LSRs.

While project planning and NEPA decisions will determine specific treatment needs, the most acres that could be treated can be estimated here. Of the 6000 acres in 17 fires during 1996, a maximum of about 1077 acres in 5 fires qualify for salvage consideration under the standards and guidelines in the ROD.

**Table 51: 1996 Fires in South Cascades LSR Network Larger than 10 Acres.
Only Acres within LSR are Shown**

LSR	Admin. Unit	Fire Name	Fire Acres in LSR	Stand Replacement Acres in LSR
222	Umpqua NF	Baby Wren	5	0
222	Umpqua NF	Bearbones 1 & 2	293	110
222	Umpqua NF	Black Gorge	280	40
222	Umpqua NF	Bohemia Bubble	24	0
222	Umpqua NF	Firemans Leap	23	0
222	Umpqua NF	Horse Prairie	57	10
222	Umpqua NF	Johnson Creek	7	0
222	Umpqua NF	O Four	7	0
222	Umpqua NF	Quarry	56	5
222	Umpqua NF	Rumble	27	0
222	Umpqua NF	Smurf	42	5
222	Umpqua NF	Spring	4988	890
222	Umpqua NF	Tabasco	4	0
222	Umpqua NF	Three Springs	15	0
222	Umpqua NF	Washboard	37	2
222	Umpqua NF	Wren	95	5
222	Willamette NF	Bearbones 1 & 2	15	0
222	Willamette NF	Bohemia Bubble	12	0
227	Rogue River NF	Hepsie Fire	42	10
TOTAL			6029	1077

TREATMENT AMOUNTS AND IMPLEMENTATION SCHEDULE

The extent of stand replacement events within the next few years cannot be predicted, however, exemption from further REO review for a reasonable, yet conservative amount of salvage treatment is requested.

Exemption is requested for all salvage treatments combined, to not exceed approximately one percent (7,100 acres) over 5 years. This amount is expected to be enough for most situations, but would require review for very large stand replacement events. For tracking purposes, this amount is segregated by LSR administrative unit. If proposed treatments would exceed the amount listed by individual LSR administrative unit, coordination with other units in that LSR will be needed to assure that the amount listed as exempt from REO review is not exceeded for that LSR as a whole.

Table 52: Cumulative Salvage Treatment Area Exempt from Further REO Review

LSR	LSR Total Acres	Salvage Treatment Area Exempt from Further REO Review (@ Approx. 1% of total acres)
222, Eugene BLM	21,200	200
222, Roseburg BLM	25,500	250
222, Umpqua NF	342,800	3,400
222, Willamette NF	93,300	900
222, Rogue River NF	25,200	250
224, Medford BLM	21,500	200
225, Rogue River NF	39,800	400
226, Rogue River NF	49,800	500
227, Rogue River NF	52,800	500
227, Winema NF	48,800	500
Total	720,700	7,100

TREATMENTS AND CRITERIA FOR MULTIPLE USE ACTIVITIES OTHER THAN SILVICULTURE

Non-silvicultural activities are on-going and new ones may be proposed within the LSR boundaries. "As a general guideline, nonsilvicultural activities located inside Late Successional Reserves that are neutral or beneficial to the creation and maintenance of late-successional habitat are allowed." (ROD C-16). Although non-silvicultural activities do not require REO review, projects must be consistent with the ROD. The ROD provides good direction on these types of activities (C-16 through C-19).

During the period from December 1996 through January 1997, visits were made to individual land management units to collect details on existing land uses and additional items of note. See Table 6 for the summary of "Multiple Use Activities Other Than Silviculture". At that time, none of the current uses were judged to have adverse effects on LSR objectives.

There may, however, be some site-specific areas that are outside of ACS or LSR objectives. These will need to be reviewed at a finer scale, either in watershed analyses or environmental assessments.

ROAD CONSTRUCTION AND MAINTENANCE

Substantial road related restoration is needed in LSR 222 due to increased slides the past two winters. Deferring road maintenance may have adverse effects on LSR objectives as impaired drainage increases the potential of roadbed slumps and increased sediment delivery to streams. When deferred maintenance keeps roads closed, this will affect the ability to respond rapidly to fire, increasing the chance of large scale fire.

Access and Travel Management Plans are also needed.

Improvements are planned by Fed. Highway Administration on the Elk Cr. Road in LSR 224. This project does have some impact on the riparian area.

