South River Commercial Thinning 2000

Environmental Assessment
South River Field Office
EA # OR-105-00-08

U.S. Department of the Interior, Bureau of Land Management
Roseburg District Office
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Roseburg, Oregon 97470

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Chapter 1
PURPOSE AND NEED FOR ACTION

This chapter provides a brief description of the purpose and need for the proposed action being analyzed in this environmental assessment.

Background

The areas proposed for commercial thinning and density management consist of approximately 272 acres allocated as General Forest Management Area (GFMA) and 79 acres allocated as Riparian Reserves. The stands are located in Section 19 of T. 28 S., R. 8 W.; Section 19 of T. 29 S., R. 2 W.; Sections 13 and 24 of T. 29 S., R. 3 W.; Section 9 of T. 30 S., R. 2 W.; and Sections 3 and 4 of T. 30 S., R. 3 W. These areas are located within the East Fork Coquille River, Upper Middle Fork Coquille River, South Umpqua River and the Middle South Umpqua River/Dumont Creek Analytical Watersheds.

The East Fork Coquille (pp. VI-10, VII-24 to VII-26, and VIII-14), Upper Middle Fork Coquille (pp. 107-124), John Days Coffee (pp. 32) and Deadman/Dompier (pp. 42-44) Watershed Analyses recommend the commercial thinning of stands 30-70 years of age in GFMA. Thinning should be designed to maintain stand health, enhance wood quality through the production of clear wood, and increase timber yields through the harvest of merchantable trees that would otherwise be lost to suppression mortality. Thinning would also improve the growth rate of residual trees. Density management within Riparian Reserves should also be considered in order to hasten the growth of larger trees that would provide shading and large wood for recruitment into streams. Density management would also introduce diversity into stand structure and vegetative composition in even-aged, closed-canopy forest stands within the Riparian Reserves.

Purpose

The Roseburg District *Record of Decision and Resource Management Plan* (ROD/RMP June 1995) directs that within GFMA, "Suitable commercial forest land would be managed to assure a high level of sustained timber productivity. Emphasis would be placed on use of intensive forest management practices and investments to maintain a high level of sustainable resource production while maintaining long-term site productivity, biological legacies, and a biologically diverse forest matrix." (ROD/RMP, p. 150) Landscape objectives include ". . . a forest composed of stands containing a variety of structures; stands containing trees of varying age and size, and stands with an assortment of canopy configurations. As stands age, within stand conditions should trend toward those characteristic of older forest types." (ROD/RMP, p. 150)

The proposed density management within Riparian Reserves would diversify stand structure and hasten the development of late-successional habitat characteristics. These characteristics would include large diameter trees which would eventually provide large snags, and large wood for recruitment into the aquatic system. The treatments would release hardwoods from suppression allowing retention as a component of the forest stands. The treatments would also allow for the development of intermediate canopy layers and understory vegetation that would provide a variety of habitats for both terrestrial and riparian-dependent species.

Under the proposed action, thinning of GFMA stands would yield an estimated 2.7 million board feet, or approximately 4,590 hundred cubic feet. This timber volume would contribute to the Roseburg District's declared objective for an annual allowable sale quantity (ROD/RMP, p. 8) and the socioeconomic objectives of the ROD/RMP (p. 55).

This environmental assessment will provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI). It will consider the short and long term environmental consequences of the proposed action and no action alternatives, at the project level and fifth-field analytical watershed level.

Need

Inventories have identified dense, even-aged stands where treatments are needed to reduce present stand densities in order to maintain health and vigor. Thinning these GFMA stands would also meet the objectives for stand and landscape conditions and Management Action/Direction for assuring high levels of volume productivity (ROD/RMP, pp. 150-151). There is also a need to treat the portions of the stands allocated as Riparian Reserves to meet objectives for controlled stocking, establishment and management of desired non-conifer vegetation, and acquisition of the desired vegetation characteristics needed to attain objectives of the Aquatic Conservation Strategy (ROD/RMP, pp. 153-154). These objectives include the development of habitat characteristics necessary to both aquatic and terrestrial species, for occupancy and dispersal.

Implementation of the proposed action would conform to the standards and guidelines of the ROD/RMP, as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (p. 3). The ROD/RMP incorporates the analysis contained in the *Roseburg District Proposed Resource Management Plan/Environmental Impact Statement* (PRMP/EIS. October 1994). The ROD/RMP and PRMP/EIS incorporate the standards and guidelines of the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (FSEIS. February 1994) and the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (ROD. April 1994), otherwise known as the Northwest Forest Plan.

Chapter 2
DISCUSSION OF THE ALTERNATIVES

This chapter describes the basic features of the alternatives being analyzed in this environmental assessment.

I. Alternative 1 - No Action

Under an alternative of no action, there would be no commercial thinning in the identified GFMA stands and no density management within adjoining Riparian Reserves at this time. Current stand densities would be maintained. Growth, development and maturation of these stands would continue along present trajectories.

There would be no construction of permanent or temporary roads. None of the proposed road renovation or road decommissioning opportunities identified in this analysis would be undertaken at this time. Identified opportunities for renovation and decommissioning would require separate analyses of environmental consequences and accomplishment under separate authorizations.

II. Alternative 2 - Proposed Action

This alternative proposes commercial thinning and density management of 18 units, composed of 272 acres of GFMA and 79 acres of Riparian Reserves. All of the proposed Riparian Reserve treatments would be located in Section 19, T. 28 S., R. 8 W. There are no fish-bearing streams adjacent to or within any of the proposed units. Riparian Reserves widths are based on a site potential tree height of 220 feet for the East Fork Coquille River watershed, 180 feet for the Upper Middle Fork Coquille River Watershed Analysis Unit and Middle South Umpqua River/Dumont Creek watershed, and 160 feet for the South Umpqua River watershed.

Approximately l50 acres would be designated for ground-based harvesting. The remaining 201 acres would be thinned using cable yarding systems capable of maintaining a minimum of one-end log suspension, and having a minimum lateral-yarding capability of 100 feet. No yarding operations would be authorized during the bark slip period between April 15th and July 15th, in order to protect the trees reserved from cutting. The bark slip period is that time of year when active cambial growth can result in the bark being loosely attached and susceptible to mechanical damage. All ground-based harvest would be restricted to the period between July 16th and October 15th. The need for selective tilling of skid trails and landings to compaction and meet soil and site productivity objectives would be evaluated by silviculture and soils personnel following the completion of thinning.

The marking prescription and thinning guidelines would be the same for all portions of the units located in GFMA. Stands would be thinned from below, primarily removing trees in the suppressed and intermediate canopy classes. All residual old-growth conifers and Decay Class 3, 4, and 5 down wood would be reserved under contract stipulations. Where there is a reasonable likelihood that they would survive thinning operations, not pose an unacceptable safety risk, or conflict with project objectives existing hardwood and conifer snags would be marked for reservation and buffered with unthinned areas to further facilitate retention. Reserved snags that would require felling for safety reasons would be retained on site as large woody debris. Some thinning would be targeted at releasing hardwood trees in order to promote stand diversity. More specific marking guidelines are contained in Appendix B of this document.

In proposed Units J, K, L and M, hardwoods greater than 10 inches in diameter would be favored for retention, while hardwoods greater than 6 inches in diameter would be selected in the remaining units. The trees selected would exhibit a high potential for surviving thinning operations. There would be no requirement to cut hardwoods not otherwise reserved.

In Riparian Reserves, no-entry buffers would be established along either side of streams. These buffers would be a minimum of 20 feet in width, with actual widths reflecting topographic features and vegetative conditions. Outside of these buffers, 10-20 percent of the remaining Riparian Reserve acres would be left as untreated islands, 1-2 acres in size. These areas would be marked on a site-by-site basis with direction from wildlife staff, and would be focused on concentrations of large down wood, snags, patches of shrubs and hardwoods, or areas that would be operationally difficult. In the treated portions of Riparian Reserves, a minimum average of 50 percent canopy closure would be maintained. Where a portion of the Riparian Reserve in proposed Unit B is isolated by the 28-8-18.0 road, upland marking prescriptions would be applied to the isolated portion.

Within Riparian Reserves, stands would be thinned from below, using a variable spacing marking prescription, which would retain trees of varying diameters and heights. The prescription would yield a variable density, with small canopy gaps and tree clumps. This would release reserved trees, and any natural regeneration that presently exists in the understory. Trees would be marked for cutting in all diameters breast height (DBH) from 6 inches up to 18 inches, reflective of the characteristics of the individual stands. All trees in Riparian Reserves equal to or greater than 18 inches DBH would be retained. If trees 18 inches DBH or greater require cutting during contract operations, these trees would be left on site as large down wood.

Approximately 58 acres designated for cable yarding would be accessed by temporary roads or renovated natural-surface roads. Yarding operations would be restricted to the period between July 16th and October 15th. The remaining 106 acres designated for cable yarding would be available for winter operations, at the purchaser's discretion.

Access would be provided by existing roads, in combination with 1.07 miles of temporary roads, and 0.36 miles of new permanent road construction. Temporary roads would be constructed on ridge top or stable side-slope locations, and would be used and decommissioned in the same operational season in which they are built. Approximately 2 miles of existing roads would be renovated. Decommissioning is proposed for 2.35 miles of road upon the completion of thinning operations, including 0.75 miles of the natural-surface roads proposed for renovation. The actual mileage decommissioned would be determined after conferring with forest protective agencies and holders of reciprocal rights-of-way agreements or easements.

TABLE 1 - DESCRIPTION OF ALTERNATIVE 2
(All values are approximate)

UNIT	ACRES	Harvest Method (acres)		Road Construction/Renovation (miles)		
		Cable	Tractor	temporary	permanent (rock)	Renovation
A	10	5	5			0.31 of Road No. 28-8-19.3
B	79	48	31	0.34		0.27
C	8	6	2	0.11		
E1	9	9				
E2	2	2		0.06		
E3	6		6			0.31 of Road No. 28-8-20.1
E4	24	24		0.16	0.36 for access to top of E4 and E5	0.20 of Road No. 28-8-19.1 to access tops of E4 and E5, 0.41 of Road No. 28-8-20.1 through E5
E5	17	13	4			
E6	2	2				same as E3
F	20	2	18			0.12 of Road No. 28-8-19.2
G	23		23			0.35 un-numbered spur along west boundary of G and H1
H1	11		11			
H2	2	2				
H3	2	2				
J	23	23				0.92 of Road No. 29-2-19.2
K	13	10	3	0.25		0.16 of Road No. 30-2-13.1
L	13	9	4	0.15		0.51 of Road No. 30-4-1.0
M	10	7	3			
TOTAL	**274**	**164**	**110**			

III. Considered But Eliminated From Detailed Study

A. Units Eliminated From Consideration For Treatment

Four proposed units were eliminated from this analysis. Unit D is not sufficiently stocked to justify commercial thinning. Trees in Unit H4 are still too small for a commercial thinning, and Unit H5 is not operationally feasible at this time. Unit I has fewer trees per acre because it was thinned to a spacing much wider than usual.

In general, relative densities are currently in the optimal growth range, individual crown ratios exceed 50 percent, and there would be no benefit gained from thinning at this time. Within the next ten years the canopies of these stands are expected to close in, at which time they should be reevaluated for commercial thinning treatments.

B. Retention On-Site Of All Material Cut In Riparian Reserves

Girdling or felling, and retention on site of all trees designated for cutting within Riparian Reserves was considered as an alternative to removal. It was concluded that it was not a viable option because of the risks it could pose to forest health.

An increased risk of Douglas-fir beetle infestation exists when three or more trees per acre greater than 12 inches in diameter are killed in a single year, though beetles have been found to utilize trees as small as 8 inches in diameter. Newly hatched beetles may then infest and damage residual trees and adjoining stands (Goheen 1996, 2001). Felled or girdled trees would provide prime brood habitat for beetles, increasing the risk of an infestation. Full or partial shade also provides better microclimate conditions for brood production than full sunlight. New generations of beetles could move into adjacent green trees, attacking and killing them.

Beetles typically attack the larger trees and outbreaks generally persist for a cycle of four years. During an outbreak it may be expected that an average of four live trees would be attacked and killed for every 10 trees felled or girdled. If beetle populations are high enough, all live trees within pockets of ¼ - 2 acres in size may be killed. Douglas-fir beetles are strong fliers and 10-20 percent of the time they may fly five miles or further, and infest other stands. This would pose an unacceptable risk to other forest stands managed by Federal agencies, private timber companies, and individual property owners.

Organon modeling and stand exam data indicates that there are approximately 220 trees per acre in the 8-16 inch diameter classes in the Riparian Reserves proposed for treatment. To meet silvicultural objectives, 50 percent of the trees in these size classes would require removal. Falling or girdling approximately 110 trees per acre in this diameter range and leaving them on site could potentially result in the loss of an additional 40-45 live trees for each acre treated in this manner.

Most susceptible would be the larger trees that would provide future habitat diversity and structure for terrestrial and aquatic wildlife.

If all the girdled or felled trees were retained on-site, fuel loading and associated fire risk would increase, especially in those areas in close proximity to roads. Fuel modeling and risk analysis for other thinnings of a similar design indicates that fuel loads could be expected to increase by 15-18 tons/acre. Approximately two-thirds (10-12 tons/acre) of this material would be less than 3 inches in diameter. This size of material provides an ignition potential and has the greatest influence on the rate of fire spread in the event of an ignition. Fine fuels also provide the means by which larger fuels are ignited. These fuels would pose a short-term increase in the risk of ignition, lasting one to three years after the completion of density management. The remaining 5-6 tons/acre would be material approximately 3-8 inches in diameter. This size of material is primarily responsible for the intensity and duration of a fire. The increased potential for high fire intensity represented by the larger fuels would persist for 15 to 20 years. While this large material does not pose a high risk for fire by itself, this material in conjunction with the tonnage of fine fuels would represent a heightened risk of stand replacement events. This increased risk would not be consistent with management objectives for limiting the size of all wildfires and maintaining long-term ecosystem function within the Riparian Reserves (ROD/RMP, p. 27).

IV. Resources Not Present or Unaffected by Either Alternative

The following resources would not be affected by either of the alternatives, because they are absent from the area: Areas of Critical Environmental Concern (ACEC); prime or unique farmlands; floodplains; and Wild and Scenic Rivers. No Native American religious concerns, environmental justice issues, cultural resources, or solid or hazardous waste concerns were identified. No increase or decrease on the introduction or rate of spread of noxious weeds is expected, and is discussed in text.

Chapter 3
AFFECTED ENVIRONMENT

This chapter summarizes the specific resources that are present or have the potential to be present within the area, and that could be affected by the proposed action.

I. Timber/Vegetation

The conifer stands proposed for thinning may be characterized as dense, closed-canopy stands. They are generally even-aged within individual proposed units and are dominated by Douglas-fir. Unit E5 is an exception, being primarily a stand of western hemlock. Other less numerous conifer species include incense-cedar, western redcedar, grand fir, and a small number of Port-Orford-cedar in proposed Units B and C.

Table 2 summarizes existing stand conditions irrespective of their allocation to GFMA or Riparian Reserves. These approximations were derived using Organon growth modeling and stand exam data collected in 1999 and 2000.

Table 2: Current Stand Conditions

Unit	Age	Trees per Acre	Quadratic Mean Diameter (in.)	Percent Crown Closure	Basal Area in Sq. Ft.	Relative Density
A, B, F, G & H	36	270	11.3	92	190	0.624
C	36	285	10.8	92	180	0.605
E1/E2	67	111	17.8	73	192	0.528
E3/E6	36	314	11.1	91	210	0.698
E4	37	282	10.8	83	180	0.604
E5	82	144	19.6	100	300	0.796
J	87	121	19.1	84	240	0.643
K	32	284	11.3	85	197	0.649
L	54	198	12.9	76	180	0.563
M	45	227	12.1	78	180	0.578

Hardwood species found in these stands include Pacific madrone, bigleaf maple, and golden chinkapin. There are generally few hardwoods except in proposed Unit M, where they are numerous in the south-central portion of the stand. Rhododendron is the primary shrub species in proposed units located in Section 19, T. 28 S., R. 8 W. Elsewhere, understory species consist primarily of salal, Oregon-grape, and sword fern.

Figure 1 was generated using stand exam data and the Stand Visualization System. This depicts the approximate current stand conditions in proposed Units A, B, F and G. As illustrated, the stands have a high stem density. The darker shade of green represents hardwood trees in the stand. The current Organon relative density index is 0.62. The optimal density for the growth of Douglas-fir is between 0.4 and 0.63. Suppression mortality occurs when densities exceed 0.63.

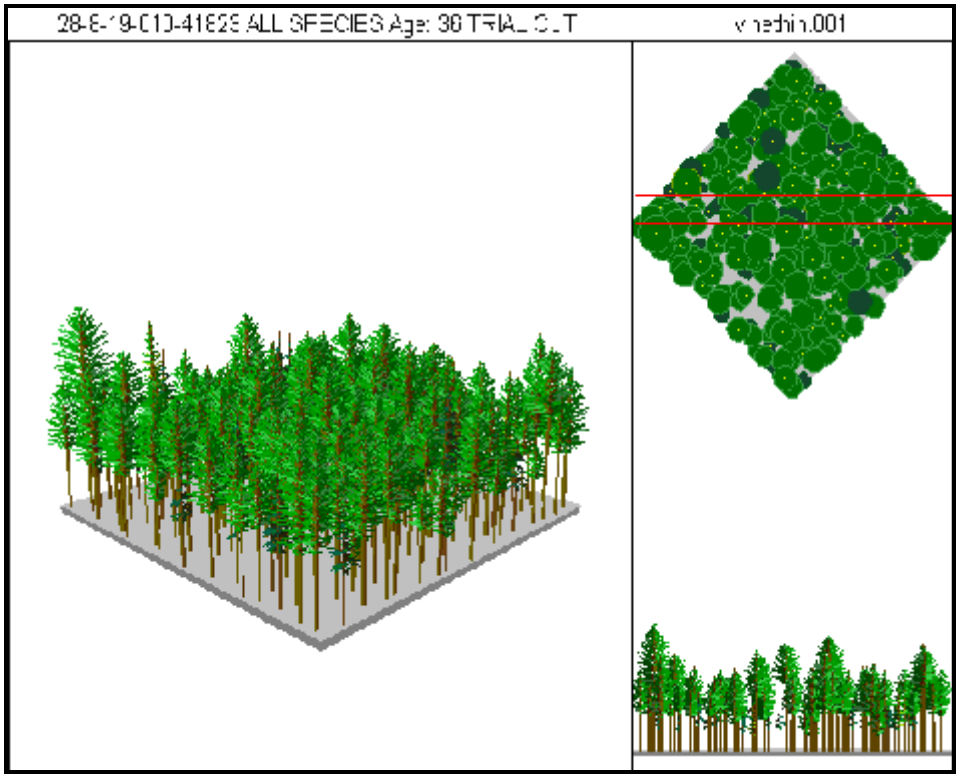


Figure 1

Stand density is a measure of site occupancy that is based on tree size and the number of trees per acre. For a given average stand diameter, there is a theoretical maximum number of trees per acre that can exist on the site. In another perspective, for a given number of trees per acre there is a maximum average stand diameter. This value varies by species and is termed the maximum stand density index. Relative density compares the current density of a stand with the theoretical maximum. Relative density indicates whether the stand is growing well, is in need of thinning, can support an understory, or is subject to mortality suppression.

Diseases within the stands:

There are western hemlock in proposed Units E3 and E6 that are infected with dwarf mistletoe (*Arceuthobium tsugense*). This parasitic plant penetrates the xylem of the host tree and takes up nutrients, carbohydrates, and water. Losses from this parasitic infection may include reduced tree growth and vigor, poor growth form, reductions in wood quality and yield, and mortality among older trees. Western hemlock is the only susceptible tree species in these stands.

A small pocket of laminated root rot (*Phellinus weirii*) is present in proposed Unit C. A group of trees have been killed and the infection has spread to other nearby trees. The initial symptom is chlorosis, characterized by stunted and yellowing foliage tufted at the ends of branches. This results from a reduction in the uptake of water and nutrients caused by the death of roots and cambial tissue. Laminated root rot spreads through root grafts known as rhizomorphs. Infected trees eventually die standing upright, or blow down when root structure weakens. Grand fir and Douglas-fir are highly susceptible, while western hemlock is only moderately susceptible.

Four pockets of dead and dying Douglas-fir trees are present in proposed Unit E4. The suspected cause is Black Stain fungus (*Leptographium wageneri*). The pockets of infection have created small openings less than one-tenth acre in size. Douglas-fir is the only tree species in this stand that is susceptible. The fungus is spread by root grafts and fungal hyphae growing in the soil. The fungus colonizes water-conducting tissues in the roots and lower stem of the host tree, ultimately blocking the transport of water to the tree canopy. Infected trees initially exhibit chlorosis and needle loss, followed by a reduction in growth, and eventual death. The occurrence of black stain generally decreases as trees mature.

No evidence of Port-Orford-cedar root disease (*Phytophthora lateralis)* was observed in the Port-Orford-cedar trees located in proposed Units B and C.

II. Wildlife

A. Special Status Species

Special Status Species are: species listed as threatened or endangered under the Endangered Species Act of 1973, as amended; candidate species or species proposed for listing under the Endangered Species Act; and Bureau Sensitive or Bureau Assessment species designated under BLM 6840 policy. Bureau Sensitive species are eligible for federal or state listing or candidate status. Bureau Assessment species are not presently eligible for listing or candidate status under the Endangered Species Act, but are of State concern, and may require protection or mitigation in the application of BLM management activities.

1. Threatened and Endangered

The Federally-endangered Columbian White-tailed deer (*Odocoileus virginianus leucurus*), the Federally-threatened marbled murrelet (*Brachyramphus marmoratum*), the Federally-threatened northern spotted owl (*Strix occidentalis caurina*), and the Federally-threatened bald eagle (*Haliaeetus leucocephalus*) have all been documented on the Roseburg District.

Suitable habitat for the bald eagle and Columbian white-tailed deer is not present. As a consequence, no impacts to these species are anticipated, and they will receive no further discussion in this analysis.

Additional species recently listed include the Federally-threatened Canada lynx (*Lynx canadensis*), Federally-endangered Fender's blue butterfly (*Icaricia icarioides fenderi*) and the Federally-threatened vernal pool fairy shrimp (*Branchinecta lynchi*). None of these species have been documented on the Roseburg District. Suitable habitat for the lynx and fairy shrimp is not present, so these species would not be expected in the project area, no impacts would be anticipated, and they will not be discussed further.

Larvae of Fender's blue butterfly feed almost exclusively on Kincaid's lupine. There are only four known populations of Kincaid's lupine on BLM-managed lands in the South River Resource Area, which comprise fewer than 5 acres. These sites are generally located along road prisms, not in meadow habitat. In a visit in 1990, Paul Hammond of Oregon State University concluded that the populations of Kincaid's lupine on the Roseburg District were too small and too widely scattered to support the butterfly. The absence of other lupine species in association with Kincaid's lupine, and lack of meadow habitat make these sites unsuitable habitat for the butterfly. As a consequence, the butterfly is not expected to be present and will not be discussed further in this analysis.

a. Northern Spotted Owl (*Strix occidentalis caurina*)

Proposed thinning units in Section 19 of T. 28 S., R. 8 W. are located within the Coast Range Province. The stands range from 36-82 years of age with average stand diameters of 11-20 inches. The stands lack old-growth habitat components such as large trees and snags that would provide suitable nesting habitat and thermal cover, but do provide potential foraging and dispersal habitat. The remaining units are located in the South Umpqua River basin, within the Western Cascades Province. These stands are similar in age, composition, structure, and function to those noted above.

Proposed Units H1 - H3 are located within the territorial home range of an owl site but are not within a ¼-mile of an owl activity center. Proposed Unit J is located within Critical Habitat Unit OR-29, designated by the U.S. Fish and Wildlife Service. This is the only proposed unit located within a Critical Habitat Unit. It is overlapped by the territorial range of two owl sites and is adjacent to an owl activity center. Proposed Unit M is located within the territorial range of a single

owl site, and is adjacent to the owl activity center. Proposed Units K, L are within ¼-mile of owl activity centers. Proposed Unit L is overlapped by the territorial range of two owl sites and proposed Unit K is situated within the territorial range of three owl sites.

b. Marbled Murrelet (*Brachyramphus marmoratum*)

All of the proposed thinning units in Section 19, T. 28 S., R. 8 W., are located within the 35-50 mile habitat management zone for the marbled murrelet. None of the proposed units contain suitable nesting habitat, though it is present adjacent to the units, in the form of large old-growth trees with large diameter limbs and broken tops that would provide nesting platforms. Units A, E1, E2, and E4 are immediately adjacent to suitable habitat. Two year surveys of suitable habitat in this area have been conducted by Coos Bay and Roseburg District BLM personnel. A single murrelet detection was made south of the project area, consisting of a bird flying above the canopy. There was no indication that the bird was using the stands within the proposed thinning area, and the likelihood of occupancy in the area is considered low.

2. *Proposed or Candidate*

No terrestrial species currently proposed for listing, or candidates for listing, under the Endangered Species Act are documented on the Roseburg District.

3. Bureau Sensitive

Bureau Sensitive species with the potential to occupy portions of the proposed project areas include the Del Norte salamander, the Oregon Megomphix snail, the northern red-legged frog, and the foothill yellow-legged frog.

The northern red-legged frog (*Rana aurora aurora*) is found throughout the Roseburg District. This frog would be found in or near perennial water sources during the breeding season, but at other times of the year may be found foraging in upland areas away from streams and ponds. The distribution of the foothill yellow-legged frog (*Rana boyli*) is more confined to the immediate vicinity of perennial streams where it breeds in the slow moving water of quiet stream pools. There are no perennial streams located within any of the proposed thinning units, so the likelihood that these species are present is considered minimal. The few perennial water bodies located in the vicinity of proposed units are not within any of the units. These water bodies would not be affected by the proposed action and no impacts to red-legged or foothill yellow-legged frogs are anticipated if they are present. As a consequence, there will be no further discussion of either species in this analysis.

The portions of the proposed action located in Section 19 of T. 28 S., R. 8 W., and Sections 3 and 4 of T. 29 S., R. 3 W. are within a 25 mile radius of known populations of Del Norte salamanders (*Plethodon elongatus*). This species has been designated in the amended Standards and Guidelines for Survey and Manage (p.49) as one for which pre-disturbance surveys of suitable habitat are no longer necessary in order to meet management objectives. As a consequence, the Del Norte salamander will receive no further discussion in this analysis.

The Oregon Megomphix snail (*Megomphix hemphilli*) has been identified throughout the South River Resource Area. This species appears to favor hardwoods and hardwood litter as primary habitat features. As with the Del Norte salamander, the amended Standards and Guidelines for Survey and Manage (p. 49) direct that pre-disturbance surveys are no longer required for the management of this species. Only sites located prior to September 30, 1999, require management for persistence of the species. As a consequence, no special management attention is required relative to this proposal, and no further discussion of the species is necessary in this analysis.

4. Bureau Assessment

The closed canopy conditions and down woody material present within the stands aids in maintaining higher ground moisture levels and lower soil temperatures during the warmer summer months, providing suitable habitat conditions for the tailed-frog (*Ascaphus truei*) and the clouded salamander (*Aneides ferrous*).

The tailed frog lives its entire life in the water. Cold, silt-free, fast moving rocky streams under a forested canopy provide the optimal habitat for this species (Leonard et al. 1993; USDI 1994). Habitat utilized by this species is not present in the intermittent streams present within the proposed thinning units and occupancy is unlikely. As a consequence, this species will not be discussed further in this analysis.

The clouded salamander typically inhabit cavities and crevices in downed logs that are partially decayed or areas beneath loosened bark (USDI 1994). Down logs are present within proposed units and clouded salamanders may occupy them. Existing down logs would be reserved on site, so no consequences to the species are anticipated.

B. SEIS Special Attention Species

Special Attention species are those species designated for protection under Survey and Manage and/or Protection Buffer standards and guidelines in the Northwest Forest Plan as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, and incorporated into the Roseburg District ROD/RMP. These species are not considered special status species, unless also designated under a special status category.

Red tree vole

The red tree vole (*Arborimus longicaudus*) is an arboreal rodent that primarily inhabits the canopy of Douglas-fir trees, where it nests and feeds, though it has been known to feed on needles of western hemlock, Sitka spruce and true firs. Although the red tree vole is more strongly associated with late-seral and old-growth forest, it has been documented in younger stands of the type proposed for treatment.