During road upgrades and maintenance, consider the following:

- Facilitate the upstream/downstream movements of species with culvert size and placement (or other stream crossing structures) decisions.
- Increase the frequency of drainage dips or culverts to reduce changes in drainage patterns.
- Stockpile down wood from hazard removal sites and place in areas near wetlands, ponds, and lakes where past management has reduced dead and down wood.
- Modification or removal of culverts and water diversion structures where possible to restore aquatic connectivity.

ROAD DECOMMISSIONING

The objectives of road decommissioning include:

- reducing the length of the road-related drainage network;
- improving habitat connectivity for amphibian and other species;
- restoring riparian and aquatic conditions;
- increasing terrestrial late seral patch size; and,
- reducing sediment delivery from roads and upslope areas.

These objectives are derived from ACS riparian and fisheries goals.

In addition to the objectives, there are other considerations when planning road systems and road decommissioning. Access to non-federal land needs to be considered. In addition, access may be needed for fire suppression, outdoor recreation, restoration projects, other LSR projects, or projects in other land allocations.

Nevertheless, there are opportunities to reduce the amount of existing roads within the South Cascades LSR network. Priority consideration for decommissioning and improvements in existing roads should be given to:

1. Roads within riparian reserves in key watersheds; particularly where roads have major influences on ground water, drainage patterns, flows and sedimentation on wetland, pond, spring, and seep habitats.
2. Roads within riparian reserves not in key watersheds; but where roads are within 600 feet of ponds, wetlands, springs, seeps and lakes, especially upslope of wet areas and where roads bisect a system of wetlands, ponds, or where roads exist between streams, wetlands, or ponds.
3. Roads outside of riparian reserves in key watersheds.
4. Roads within watersheds that have road density below 3 miles/square mile. The rationale is to improve or reinforce areas that are considered close to “fully functioning” based on road density.
5. Roads where density in the transient snow zone is greater than 3 miles per square mile; and,
6. Roads where density in the nontransient snow zone is greater than 3 miles per square mile.

DEVELOPMENTS

Pelican Butte Ski Area, LSR 227

There is a proposed ski area at Pelican Butte on the Winema National Forest. Most of the facility would be outside of LSR 227, but access and potentially some development may be proposed within the LSR. The implications will be addressed with REO separately from this assessment.

Westfir Administrative Site, LSR 222

The reconstruction of the Westfir Administrative Site will require an additional 1/2 to 1 acre clearing for expansion of the parking lot.

RANGE MANAGEMENT

Tiller Ranger District on the Umpqua National Forest has an environment assessment in progress. Some potential conflicts with LSR objectives due to traditional use areas, riparian concerns, and introduction of nonnative species.

Generally, livestock grazing is incompatible with desired vegetative conditions in wet areas. Consider excluding livestock from wet areas and their associated riparian reserves. Restore vegetative condition through planting if natural reproduction is unlikely. Maintaining or restoring riparian and forest vegetative structure including height, canopy cover, and vigorous

reproduction in herb, shrub, hardwood and conifer tree layers, is desired to meet LSR and ACS objectives.

RIGHTS-OF-WAY, CONTRACTED RIGHTS, EASEMENTS, SPECIAL USE PERMITS

A proposed flood control dam on Elk Creek is half-build, but the project is currently on hold due to fish blockage issue. Other special use permits are inconsequential.

NONNATIVE SPECIES

Roads have provided pathways for nonnative and noxious weed introductions and spread within the LSRs. See Table 6 and the Existing Conditions section “Nonnative Species” for additional information.

Plans for addressing negative impacts on native species in wet areas need to be developed (ROD C-19). Several of the following recommendations are outside the direct authority of the federal land management agencies. Work cooperatively with the State of Oregon when considering the following restoration items:

- Reduce water levels in ponds and wetlands to depths unsuitable for fish and bull frogs.
- Eliminate fish stocking in lakes determined to be important in habitat value or spatial connectivity.
- Control bull frog populations through removal of adults and egg masses.
- Reduce the potential for disease, parasite and nonnative species spread with the use of clean equipment policies (e.g. for multiple drafting set up portable tanks with one clean draft line to water).

FUELWOOD, AMERICAN INDIAN USES, MINING, LAND EXCHANGES, HABITAT IMPROVEMENT PROJECTS, SPECIAL FOREST PRODUCTS, RECREATION USES, AND RESEARCH

None of these current uses have adverse effects on LSR objectives. There may be some sitespecific areas that are outside of ACS or LSR objectives. Some will need to be reviewed at a finer scale either in watershed analyses or project environmental assessments. Firewood harvest and mushroom permits, in particular, should continue to be examined for consistency with standards and guidelines and LSR objectives. Generally, though, most sites occupy such a small area that, overall, the ecological functions the LSRs will not be disrupted.