The requirements for pre-disturbance surveys for the red tree vole are triggered when the average conifer diameter of a stand is equal to or greater than 16 inches, or the average diameter is 10-16 inches with remnant conifers equal or greater than 21 inches in diameter, or 120 years or greater in age (USDA, USDI. 2000a). Proposed Units E1, E2, E5, J, L and M have average conifer diameters that trigger the requirement for surveys. Protocol surveys of these units identified 12 active nest sites and 29 inactive nest sites.

C. Riparian Associated Species

Several species of terrestrial mollusks inhabit proposed units in association with Riparian Reserves, including *Ancotrema sportella*, *Haplotrema vancouverense*, *Prophysaon andersoni*, *Vertigo columbiana*, and *Ariolimax columbianus*. Various amphibians, including species of frogs and salamanders (Dunn's, Pacific giant, and the rough-skinned newt) may be present. None of the streams bordering the proposed thinning units are perennial, and intermittent streams may provide only limited habitat and populations of these species would not be expected to be numerous.

III. Fish

While all of the subwatersheds in the proposed project areas contain fish-bearing streams, there are no fish-bearing streams in or adjacent to any of the proposed thinning units. Anadromous species are present in the subwatersheds within the South Umpqua River basin, but natural barriers block anadromous passage to the Camas Valley and Upper East Fork Coquille subwatersheds in the Coquille River basin. The first barrier on the Middle Fork Coquille River is at Bradford Falls, approximately 2.5 miles inside the watershed boundary. This barrier precludes passage by coho salmon, though anecdotal evidence suggests that steelhead trout are able to pass the falls during high water episodes. A second barrier blocks all anadromous passage, 1.5 miles upstream from the confluence of Twelvemile Creek and the Middle Fork Coquille River, approximately 12 miles downstream of the project area. Brewster Canyon blocks passage on the East Fork Coquille River, approximately 15 miles downstream of the project area.

Comprehensive fish census or distribution surveys have not been conducted in any of the project drainages. Estimated distribution limits in the South Umpqua River basin are based on Oregon Department of Fish and Wildlife (ODFW) observations made during aquatic habitat surveys, and the results of past electro-shocking. Distribution limits for resident fish in the Coquille River basin are based on personal observations. These estimated limits are displayed in Table 3.

Table 3: Limits of Fish Distribution

Proposed Thinning Unit	Subwatershed(s)	Approximate Distance To Anadromous Fish (miles)	Approximate Distance to Resident Fish (miles)
A & F	Upper EF Coquille	>12.0	0.5
B	Upper EF Coquille	>12.0	1.0
C & E3	Upper EF Coquille	>12.0	1.5
E1 & E2	Camas Valley	>15.0	0.5
E4 & E5	Upper EF Coquille	>12.0	2.0
E6	Upper EF Coquille	>12.0	1.25
G, H1, H2, & H3	Upper EF Coquille	>15.0	0.5
J	Days Creek	0.5	0.5
K	Coffee Creek	8.0	1.5
L	Days Creek	1.0	1.0
M	St. John Creek	4.5	0.5

Aquatic habitat inventories were conducted by the ODFW on Coffee Creek, Days Creek, and St. John Creek. Overall habitat conditions for the Coffee Creek and Days Creek subwatersheds were described as "Poor", and St. John Creek as “Fair.” An ODFW rating of "Fair" is equivalent to an "At Risk" determination and “Poor” to “Not Properly Functioning” in the National Marine Fisheries Service Matrix of Pathways and Indicators (MPI) (USDC 1996). The MPIs for hydrologic units in which thinning is proposed are located in Appendix C of this document. Habitat elements for pool frequency, pool quality, off-channel habitat and refugia were generally considered "At Risk" for Coffee Creek and Days Creek. The indicator for physical barriers is considered to be “Not Properly Functioning” for Days Creek, but is described as “Properly Functioning” for Coffee Creek. Stream substrate was considered “Properly Functioning” in both these subwatersheds. For St. John Creek, habitat components were generally considered “At Risk” with pool quality and large woody debris described as “Not Properly Functioning.”

Aquatic habitat inventories for the Middle Fork Coquille River watershed also indicate conditions that are “At Risk” and trending toward “Not Properly Functioning”. Habitat conditions for the East Fork Coquille River watershed are considered similar, based upon professional observations and judgement. These descriptions reflect overall watershed conditions, including the areas below natural barriers.

Large amounts of down woody debris were observed in Riparian Reserves in the Middle and East Fork Coquille watersheds. The material is primarily of 35-60 year old logging debris, in an advanced stage of decay. This habitat element is considered to be “Not Properly Functioning” because current suppression mortality only contributes small diameter material and the stands lack the large trees that would provide near and long-term sources of additional large wood.

A. *Threatened and Endangered*

The Oregon Coast coho salmon (*Oncorhynchus kisutch*) Evolutionary Significant Unit was listed as threatened (Federal Register August 10, 1998), and critical habitat was subsequently designated. The species is present in the South Umpqua River, and below natural barriers in the Middle Fork and East Fork of the Coquille River.

B. *Proposed or Candidate*

The Oregon Coast steelhead trout (*Oncorhynchus mykiss*) Evolutionary Significant Unit was listed as a candidate species (Federal Register March 19, 1998). It is also present in the South Umpqua River, and below natural barriers in the Middle Fork and East Fork of the Coquille River.

The Oregon Coast cutthroat trout (*Oncorhynchus clarki clarki*) Evolutionary Significant Unit is under review by the U.S. Fish and Wildlife Service for candidate status. The National Marine Fisheries Service listed the Oregon Coastal cutthroat trout a candidate species (Federal Register April 5, 1999), and transferred jurisdiction to the U.S. Fish and Wildlife Service (Federal Register April 21, 2000).

The Umpqua chub (*Oregonichthys kalawatseti*) is listed as a Category 2 candidate species by the U.S. Fish and Wildlife Service. It has been documented in the main stem of the Umpqua River and in the South Umpqua River, but does not reside in project drainages and would not be affected by the proposed thinning.

C. *Bureau Sensitive*

The Pacific lamprey (*Lampetra tridentata)* is a U.S. Fish and Wildlife Service Species of Concern and listed as Bureau Sensitive (BLM Manual 6840). The distribution of this species is probably comparable to the steelhead trout. It has been documented by the ODFW in the main stem of the of the Umpqua River and in the South Umpqua River, but does not reside in drainages in which thinning is proposed and will not be discussed further in this analysis.

IV. Vascular and Non-Vascular Plants

A. Special Status Species

The following vascular plants were identified as species which could occur within the proposed project areas, based on available habitat conditions.

Eucephalus vialis (*Aster vialis*)
Cimicifuga elata
Cypripedium montanum
Perideridia howellii
Bensoniella oregona
Cypripedium fasciculatum
Lupinus sulphureus var.*kincaidii*
Polystichum californicum

Kincaid's lupine (*Lupinus sulphureus* var. *kincaidii*) is a Federally-threatened species with four known locations on BLM-managed lands in the South River Resource Area. The remaining species listed are designated as Bureau Sensitive or Bureau Assessment.

B. SEIS Special Attention Species

The following list of SEIS Special Attention Species are expected to occur on the Roseburg District.

Bryophytes
Tetraphis geniculata
Schistostega pennata

Fungi
Bridgeoporus nobilissimus
Craterellus tubaeformis
Hydnum umbilicatum
Otidea leporina
Ramaria stuntzii
Spathularia flavida

Lichens
Bryoria tortuosa
Hypogymnia duplicata
Lobaria linita
Pseudocyphellaria rainierensis
Ramalina thrausta

Moss
Buxbaumia viridus

V. Water Quality/Resources

Most precipitation in the South River Resource Area occurs in the form of rain, between November and March. Peak stream flows occur between November and March, with lowest stream flows between July and October. In summer base flows are extremely low, occasionally resulting in perennial streams going dry.

The Oregon Department of Environmental Quality (ODEQ) establishes water quality standards designed to protect the most sensitive beneficial use of each water body (Miner 1996). The most sensitive beneficial use water in the downstream vicinity of proposed thinning units, is as habitat for resident fish and aquatic wildlife, and as spawning and rearing habitat for salmonid species of fish. As previously noted, anadromous species are absent from the Upper Middle Fork and Upper East Fork Coquille, so concerns for aquatic habitat quality in this portion of the project area would be in relation to resident fish and aquatic wildlife.

In its 303(d) listing of Water Quality Limited Water Bodies in 1998, the ODEQ listed the Middle Fork and East Fork of the Coquille River as water quality limited for elevated temperatures, primarily the consequence of lack of shade and low summer flows.

The South Umpqua River is listed for elevated temperature for the same reasons as the Middle and East Forks of the Coquille. Additional water quality limitations include flow modification resulting from irrigation withdrawals, acidic pH caused by agricultural run off, habitat modification, and sediment.

Habitat modification is primarily the result of a lack of large woody debris within stream and river channels. ODFW aquatic habitat surveys also form the basis for listing approximately 23 miles of streams in the South Umpqua River watershed for sediment, though none of these listed streams are within or adjacent to proposed thinning units.

Approximately 17 miles of river and tributary streams in the South Umpqua River watershed are listed for excess fine sediment, based primarily on ODFW aquatic habitat surveys.

Portions of project areas are located in the transient snow zone between 2,000 and 5,000 feet in elevation above sea level. Timber harvest within the transient snow zone has been identified as potentially affecting peak flows. Timber harvest can create openings where higher than normal snow accumulation may occur. Higher than normal peak flows may result from warm rain on snow events and rapid melting of the unconsolidated snow pack (Harr and Coffin, 1992).

The Hydrologic Recovery Procedure (USDA 1990) was developed by the Umpqua National Forest in 1990 as a model for estimating the potential cumulative effects on peak flows of forest management activities in the transient snow zone in the southern Oregon Cascades, and determining whether additional analysis is required. The model considers all lands in a drainage within the transient snow zone, irrespective of ownership. It assumes that if less that 75 percent of lands in the transient snow zone within a given drainage are hydrologically recovered, timber harvest could result in measurable increases in peak flows. Areas are considered recovered when forest stands have an average diameter of eight inches or more, and a canopy closure of at least 70 percent. Lands above or below the transient snow zone are considered 100 percent recovered. Table 4 illustrates the current projected level of recovery for drainages in the South Umpqua River watershed, in which thinning would be conducted. Recovery levels are not projected for drainages in the Coquille River basin because the validity of the Hydrologic Recovery Procedure has not been established for the Coast Range.

Table 4 - Acres in the Transient Snow Zone (TSZ) and Percent of Hydrologic Recovery

Drainage	Total Acres in Drainage	Acres in TSZ	Percent of Acres in TSZ	Current Level of Hydrologic Recovery
Granite Creek	1,895	1,181	62	96.8
May Creek	2,592	381	15	99.2
Middle Days	3,809	973	26	96.6
St Johns	4,744	2,227	47	94.4
Upper Coffee	3,363	2,911	87	91.5
Upper Coquille	6,467	1335	21	N/A
Upper EF Coquille	5,426	4564	84	N/A

Roads have been identified as potential contributors to increases in peak flows, landslides, and sediment (Beschta 1978, Wemple et al. 1996). Roads may extend the drainage network by channeling run off down road surfaces and into ditchlines, and by intercepting subsurface flows that are then channeled into the road drainage system. These flows may be concentrated, rather than dispersed, and delivered directly to streams at a higher than normal rate.

Forest roads can also contribute fine sediment to streams (Reid 1981) where it can degrade stream bed substrates and spawning habitat. Sediment delivery may be increased by the downcutting of ditchlines, and erosion of unprotected road surfaces. Undersized stream crossings may increase erosion by accelerating stream velocities which may increase down cutting of stream beds and channels, and generation of additional sediments. Concentration of drainage may also contribute instability and erosion slopes and road fills, triggering slope failures or landslides that contribute large quantities of sediment.

Some of the roads that access proposed thinning units show obvious signs of surface erosion. Among these are roads with inadequate or improper drainage, and unstable cutbanks and failing fill slopes that are actual or potential sources of additional sediment.

Figures for current road density, number of stream crossings, and the percentage of the land base managed by the BLM in the project drainages is presented in Table 5..

Table 5 - Affected Drainages - Road Densities, Stream Crossings, Percent BLM Ownership

Drainage	Area in Square Miles	Road Miles	Road Density miles/sq. mile	Number of Stream Crossings	Percent BLM Administered
Granite Creek	2.96	9.93	3.35	21	44
May Creek	4.05	12.72	3.14	41	16
Middle Days	5.95	26.73	4.49	62	43
St Johns	7.41	35.22	4.75	124	42
Upper Coffee	5.26	9.92	1.89	14	89
Upper Days	8.14	35.83	4.40	79	64
Upper EF Coquille	8.48	51.82	6.11	171	56
Upper Coquille	10.10	51.38	5.09	69	39

VI. Soils

Section 19 of T. 28 S., R. 8 W. is within the Coast Range Geologic Province. Soil depths are generally 20 to 40 inches deep, sometimes reaching 60 inches in depth. Soils in proposed Units A, B, C, E2 - E6, F, G, and H1 - H3 are generally loamy textured with a clay content of 18 to 30 percent, making them moderately susceptible to bare surface erosion. These soils are generally well-drained with 10 to 40 percent rock content in the form of gravel-sized fragments.

Portions of Units B, F and G were tractor-yarded in the early 1960s. An on-ground inspection and evaluation determined that some displacement of organic and surface horizons had occurred, but compaction as indicated by increases in bulk soil density was not a problem for soil productivity.

On the upper portions of Unit E1, along the ridge top, soils are 10-40 inches deep with visible outcrops of unweathered sandstone bedrock. The soils are well drained with a low potential for bare surface erosion because of a high rock fragment content of up to 75 percent. On the lower slopes, the soils are less well drained because of a higher silt content. Some minor slumping has occurred in a headwall in the northeast corner of the proposed unit. Soils on the lower slopes are less well drained and moderately susceptible to bare surface erosion because of higher clay content and lower rock fragment content. In the winter months water tables may rise to within 8 inches of the soil surface.

Proposed Units L and M are within the Klamath Mountain Geologic Province. Soils are formed from slightly metamorphosed sandstones and siltstones and are 30 to 60 inches deep. These soils are mostly well drained, but in the winter months the water table may rise to within 25 inches of the soil surface on concave slopes. Soils are loamy textured with a 15 to 30 percent clay content and are moderately susceptible to bare surface erosion. Rock fragment content is 10 to 30 percent in the form of soft gravel-sized fragments. Soils in proposed Unit J are similar in origin, composition, and character to those in Units L and M. There is noticeable seepage from the cutbank of Road No. 29-2-19.2. Several road failures are likely the result of fill saturation caused by this seepage.

Proposed Unit K is located within the Cascade Geologic Province. Soils originated from sedimentary materials and have a moderate potential for bare surface erosion. They are well-drained and loamy textured with a clay content of 25 to 35 percent, and are 40 to greater than 60 inches deep. Rock fragment content ranges from 10 to 30 percent in the form of soft gravel sized fragments.

VII. Noxious Weeds

Noxious weeds are a problem throughout the United States. The BLM Oregon State Office reported that acres infested nationwide increased 14 percent per year, on average, between 1985 and 1991. Exact acreage figures on the Roseburg District are not available, but based on an assumption of 14 percent, this would equal an annual increase of at least 1,000 acres, as described on page 7 of the *Roseburg District Integrated Weed Control Plan and Environmental Assessment* (USDI 1995).

This environmental assessment contains a strategic control plan and is tiered to the *Northwest Area Noxious Weed Control Program Environmental Impact Statement* (USDI 1985) and *The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program* (USDI 1987).

The Oregon Department of Agriculture (ODA) has developed a rating system for noxious weeds comparable to that contained in BLM Manual 9015 - Integrated Weed Management. The ODA Noxious Weed Rating System designates weeds as types "A" "B," and "T," which are equivalent to types "A," "B," and "C" described in BLM Manual 9015 - Integrated Weed Management. Species may be classed in multiple categories.

Type "A" weeds are of known economic importance which occur in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

Type "B" weeds are of economic importance which are regionally abundant, but of limited distribution in some counties. Where implementation of a fully-integrated statewide management plan is infeasible, biological control shall be the main approach.

Type "T" weeds are designated by the State Weed Board as target weed species on which the ODA will implement a statewide management plan.

Examples of noxious weeds suspected or previously documented in the project areas may include but are not limited to:

"A" Noxious Weed	**"B" Noxious Weeds**	**"T" Noxious Weeds**
Woolly distaff thistle	Bull thistle	Yellow starthistle
Purple starthistle	Canada thistle	Woolly distaff thistle
	Rush skeletonweed	Rush skeletonweed
	Scotch broom	

Implementation of the *Integrated Weed Control Plan* by the District would continue in an effort to prevent or reduce rates of spread of weed populations, through aggressive eradication of target species and implementation of management practices that reduce the potential for spreading weed seed to uninfected areas. As a consequence, no demonstrable increase or decrease in the extent of noxious weed populations are anticipated regardless of the alternative selected, and no further discussion of noxious weeds is necessary in this analysis.

VIII. Cultural and Historical Resources

A review of catalogued sites did not identify any known historic or prehistoric sites within any of the proposed thinning units, though several prehistoric sites have been documented within a mile of proposed units located in Section 9 of T. 30 S., R. 2 W., and Section 19 of T. 29 S., R. 2 W. These sites are located along upland ridges in these areas. No historic or prehistoric sites have been located and documented in the vicinity of any proposed units located in Sections 3 and 4 of T. 30 S., R. 3 W., or Section 19 of T. 28 S., R. 8 W. No additional sites were located in field surveys. Documentation has been submitted to the Oregon State Historic Preservation Office for their concurrence. In the absence of any cultural or historical resources, no consequences would be expected from the proposed action and further discussion in this analysis is unnecessary.

IX. Fuels Management, Rural Interface and Air Quality

There are no lands zoned as R5 for 1-5 acre residential properties within ¼-mile of any of the proposed units which would require special management consideration.

There are no plans to use any prescribed burning for site preparation. Some limited pile burning is anticipated at landings or adjacent to roads for hazard reduction. Any burning would be done in accordance with the Oregon Smoke Management Plan. Piles would be burned during rainy periods when winds would disperse smoke, and precipitation would wash particulates from the air. As a consequence, no impacts to air quality are expected and it will not be discussed further in this analysis.

X. Recreation and Visual Resources

There are no developed recreational sites in the general vicinity of any proposed thinning units. Recreational use would be of a dispersed nature, including activities such as hunting, plant gathering, and wildlife observation. The opportunities to pursue these activities would remain unaffected by the proposed action.

Lands in the project areas are designated as Class III and IV for Visual Resource Management. Management Action/Direction allows for moderate levels of change to the characteristic landscape (ROD/RMP, pp. 52-53). Commercial thinning would be consistent with these objectives because it would retain the predominant visual perspective.

No consequences to either of these resources is anticipated, and no further discussion is necessary in this analysis.

Chapter 4
ENVIRONMENTAL CONSEQUENCES

This chapter discusses how the specific resources would or would not be affected in the short term and long term, by implementation of the alternatives contained in this analysis. The discussion also identifies the potential impacts or consequences that would be expected.

I. Alternative 1 - No Action

A. Timber/Vegetation

General Forest Management Areas

There would be no commercial thinning in these areas. Other forest stands within the Matrix allocations would be analyzed for commercial thinning or regeneration harvest in order to meet the allowable sale quantity objectives of the South River Field Office.

In the absence of any treatments or natural disturbances, the relative densities of these forest stands would continue to increase. The average relative density index presently averages 0.62, with 11 units exceeding this figure. As the relative density increases with time, canopies would become closed, individual tree crowns would recede, suppression mortality would increase, and growth of the remaining trees would stagnate.

As the percentage of live crown in individual trees decreases, tree vigor would decline, rendering individual trees less able to respond to disturbance and more susceptible to wind damage, insect and disease. The ability of individual trees to release in response to a future thinning would also decrease as crown ratios decline below 30 percent.

Organon growth modeling was used to project future development of these stands if left untreated and grown to an age approximating the culmination of mean annual increment. Culmination of mean annual increment is simply described as the point in time at which a stand achieves its greatest annual increase in volume growth, and after which that rate of growth declines.

The age at which various stands would reach the culmination of mean annual increment varies with site index and is reflected in the different lengths of time over which stands were grown in Organon to generate the data in Table 6. This data may be compared with the Current Stand Conditions contained in Table 2 (p. 8) as a means of gaging stand development. The values for Units A, B, F, G and H would also be representative of untreated Riparian Reserves.

Table 6 - Stand Conditions at Culmination of Mean Annual Increment with No Treatment

Unit	Age	Trees per Acre	Quadratic Mean Diameter (in.)	Percent Crown Closure	Basal Area in Sq. Ft.	Relative Density
A, B, F, G & H	81	191	18.7	96	365	0.984
C	91	159	20.5	100	367	0.955
E1/E2	112	92	23.5	96	279	0.687
E3/E6	91	169	19.7	94	358	0.946
E4	97	150	20.7	91	349	0.905
E5	122	116	25.6	100	415	0.989
J	127	111	23.0	97	322	0.801
K	82	144	21.6	93	368	0.938
L	124	125	22.6	91	348	0.872
M	120	123	23.1	92	358	0.889

Riparian Reserves

An objective of the Aquatic Conservation Strategy (ACS) is to maintain and restore the species composition and structural diversity of plant communities in riparian zones. Another objective is the maintenance and restoration of habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species (ROD/RMP, p. 20).

Single-storied conifer stands would not develop into multi-storied stands without some form of disturbance. Shade-tolerant conifer species such as grand fir, western redcedar and western hemlock would remain suppressed in the understory. Conifer and hardwood regeneration would not occur in the absence of canopy gaps and openings because there would not be sufficient sunlight for germination and growth. The numbers of large diameter snags, and large logs on the forest floor would diminish as they rot away, because suppression mortality would primarily occur in smaller trees, providing smaller diameter material that would decay faster and not persist over time. Suppression mortality would eventually eliminate most hardwoods in the Riparian Reserves, resulting in simplification of vegetation and habitat components that would not provide for a broad range of terrestrial and riparian-dependent species. This would not be consistent with ACS objectives, or the objective of developing the structural diversity and components characteristics of late-successional forest habitat that would also provide dispersal paths for old-growth dependent species of terrestrial wildlife.

B. Wildlife

1. Special Status Species

a. Northern Spotted Owl

Under an alternative of no action there would be no direct consequences to northern spotted owls, as stand conditions would generally remain unchanged. Portions of stands allocated as General Forest Management Area would continue to provide dispersal and foraging habitat until they are eventually harvested. Stands with the Riparian Reserves would also continue to provide foraging and dispersal habitat. These areas would not be subject to future harvest, but in the absence of density management or some natural disturbance, development of late-successional characteristics that provide nesting habitat would be delayed by many decades.

b. Marbled Murrelet

Nesting habitat for the murrelet is characterized by large trees with large lateral limbs, deformities, and broken tops that provide nesting platforms. The larger trees that possess these structural characteristics tended to develop under more open-grown conditions.

There would be no direct consequences to murrelet nesting habitat because there would be no removal of trees that provide nesting opportunities. Portions of the stands allocated as General Forest Management Area would eventually be harvested and would not be expected to develop characteristics providing suitable nesting habitat. Trees within Riparian Reserves would continue to grow under closed conditions and increasing competition, resulting in receding crowns and natural limb pruning. This would not promote lateral crown development and the growth of larger limbs that would provide future nesting opportunities.

2. SEIS Special Attention Species

An alternative of no action would not have any direct impact on the red tree vole. Although the species is thought to favor old-growth forest, current stand conditions would continue to provide habitat, with closed canopies providing cover and dispersal paths.

3. Riparian Associated Species

No direct consequences to species using riparian areas as primary or secondary habitat would be expected in the near term. Habitat utilized by these species would remain intact and available at current levels. In the long term, stands would mature without the development of the structural diversity and characteristics typical of late-successional forest habitat. Recruitment of future sources of large woody debris that provide habitat for many species would be interrupted

until trees are greater than 24 inches in diameter and competition results in suppression mortality among these larger trees. While the Riparian Reserves would continue to provide usable habitat for some species, the simplification of stand structure would not provide the full range of habitat niches typically present in late-successional forests, and subsequently, would not support the full range of species normally found there.

C. Fish

No direct impacts to fisheries resources would occur as a consequence of the no action alternative. Fish populations and habitat would continue to be indirectly and cumulatively affected by improperly functioning watershed conditions.

Roads, stream crossings and culverts identified as chronic sources of sediment would not be renovated or decommissioned. Streams would remain subject to abnormally high levels of sedimentation and the degradation of water quality and spawning substrates. These conditions would likely have a continuing adverse affect on spawning habitat, and normal feeding and life-cycles of fish.

Without the application of density management in Riparian Reserves, there would be no acceleration in the growth rate of trees located in those areas most likely to contribute large wood to stream channels (FEMAT 1993). The stands would remain largely uniform in age, resulting in a diameter distribution and species composition leading to the development of simplified size and age class distributions in upland and riparian areas. The outcome would be forest stands dominated by smaller trees. This simplified structure within Riparian Reserves would be retard stand development and would be inconsistent with the management objective of developing old-growth stand characteristics. The growth of large diameter trees that would provide for the future recruitment of large wood into streams and riparian areas would be delayed by decades. Large wood providing habitat and organic nutrients would be unavailable in the near term, because suppression mortality would only provide smaller sized material which would not persist over time.

D. Vascular and Non-Vascular Plants

There would be no direct impacts to any special status or special attention species as a consequence of no action, because there would be no management activities which would disturb or modify present habitat and micro-climate conditions. Those species dependent upon early and mid-seral forest habitat would be indirectly affected in the long term as the normal processes of succession gradually modify habitat, allowing the establishment of new plant communities better suited and adapted to the new conditions.

E. Water Quality/Resources

Under an alternative of no action, there would be no timber thinning and no potential affect on the timing and magnitude of peak and base flows. No temporary road construction or renovation to existing roads would occur. No proposed road decommissioning, or correction of drainage and sediment problems associated with existing roads in the project area would occur at this time. These restoration opportunities would require a separate analysis of environmental consequences and authorization under separate decisions.

The period of time necessary to grow large trees in the Riparian Reserves would be lengthened by decades. In the interim, there would be insufficient large down wood for in-stream structure and habitat, and the protection of stream morphology and function. Similarly, the development of shade provided by larger trees that moderates water temperatures would also be lengthened.

F. Soils

Under an alternative of no action, potential soil disturbance, displacement, erosion, compaction and productivity loss associated with timber harvest would not occur at this time. Other areas in the Matrix allocations would be identified for harvest, and potential impacts to soils would occur there.

Road renovation to correct fill failures and slope erosion would not be implemented at this time, potentially resulting in larger slope failures or landslides and increased surface erosion. Specifically, fill slope failures below Road No. 29-2-19.2 would continue, resulting in further loss of portions of the road prism. The cutoff road between Road Nos. 28-8-19.6 and 28-8-20.1 and the ditch line of Road No. 30-2-9.3 would continue to erode.

II. Alternative 2 - Proposed Action

A. Timber/Vegetation

General Forest Management Areas

The thinning treatments would primarily remove suppressed and intermediate trees, representing 25-35 percent of stand basal area. This would allow the utilization of material that would otherwise be lost to suppression mortality, disease or insects. The relative stand densities would be reduced to between 0.4 and 0.46, reflecting the optimal growth range for Douglas-fir. Retention and release of the dominant trees would increase their vigor and growth by providing additional light and growing space. Increasing the vigor of individual trees would make them less susceptible to loss from natural disturbances. The increased growth rates would result in larger trees of higher value, and an increase in total harvest volume when compared with no treatment. Table 7 summarizes anticipated stand conditions immediately following treatments, while Table 8 compares the affects of treatment and no treatment on stand structure and average tree size at the culmination of mean annual increment (CMAI).

Table 7 - Post-Treatment Stand Conditions

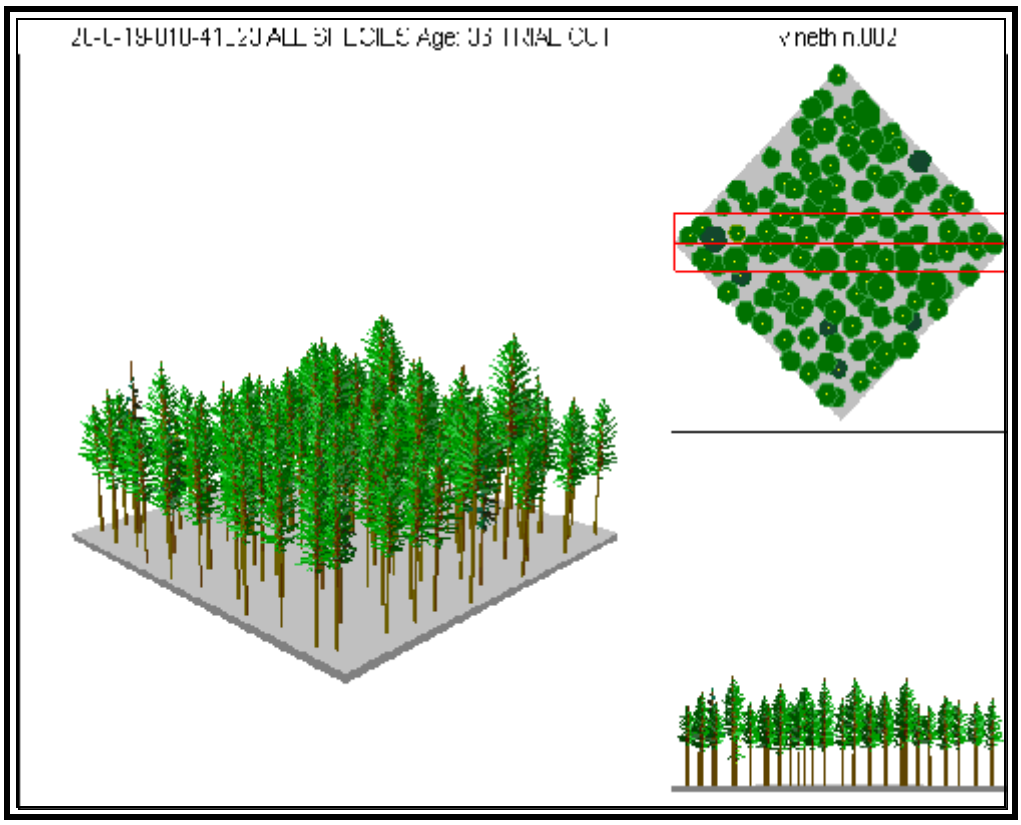
Unit	Trees per Acre	Quadratic Mean Diameter (in.)	Percent Crown Closure	Basal Area in Sq. Ft.	Relative Density
A, B, F, G & H	120	14.4	63	135	0.405
C	150	12.6	68	130	0.410
E1/E2	71	19.5	59	155	0.412
E3/E6	147	12.7	62	130	0.409
E4	164	11.8	61	125	0.405
E5	58	22.5	64	160	0.402
J	69	21.8	62	180	0.457
K	122	14.2	58	135	0.406
L	118	14.8	60	140	0.415
M	116	14.9	60	140	0.414

Table 8 - Stand Density and Tree Diameter at CMAI: Thinned vs. Unthinned

Unit	Age	Trees per Acre Thinned	Trees per Acre Unthinned	Quadratic Mean Diameter Thinned	Quadratic Mean Diameter Unthinned
A, B, F, G & H	81	110	191	23.4 in.	18.7 in.
C	91	134	159	22.9 in.	20.5 in.
E1 & E2	112	71	92	25.8 in.	23.5 in.
E3 & E6	91	130	169	22.7 in.	19.7 in.
E4	97	129	150	22.8 in.	20.7 in.
E5	122	58	116	30.5 in.	25.6 in.
J	127	68	111	27.0 in.	23.0 in.
K	82	103	144	26.1 in.	21.6 in.
L	124	101	125	25.2 in.	22.6 in.
M	120	101	124	25.5 in.	23.1 in.

Figure 2 was generated using Organon growth modeling and the Stand Visualization System, and depicts the anticipated post-treatment appearance of Units A, B, F & G.

Figure 2



No spread of Port-Orford-Cedar root rot disease (*Phytophthora lateralis*) would be anticipated as a consequence of thinning. Port-Orford-cedar located in proposed thinning units in Section 19, T. 28 S., R. 8 W. appears to be disease-free. Port-Orford Cedar Management Guidelines (USDI 1994) would be applied to reduce the likelihood of introduction of the disease into the area. Thinning operations and timber hauling on unsurfaced roads would be restricted to the dry season. Washing of logging and road construction equipment would be required prior to initial move-in, or at any times where equipment is removed from the project area and later returned.

Riparian Reserves

Variable spacing would retain a projected average canopy closure of 53 percent. There would be a lower stand density, compared to upland areas where marking would be done on a more uniform spacing. The density management treatment within the Riparian Reserves in Units A, B, F, G and H would create a developmental trajectory that would increase structural and species diversity over time, leading to stand development more characteristic of late-successional forest habitat.

Remaining trees would be released, allowing increased growth in height and diameter, along with crown growth and expansion. Organon modeling projects an increase of nearly 5 inches in the average stand diameter for treated stands vs. untreated stands, when grown for 45 years. This would enhance individual tree vigor, and increase the ability of trees to resist and survive disturbance events such as disease, insects, wind and fire. If a fire were to occur, the discontinuity in fuel patterns created by the density management would reduce potential rates of fire spread and the likelihood of broad scale, high intensity fires that could result in stand replacement.

Variable spacing would create small openings and canopy gaps. These gaps would generally be no greater than 30 feet square. These gaps would allow sufficient sunlight to penetrate the canopy and allow regeneration of trees and shrubs which would develop into additional canopy layers and vegetative communities in the understory. This would also release selected hardwoods and allow for their retention in the stands. Figure 3 is a visual approximation of the appearance of stands within Riparian Reserves, following density management.

Figure 3

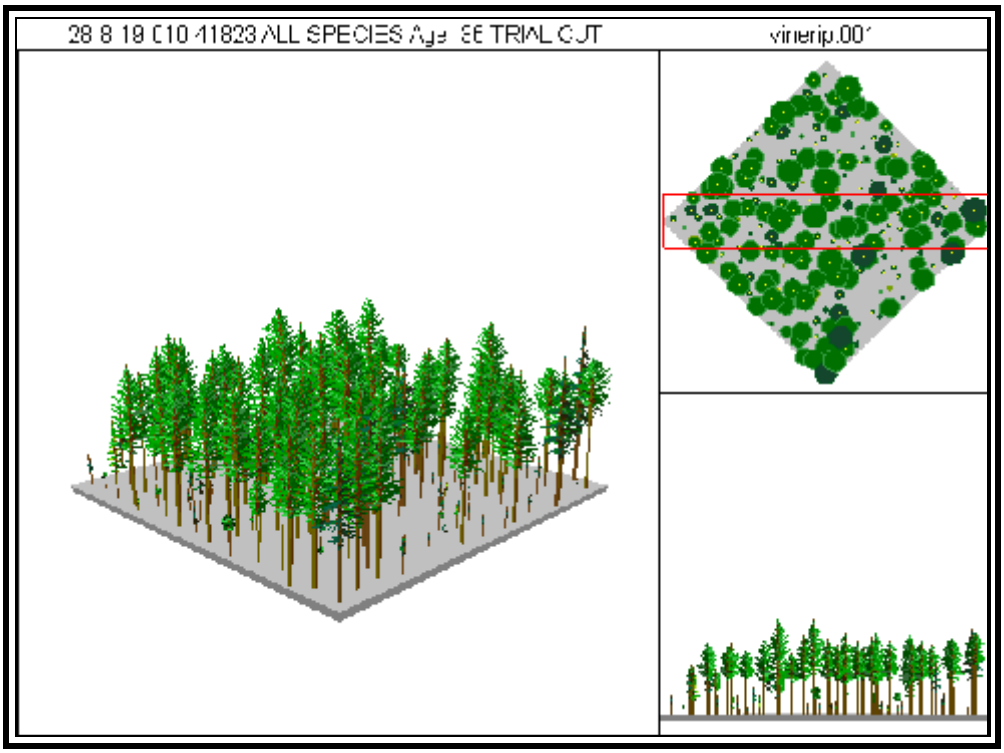


Figure 4 compares the diameter distribution of a representative old-growth stand with the diameter distribution in Riparian Reserves as it currently exists, and as would exist following density management, as projected by Organon modeling.

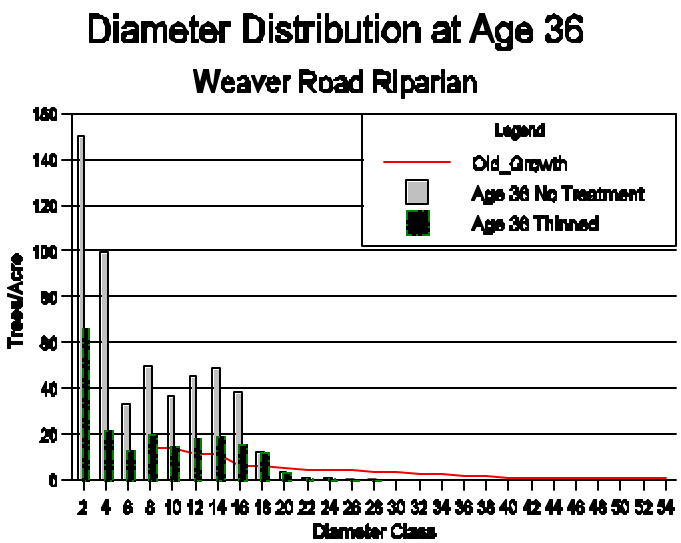


Figure 4

Figure 5 is a similar comparison after the stands have been grown for 45 years, illustrating how the density management would create a growth trajectory that would more closely parallel size class distributions in old-growth forests.

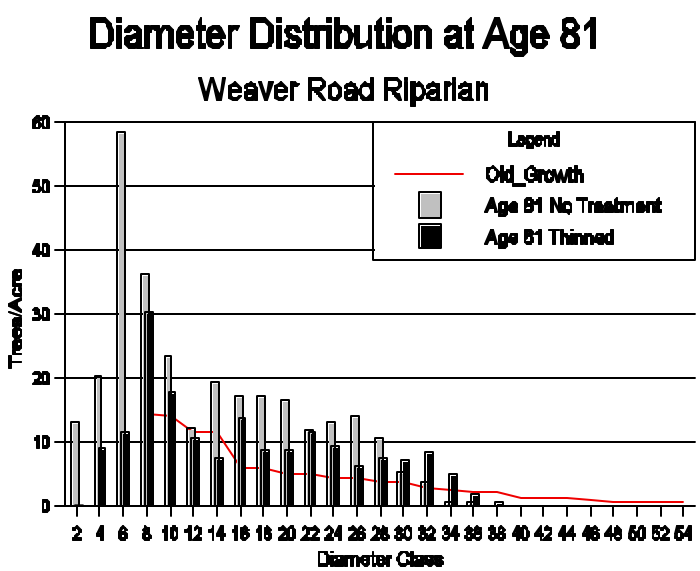


Figure 5

B. Wildlife

1. Special Status Species

a. Northern Spotted Owl

It is anticipated that the proposed thinning/density management would have a minimal affect on the usefulness of the stands as dispersal habitat in the short term. There would be no removal of suitable nesting habitat, as none is presently available. The silviculture prescription would retain a minimum average canopy closure of 50 percent or greater (Table 7) for all proposed thinning units and treated Riparian Reserves. Hardwood and conifer snags not constituting a safety hazard would be retained and buffered with untreated clumps of trees, selected hardwoods would be released and retained as a forest component, large down wood currently on site would be reserved. All trees in Riparian Reserves greater than 18 inches DBH would be retained. In the longer term, the increased structural and vegetative diversity of the stands would provide improved habitat that would lead to a greater abundance of prey and improved foraging conditions for owls, until such time as final harvest of upland stands occurs. Beyond this time, stands within the Riparian Reserves would continue to mature and would develop late-successional habitat characteristics that would provide nesting habitat and dispersal pathways.

As described in *Chapter 3 - Affected Environment* (p. 12) several proposed thinning units are located within a ¼-mile of owl activity centers, and in some instances are immediately adjacent to the activity centers. Thinning operations would have the potential for disturbance of nesting owls. In order to avoid such disturbance, operations on these units would be seasonally restricted.

Unit J is located within a designated Critical Habitat Unit. The proposed thinning should have no short-term affect on the critical habitat unit, because the area would remain functional as dispersal and foraging habitat. Over the long term, the stand would develop additional structure and diversity, and would provide improved foraging and dispersal conditions up to the time of future regeneration harvest.

With the application of seasonal restrictions, the potential for noise disturbance to nesting owls associated with thinning of units within a ¼-mile of some owl activity centers was determined to constitute an extremely low or negligible probability of take. As a consequence, the proposed action would constitute a “may affect, not likely to adversely affect” determination for the species, requiring informal conferencing on the proposed action, and a Letter of Concurrence from the U.S. Fish and Wildlife Service.

b. Marbled Murrelet

Proposed thinning units in Section 19, T. 28 S., R. 8 W. do not presently contain suitable nesting habitat for the marbled murrelet, so there would be no removal or modification of any suitable habitat. Boundaries on proposed Units A, E1, E2 and E4 would be established in such a fashion that no primary constituent habitat elements would be removed, or function of these elements impaired. Density management within the Riparian Reserves would accelerate the growth and development of trees that would provide future nesting opportunities and habitat.

All suitable murrelet nesting habitat within a ¼-mile of the proposed thinning units has been surveyed. No nesting or occupancy was detected. As a consequence, there is not considered to be the potential for disturbance, and no Daily Operational Restrictions are necessary. As a consequence, the proposed action would constitute a "may affect, not likely to adversely affect" determination. Informal conferencing on the proposed action with the U.S. Fish and Wildlife Service has been completed and concurrence with the determination received.

2. SEIS Special Attention Species

Red tree vole sites located during surveys will be protected at such time as project implementation occurs, in accordance with management recommendations in effect at that time. These management recommendations would provide the necessary protection of habitat and microclimate conditions essential for persistence of the red tree vole in the short term. (FSEIS. 1994) In the long term, the proposed action would likely benefit this species through the accelerated development of late-successional forest conditions thought to be favored by the red tree vole.

3. Riparian Associated Species

There could be short-term consequences associated with density management in Riparian Reserves resulting from disturbance or modification of current habitat conditions. No long-term consequences would be expected, because:

1. The physical structure and micro-climatic conditions of intermittent streams in the project areas would be protected and maintained by the establishment of minimum 20-foot no-entry buffers. Further protection would be provided by requirements for directional felling away from the buffers, and a prohibition on yarding through them.

2. Retention of 1-2 acre untreated islands would be centered on the protection of habitat features deemed essential to riparian-dependent species.

3. Thinning in the outer portions of Riparian Reserves would retain a minimum average of 50 percent canopy closure to maintain shade and protect microclimate. Canopy closure would reach or exceed a minimum of 70 percent within 10 years of treatment.

4. Down woody debris would be reserved under contract provisions and retained on site, and would continue to provide habitat for a variety of mollusk and amphibian species.

5. Enhanced riparian conditions and habitat complexity would support greater numbers and diversity of riparian-dependent species.

C. Fish

No direct consequences to anadromous or resident fish would be anticipated as a result of the proposed commercial thinning/density management. The proposed action would not degrade any current environmental condition, and the shortest distance from any proposed thinning unit to stream reaches inhabited by fish is at least a half mile (Table 3, p. 15). Indirect and cumulative impacts directly related to the existing aquatic conditions would continue to affect fish and their habitat.

There would be no measurable changes in habitat access and habitat elements (See MPIs, Appendix C) at the watershed or subwatershed levels. These factors would be maintained or improved at the site level in the long term for the following reasons:

1. None of the proposed road construction would cross perennial streams where the installation of stream crossings would be necessary. The proposed thinning occurs upstream of occupied reaches or natural barriers, and streams in or adjacent to proposed units are intermittent in nature and do not support fish populations. As a consequence, habitat access would remain unchanged.

2. Streambed substrates would be unaffected. While road renovation, thinning operations and timber hauling all have the potential to generate sediment that could degrade substrates and interfere with spawning and feeding, the application of project design features and Best Management Practices would reduce the potential for sediment generation to minimal and localized amounts. The affect on sediment from the application of these project design features and Best Management Practices is discussed in detail in the **Water Quality/Resources** section (p. 37).

3. Current levels of large woody debris would be maintained by reservation of all Decay Class 3, 4 & 5 down wood. All trees in Riparian Reserves greater than 18 inches DBH would be retained to provide a future source of large wood. A post-operational review of thinned units would be conducted to determine if there is an immediate need for additional large wood within the Riparian Reserves. If a determination was made that additional large woody material was

needed, larger reserve trees located within 100 feet of the streams would be selected and felled into the streams.

4. The intermittent streams that exist in or adjacent to some of the proposed thinning units lack surface flow during the summer months necessary to maintain pool habitat, so pool frequency and quality would not be affected in any manner by the proposed treatments and are not relevant habitat concerns.

5. Proposed density management within the Riparian Reserves would not degrade off-channel habitat and refugia in the near term, because the treatments would retain important habitat features and would accelerate the development of late-successional habitat characteristics elsewhere, as previously described. This enhanced habitat complexity would support larger and more diverse populations of riparian-dependent plant, vertebrate and invertebrate species.

The greatest potential effect to salmonids from timber harvest activities is from sediment mobilization. The thinning activities in Middle Fork Coquille Watershed and East Fork Coquille Watershed would not affect steelhead trout, coho salmon, or coho critical habitat because natural barriers preclude these species from migrating into areas that could be influenced by the proposed project. There are no mechanisms for adversely affecting steelhead trout or coho rearing/spawning habitat located 12 to 15 miles downstream, because there is no vehicle by which sediment could be transported downstream. Units J, K, L, and M in the South Umpqua River watershed are not adjacent to any streams which would provide a potential vehicle by which sediment could reach Days Creek, Coffee Creek, or St. John Creek. Timber harvest and hauling activities on unsurfaced roads would occur during the dry season so that the potential for mobilized sediment is not considered an issue. Proposed road renovation would include the application of Best Management Practices designed to prevent the introduction of sediments into streams.

Because the proposed thinning/density management would not degrade environmental factors at the watershed level, and there are no anticipated affects on the sediment regime, it was determined that there was no probability of "take" of individual fish. The proposed thinning and density management would have "no affect" on Oregon Coast coho salmon and Oregon Coast steelhead trout, or designated critical habitat.

D. Vascular and Non-Vascular Plants

Surveys for special status species of vascular plants were completed. None of the species identified as potential occupants in *Chapter 3 - Affected Environment* (p. 16) were located. In the absence of any of these species, there would be no direct consequences from the proposed commercial thinning and density management.

Protocol surveys for Special Attention vascular and non-vascular plant species were completed. Surveys identified the following in the project areas: eight occurrences of *Buxbaumia viridis*, six of *Craterellus tubaeformis*, eight of *Hydnum umbilicatum*, one of *Otidea leporina*, and two of *Ramaria stuntzii*. These sites would be protected at such time as project implementation occurs, in accordance with management recommendations in effect at that time. These management recommendations would provide the necessary protection of habitat and microclimate conditions essential for persistence of these species (FSEIS, 1994).

Indirect consequences would occur as natural successional processes eventually modify habitat conditions and allow for the establishment of new plant communities.

E. Water Quality/Resources

Peak Flows - The potential for changes in peak flows and water yield affecting the timing and magnitude of stream flows would be negligible.

Research on stream flows (Curran 1999) found that spill resistance from step-pool reaches created by large wood contributed 90 percent of the friction loss responsible for reducing flow velocities in some headwater streams in Western Washington. This potentially delays flow from these tributaries during storm events and reduces peak flows downstream. Reservation and potential supplementation of large down wood would maintain step pools which could moderate peak flow events during the rainy season.

The HRP model assumes that peak flows could increase if hydrologic recovery is reduced to a level below 75 percent. As summarized in Table 9, all of the project drainages in the South Umpqua River basin would remain above the 75 percent recovery threshold. The model also assumes that the proposed harvest was a regeneration harvest instead of a commercial thinning/density management. The proposed treatments would maintain in excess of 50 percent canopy closure (Table 7, p. 29), with recovery to greater than 70 percent within 10 years. As a consequence, the effect on hydrologic recovery and peak flows would be substantially less than the model projects. HRP analysis was not conducted for drainages in the Coquille River basin because use of the model has not been verified for the Coast Range, but similar outcomes would be anticipated.

Table 9 - Post-Treatment Hydrologic Recovery

Drainage	Acres in TSZ	Percent of Drainage in TSZ	HRP Before Thinning (Percent)	HRP After Thinning (Percent)
Granite Creek	1,181	62	96.8	96.1
May Creek	381	15	99.2	99.1
Middle Days	973	26	96.6	96.3
St Johns	2,227	47	94.4	94.1
Upper Coffee	2,911	87	91.5	91.4
Upper Days	3,377	65	90.5	89.5
Upper EF Coquille	4564	84	NA	NA
Upper Coquille	1335	21	NA	NA

Water Temperature - Density management within Riparian Reserves would not affect stream temperatures. Variable width "no-entry" buffers along streams would retain direct overhead shading. In addition, all of the streams within or adjacent to proposed units are intermittent in nature and provide little or no surface flow to perennial stream reaches during the critical summer period when elevated stream temperatures are of concern.

Sediment - Management activities associated with the proposed alternative all have the potential to increase sediment, but the risks would be considered negligible in the short term, and overall sediment would likely be reduced in the long term because:

1. "No-entry" buffers would prevent disturbance to stream channels and stream banks where exposure of bare soil would otherwise increase the potential for surface erosion above normal levels. These buffers would intercept surface run off and potential sediment from upland areas.

2. The retention of large wood in the streams would aid in the capture and storage of sediment, preventing its transport to downstream reaches inhabited by fish.

3. Temporary roads would be located on stable ridge top locations requiring minimal excavation and disturbance of normal slope hydrology. Thinning and hauling on units accessed by temporary roads would be seasonally restricted, reducing the potential for sediment generation and transport during storm events.

4. Road renovation would correct drainage deficiencies and ditch line erosion through the installation of additional cross drain culverts. Stabilization of fills and cut slopes would reduce surface erosion and the potential for slope failures that could mobilize large quantities of sediment.

5. The cut-off between Road Nos. 28-8-19.6 and 28-8-20.1 would be blocked and decommissioned, and Road No. 28-8-20.1 would be water barred and blocked to traffic. This would restore normal drainage and prevent use which would cause surface erosion, particularly during winter months.

6. The principal haul routes in the East Fork Coquille are paved and would not yield any sediments from hauling during winter months and storm events.

Large wood - Density management would not reduce present levels of large wood with Riparian Reserves, because existing Decay Class 3, 4 & 5 wood would be reserved under contract stipulations. If needed, additional trees would be felled into streams to supplement current levels. Density management would accelerate the growth of the residual trees so that larger trees would become available for recruitment into streams decades earlier than would otherwise occur.

Channel Conditions - There would be no affect on present channel configuration and structure associated with density management within the Riparian Reserves. The variable width “”no-entry” buffers, in conjunction with directional felling and a prohibition on yarding any material from or through the buffers, would protect stream channels and prevent degradation of stream banks, stream beds, and stream side vegetation.

Drainage Network and Road density - There would be no increase in the drainage network associated with the proposed action. Proposed construction of 0.36 miles of permanent road would occur on a ridge top location where it would not alter slope hydrology. Temporary roads would be built in similar locations and would be used and decommissioned in the same operating season, so that they would not become an extension of the drainage network. Subject to agreement by reciprocal rights-of-way holders, approximately 2.35 miles of road would be decommissioned which would reduce the drainage network by removing culverts and obliterating ditch lines. These same actions would also reduce road densities at the site level, though the changes would not be measurable at the watershed scale.

Riparian Reserves - A stated purpose of Riparian Reserves is to maintain and restore riparian structures and functions of intermittent streams (ROD, p. B-13). Density management in Riparian Reserves would accelerate the development late-successional vegetative and habitat characteristics in these managed second-growth stands in a shorter time period than would naturally occur. The release of residual trees would also increase the growth rates of trees in the areas most likely to contribute large wood to stream channels (FEMAT, pp. V-26 & V-27), and allow development at a rate comparable with trees in thinned areas outside of the Riparian Reserves. A failure to treat the Riparian Reserves would create a situation where the largest trees would be furthest from stream channels and have little or no chance of interacting with the streams.

F. Soils

Commercial thinning, density management, and road associated activities could potentially cause localized soil compaction, surface erosion and productivity loss.

To reduce the potential for surface erosion associated with road construction, renovation, and decommissioning areas of exposed soil would be seeded and mulched. Temporary roads would be outsloped, and decommissioned roads would be water barred and blocked to prevent rilling and erosion of road surfaces.

In order to meet soil objectives for ground-based harvest activities (ROD/RMP, p. 62) and limit soil productivity loss to less than one percent, the following project design features and Best Management Practices would be applied to the degree practicable:

- Pre-designation of skid trail locations, to be located approximately 200 feet apart to the degree practicable.
- Limit ground-based operations to slopes of 35 percent or less.
- Limit ground-based yarding operations to the dry season, from July 15th to October 1st, reflective of the additional restrictions on activities during the bark slip period
- Selectively till skid trails, landings, and other highly compacted areas following a post-thinning review by soils and silviculture personnel

To reduce surface disturbance from cable yarding, a minimum of one-end log suspension would be required. To reduce the potential for surface erosion, cable yarding corridors would be water barred by hand at 100 foot intervals, as deemed necessary by soils personnel.

III. Monitoring

Monitoring would be done in accordance with the ROD/RMP, Appendix I (p. 84, 190, 193, & 195-199). Monitoring efforts would be targeted at the following resources: Riparian Reserves; Matrix; Water and Soils; Wildlife Habitat; Fish Habitat; and Special Status and SEIS Special Attention Species Habitat.

Chapter 5
LIST OF PREPARERS, AGENCIES AND INDIVIDUALS CONTACTED OR CONSULTED, AND LITERATURE CITED

This project was included in the Roseburg BLM Project Planning Update (Spring 2000). A notice of decision would be published in the Roseburg *News-Review* if the decision is made to implement the project.

I. Agencies & Persons Contacted:

Adjacent Landowners
Coquille Indian Tribe
Cow Creek Band of Umpqua Indians
National Marine Fisheries Service
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Registered Down-Stream Water Users
U.S. Fish and Wildlife Service

II. List of Preparers and Contributors:

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Ed Horn	Soils
Dave Mathweg	Recreation/Visual Resource Management
Trixy Moser	Silviculture
Steve Niles	Management Representative
Rob Hurt	Fisheries
Don Scheleen	Archaeology
Larry Standley	Hydrology

III. The following Agencies, Organizations, and Individuals will be notified of the completion of the EA/FONSI:

Steve Carter, Northwest Hardwoods
Cow Creek Band of Umpqua Indians
Nicole Czarnomski, Oregon Natural Resources Council
Robert P. Davison, Wildlife Management Institute
Francis Eatherington , Umpqua Watersheds, Inc.
Chad Hanson, John Muir Project
Bob Ragon, Douglas Timber Operators
Douglas Forest Protective Association
National Marine Fisheries Service
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Ronald Yockim, Attorney for Douglas County Commissioners
U.S. Fish and Wildlife Service

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USDI, BLM. Roseburg District. 1999. Upper Middle Fork Coquille Watershed Analysis.

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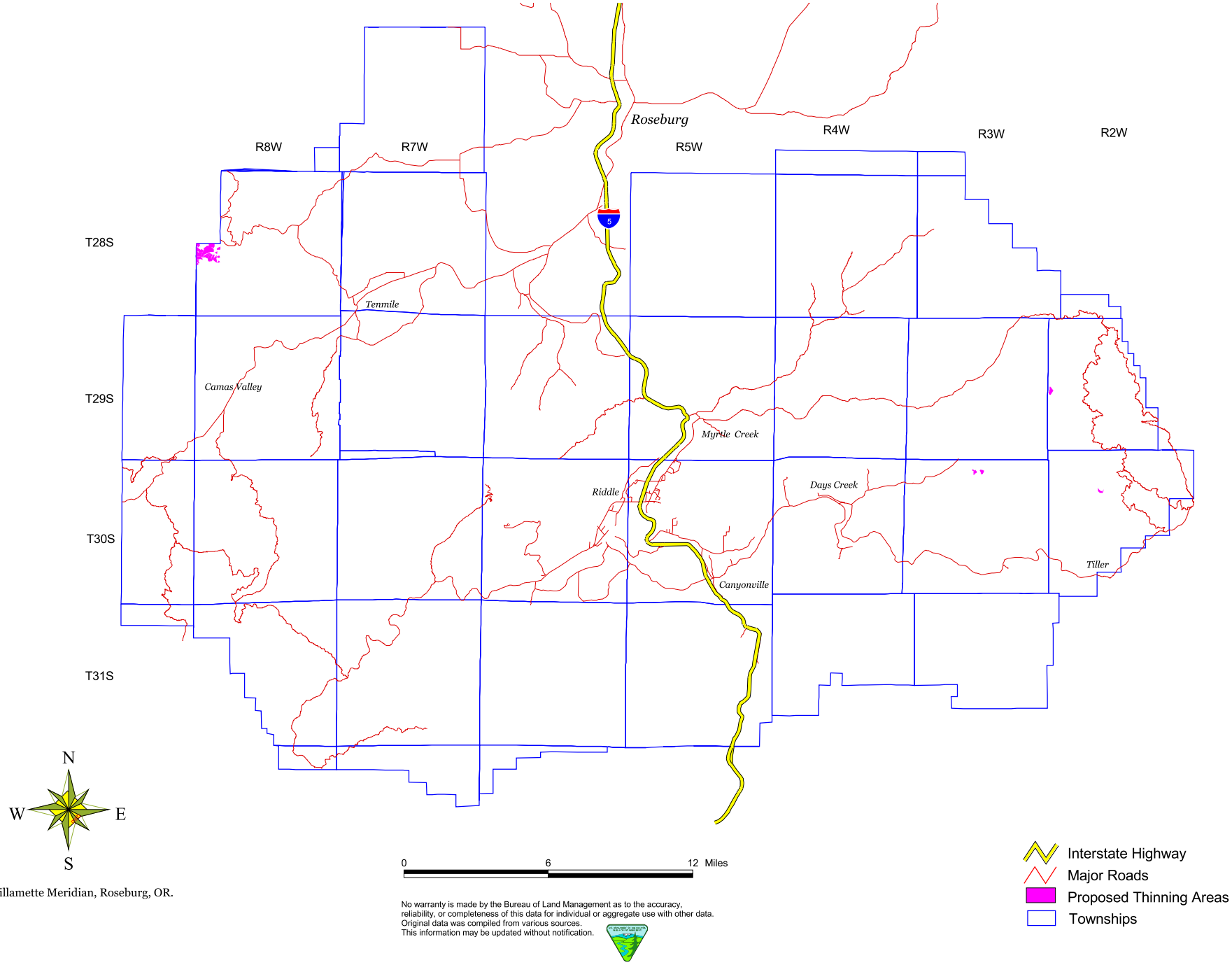
APPENDIX A

PROPOSED UNIT AND VICINITY MAPS

SOUTH RIVER COMMERCIAL THINNING 2000

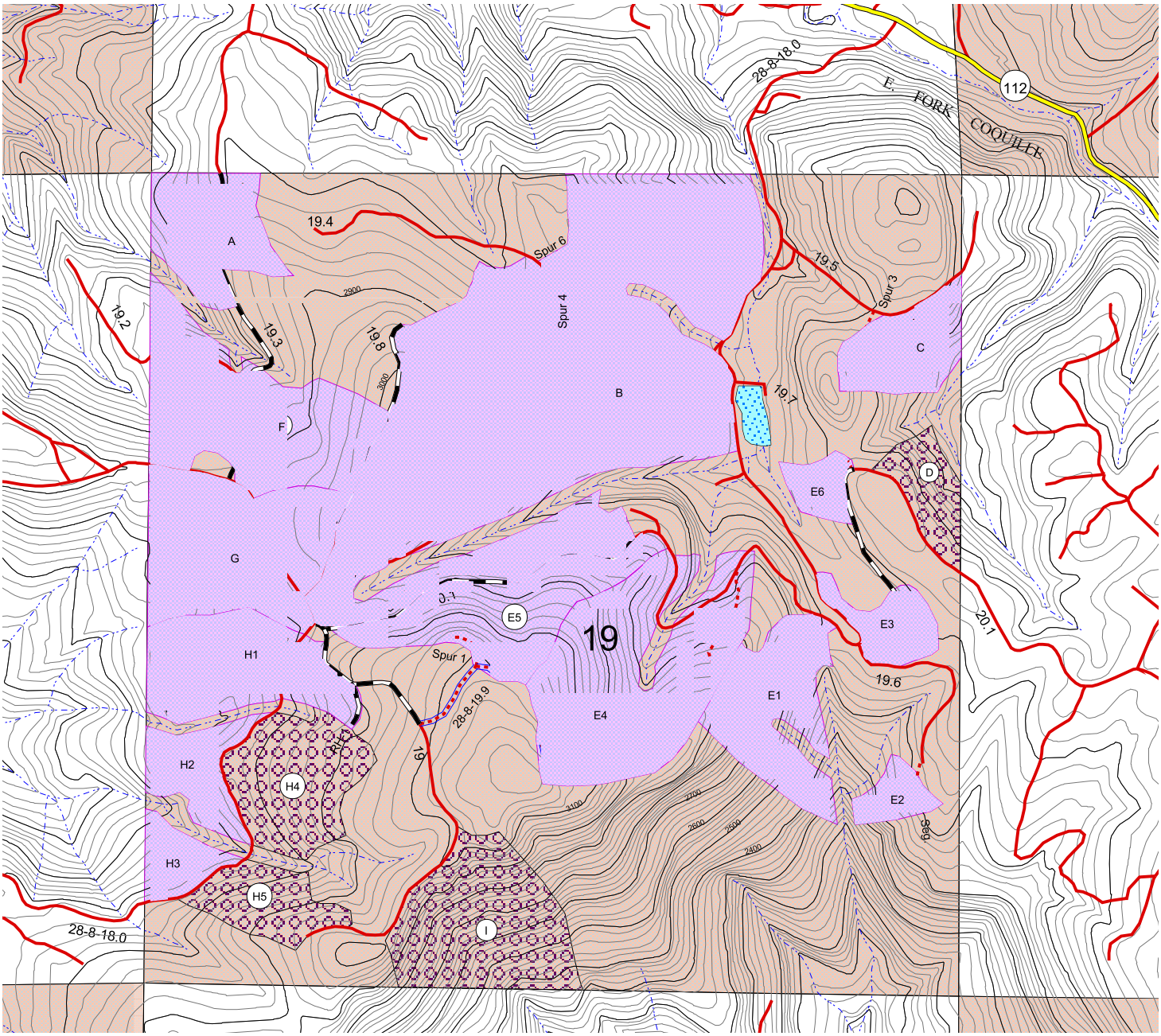


Willamette Meridian, Roseburg, OR.

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

6-28-2001

SOUTH RIVER COMMERCIAL THINNING 2000



N
W E
S

T28S, R8W

Willamette Meridian, Roseburg, OR.

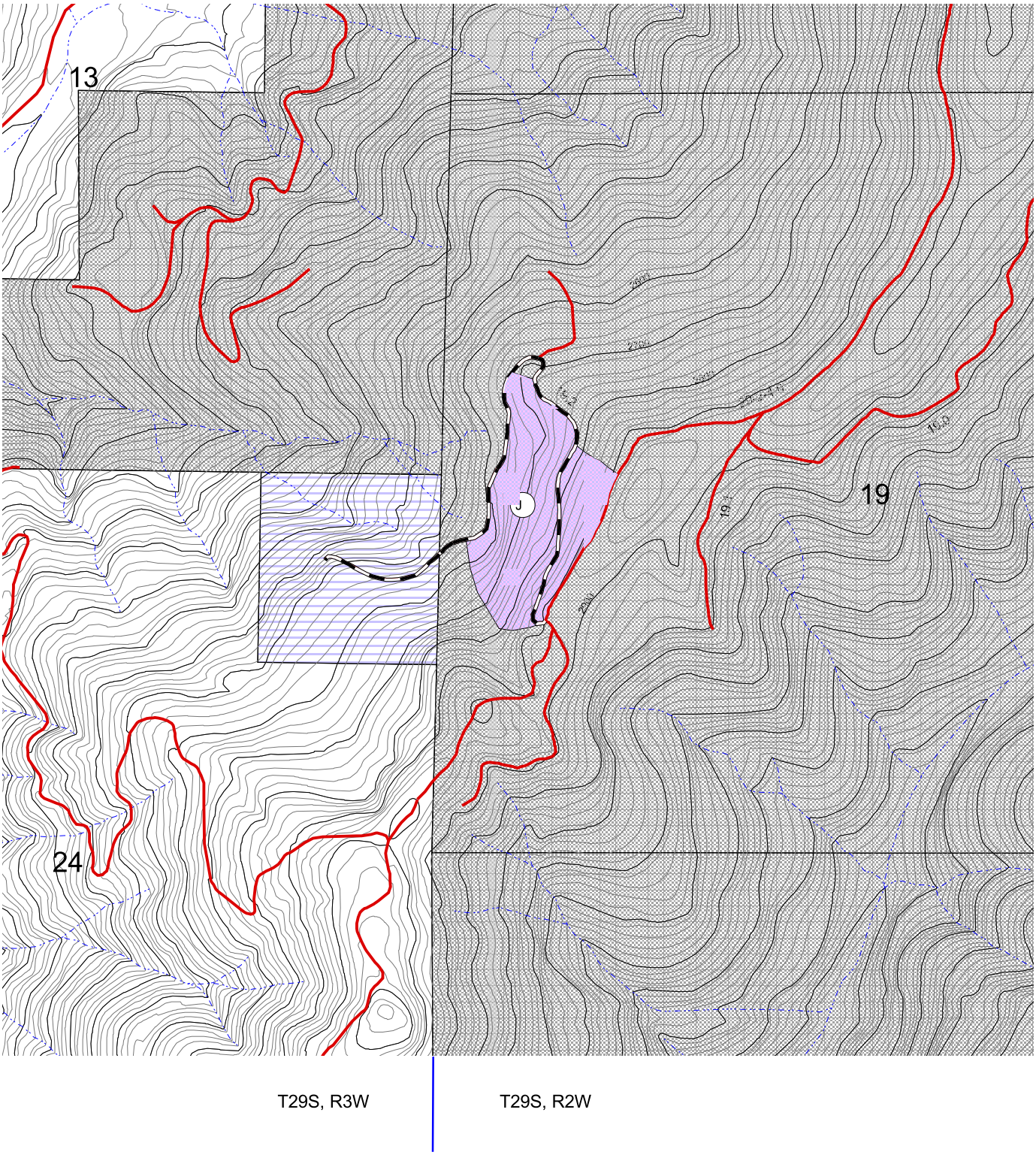
1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

ROAD TO BE RENOVATED
EXISTING ROAD
CONSTRUCT, PERMANENT/ROCK
CONSTRUCT, TEMPORARY/DIRT
100' CONTOUR
20' CONTOUR
STREAM
POND
DEFERRED THINNING AREA
PROPOSED THINNING AREA
PRIVATE LAND
BLM (COOS WAGON RD.) LAND

7-12-2001

SOUTH RIVER COMMERCIAL THINNING 2000



N
W E
S

T29S R2W

Willamette Meridian, Roseburg, OR.

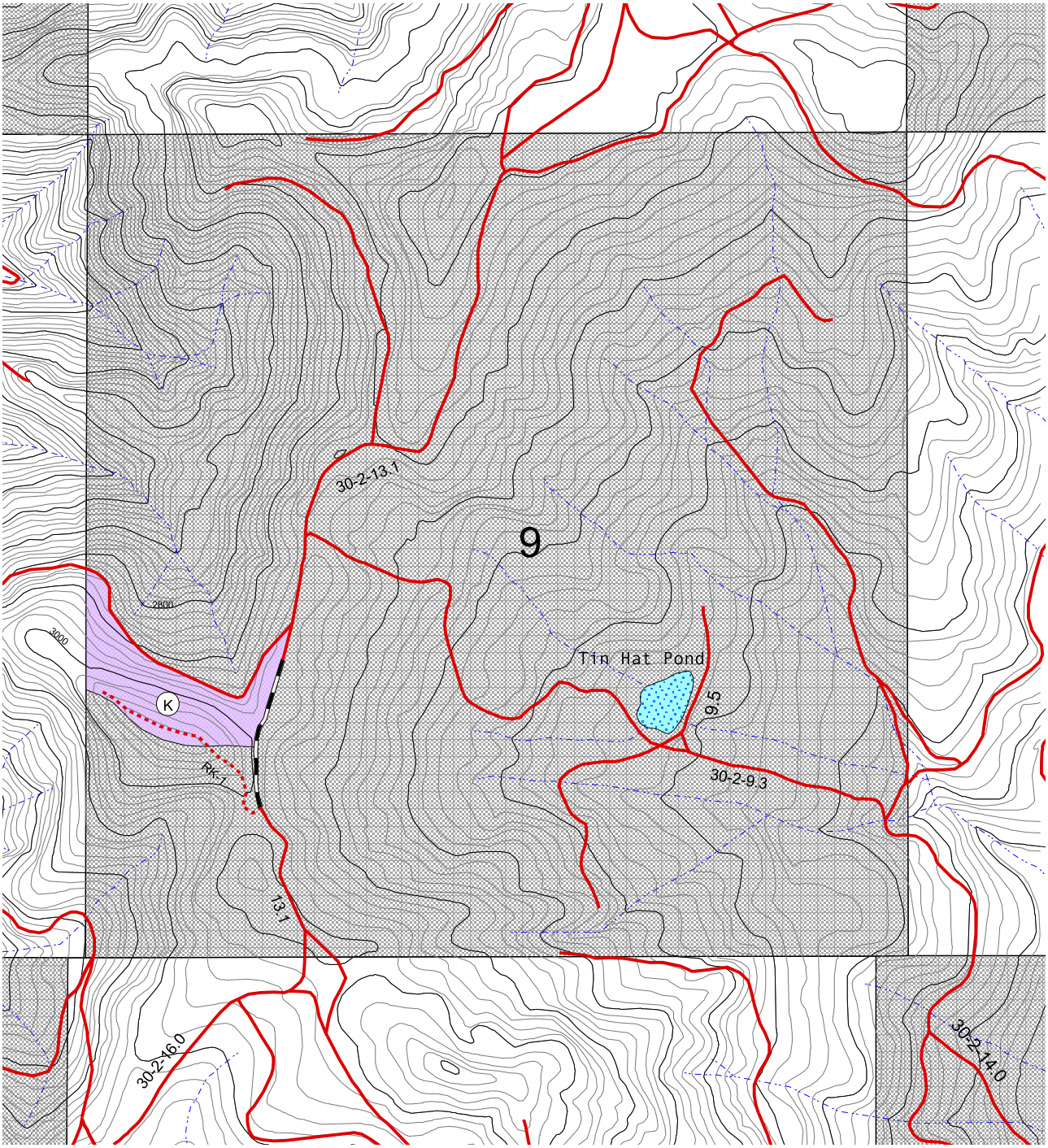
1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Road To Be Renovated
Existing Road
100' Contour
20' Contour
Stream
Proposed Thinning Area
O&C Land
PD Land
Private Land

5-14-2001

SOUTH RIVER COMMERCIAL THINNING 2000



N
W E
S

T30S R2W

Willamette Meridian, Roseburg, OR.

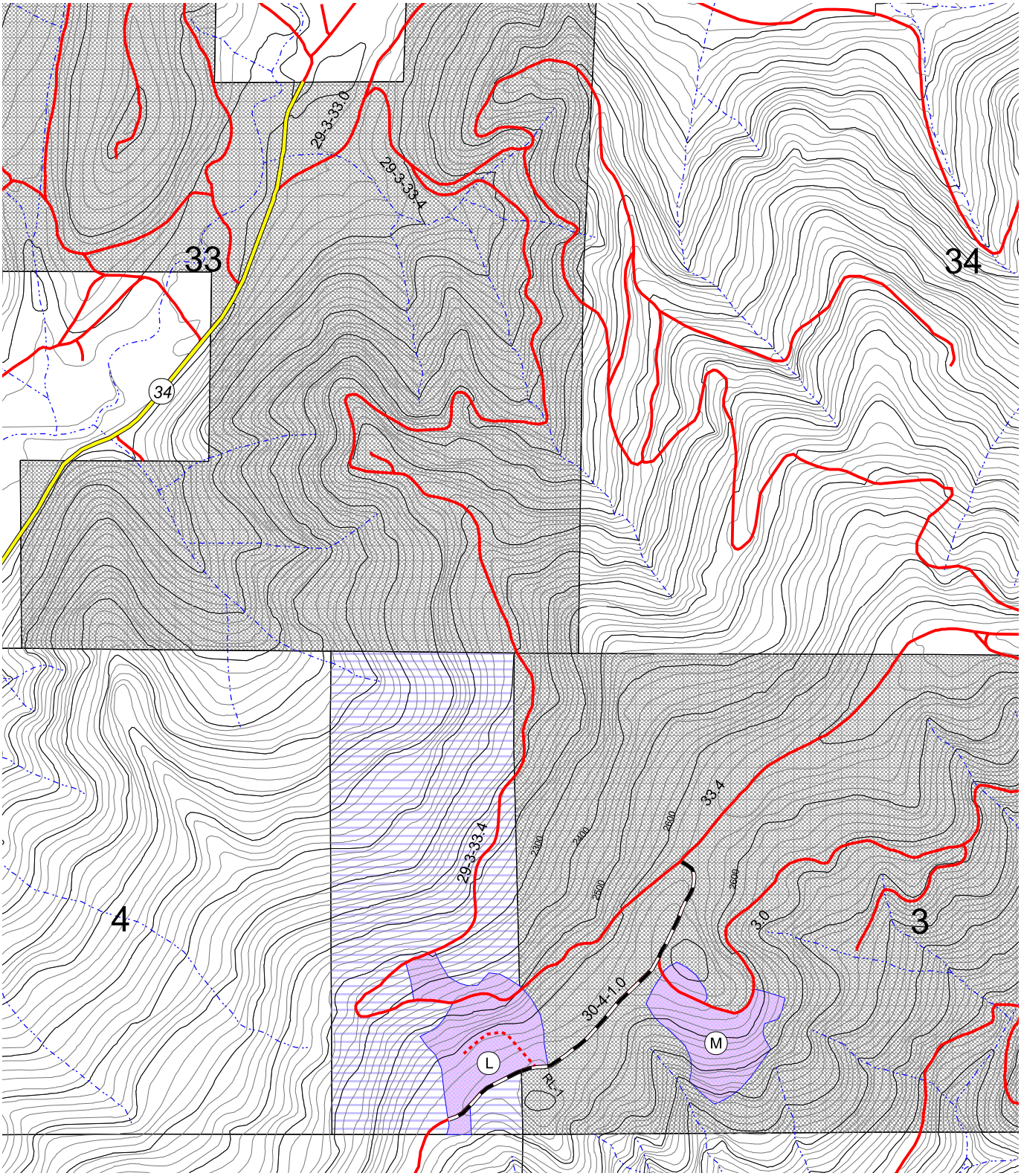
1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Existing Road
Road To Be Renovated
Construct, Decommission
100' Contour
20' Contour
Stream
Proposed Thinning Area
O&C Land
Private Land

2-12-2001

SOUTH RIVER COMMERCIAL THINNING 2000



N
W E
S

T30S R3W

Willamette Meridian, Roseburg, OR.

1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Paved Highway
Existing Road
Road To Be Renovated
Construct, Decommission
Stream
100' Contour
20' Contour

Proposed Thinning Area
O&C Land
PD Land
Private Land

2-12-2001

APPENDIX B

THINNING and DENSITY MANAGEMENT MARKING PRESCRIPTIONS

Marking Guidelines for the South River Commercial Thinning 2000

General Marking Guidelines that apply for all upland areas:

1. Thin from below, selecting the dominant and best formed trees at the appropriate spacing for retention.
2. Trees marked for retention should have greater than 30 percent live crown.
3. With the exception of Unit E5, retain species other than Douglas-fir, where possible, to encourage species diversification in the stands. In Unit E5, Douglas-fir is the minor species and should be retained over the dominant western hemlock.
4. Retain all Plus trees, and clear a radius of 25 feet around them.
5. Select healthy trees for retention. Do not mark for retention those trees that have obvious signs of disease, particularly laminated root rot, dwarf mistletoe, or black stain.
6. Reserve all residual old-growth conifers located outside of proposed road locations.

Additional Marking Guidelines that apply to Riparian Reserves:

1. Retain all trees within 20 feet of streams.
2. Thin from below, selecting co-dominant and dominant trees. Trees marked for retention should have greater than 30 percent live crown.
3. Reserve large conifer and hardwood snags where they do not constitute a safety hazard or compromise project objectives. Buffer snags with untreated areas to offer increased protection during thinning operations. Buffer size will depend on the height of the snag.
4. Retain all trees greater than 18 inches DBH.
5. Mark 10-20 percent of Riparian Reserves, exclusive of "no-entry" buffers, in retention islands 1-2 acres in size. Center retention islands on key habitat features identified by wildlife staff, that include concentrations of down wood, vegetation clumps, spring seeps, and areas of difficult operability. Remove trees immediately adjacent to these islands, where the crowns are in contact.
6. Mark on a variable spacing that will retain 100 sq. ft. of Basal Area/Acre. Trees may be marked individually or in clumps of 2 to 5 trees. Marking should release individual trees or the perimeter of clumps. Retain some smaller trees in the 4-10 inch diameter classes by including them in the clumps.

Marking Guidelines for Hardwoods:

1. Where possible, mark hardwoods 10 inches and greater in diameter Units J, K, L, and M . Take into consideration the likelihood of the tree surviving thinning operations. Space off from other leave trees where reasonable.
2. Where possible, mark hardwoods 6 inches and greater in diameter in Units A - H. Apply the same considerations as above when selecting trees.

Unit Specific Spacing Guidelines:

Unit	Spacing (ft)	Basal Area thin down to	Hardwood Retention (DBH)	Riparian Reserve (ft)
A, B, F, G & H	19	135	>6"	220
C	17	130	>6"	220
E1 & E2	25	150	>6"	220
E3 & E6	17	130	>6"	220
E4	16	125	>6"	220
E5	27	160	>6"	220
Riparian Areas	Variable	100	>6"	220
J	25	180	>10"	na
K	19	135	>10"	na
L	19	140	>10"	na
M	19	140	>10"	na

APPENDIX C

AQUATIC ENVIRONMENTAL BASELINE CONDITIONS

Checklist for documenting environmental baseline and effects of proposed action(s) o 6TH field (subwatershed) level. Index stream reach: St. John Creek, Reach #1

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		BLM data, 1999			NEPA	
Sediment/Turbidity		ODFW habitat inv.			NEPA	
Chem. Contam./Nut.		personal observation			NEPA	
Habitat Access						
Physical Barriers*			personal observation		NEPA	
Habitat Elements						
Substrate	ODFW habitat inv.				NEPA	
Large Woody Debris			ODFW habitat inv.		NEPA	
Pool Frequency	ODFW habitat inv.				NEPA	
Pool Quality			ODFW habitat inv.		NEPA	
Off-Channel Habitat*		prof. judgement			NEPA	
Refugia*		prof. judgement			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio		ODFW hab. inventory			NEPA	
Streambank Condition		prof. judgement			NEPA	
Floodplain Connectivity		prof. judgement			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee WA, prof. judgement			NEPA	
Drainage Network Incr.*			John Days Coffee WA, prof. judgement		NEPA	
Watershed Conditions						
Road Density & Location*			John Days Coffee WA, prof. judgement		NEPA	
Disturbance History*			John Days Coffee WA, prof. judgement		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. judgement		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Days Creek 6TH field (subwatershed) level. Index stream reach: Days Creek, Reach #2

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		BLM data, Douglas Co. Water Res. Div.			NEPA	
Sediment/Turbidity			ODFW habitat inv.		NEPA	
Chem. Contam./Nut.		personal observ			NEPA	
Habitat Access						
Physical Barriers*			personal observ.		NEPA	
Habitat Elements						
Substrate	ODFW habitat inv.				NEPA	
Large Woody Debris			ODFW habitat inv.		NEPA	
Pool Frequency			ODFW habitat inv.		NEPA	
Pool Quality		ODFW habitat inv.			NEPA	
Off-Channel Habitat*		John Days Coffee WA, prof. judgement			NEPA	
Refugia*		John Days Coffee WA, prof. judgement			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio			ODFW habitat inv.		NEPA	
Streambank Condition		John Days Coffee Watershed Analysis			NEPA	
Floodplain Connectivity		John Days Coffee Watershed Analysis			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee Watershed Analysis			NEPA	
Drainage Network Incr.*			John Days Coffee Watershed Analysis		NEPA	
Watershed Conditions						
Road Dens. & Location*			John Days Coffee WA, prof. judgement		NEPA	
Disturbance History*			John Days Coffee WA, prof. judgement		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. judgement		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Coffee Creek 6TH field watershed (subwatershed) level. Index stream reach: Coffee Creek, Reach #1

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature					NEPA	
Sediment/Turbidity	ODFW habitat inv.				NEPA	
Chem. Contam./Nut.		prof. judgment			NEPA	
Habitat Access						
Physical Barriers	ODFW habitat inv.				NEPA	
Habitat Elements						
Substrate	ODFW habitat inv.				NEPA	
Large Woody Debris			ODFW habitat inv.		NEPA	
Pool Frequency		ODFW habitat inv.			NEPA	
Pool Quality					NEPA	
Off-Channel Habitat*		John Days Coffee WA, prof. judgement			NEPA	
Refugia*		John Days Coffee WA, prof. judgement			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio	ODFW habitat inv.				NEPA	
Streambank Condition	ODFW habitat inv.				NEPA	
Floodplain Connectivity			John Days Coffee WA, prof. judgement		NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee WA, prof. judgement			NEPA	
Drainage Network Incr.*			John Days Coffee WA, prof. judgement		NEPA	
Watershed Conditions						
Road Dens. & Location*			John Days Coffee WA, prof. judgement		NEPA	
Disturbance History*			John Days Coffee WA, prof. judgement		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. judgement		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action on indicators at the Middle Fork Coquille 5TH field watershed level. Index stream reach: (see footnote below checklist for streams observed)

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature			MF Coquille WA and ODEQ 1998		NEPA	
Sediment			MF Coquille WA and ODEQ 1998		NEPA	
Chem. Contam./Nut.			ODEQ 1998 for Bacteria and Dissolved Oxygen		NEPA	
Habitat Access						
Physical Barriers*			personal observation		NEPA	
Habitat Elements						
Substrate			ODFW Surveys		NEPA	
Large Woody Debris			ODFW Surveys		NEPA	
Pool Frequency			ODFW Surveys		NEPA	
Pool Quality			ODFW Surveys		NEPA	
Off-Channel Habitat*		MF Coquille WA			NEPA	
Refugia*		MF Coquille WA			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio			ODFW Surveys		NEPA	
Streambank Condition	ODFW Surveys				NEPA	
Floodplain Connectivity			personal observation		NEPA	
Flow/Hydrology						
Peak/ Base Flows*		MF Coquille WA			NEPA	
Drainage Network Incr.*		MF Coquille WA			NEPA	
Watershed Conditions						
Road Dens. & Location*			MF Coquille WA		NEPA	
Disturbance History*			MF Coquille WA		NEPA	
Riparian Reserves*			MF Coquille WA		NEPA	

* This indicator is evaluated at the entire 5th field watershed level and not at the index stream reach level, based on limited visual observations made in mainstem MF Coquille River and in tributaries to MF Coquille River (i.e. Day Creek, Mill Creek, Bingham Creek, Holmes Creek) during the Summer of 1998.

Checklist for documenting environmental baseline and effects of proposed action on indicators at the East Fork Coquille 5TH field watershed level. Index stream reach: (see footnote below checklist for streams observed)

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature			East Fork Coquille WA		NEPA	
Sediment		East Fork Coquille WA			NEPA	
Chem. Contam./Nut.		prof. judgement			NEPA	
Habitat Access						
Physical Barriers*			East Fork Coquille WA		NEPA	
Habitat Elements						
Substrate			no data, personal observ.		NEPA	
Large Woody Debris			no data, personal observ.		NEPA	
Pool Frequency		no data, personal observ.			NEPA	
Pool Quality		no data, personal observ.			NEPA	
Off-Channel Habitat*		East Fork Coquille WA			NEPA	
Refugia*		East Fork Coquille WA			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio		East Fork Coquille WA			NEPA	
Streambank Condition			East Fork Coquille WA		NEPA	
Floodplain Connectivity			East Fork Coquille WA		NEPA	
Flow/Hydrology						
Peak/ Base Flows*		East Fork Coquille WA			NEPA	
Drainage Network Incr.*		East Fork Coquille WA			NEPA	
Watershed Conditions						
Road Dens. & Location*			East Fork Coquille WA		NEPA	
Disturbance History*			East Fork Coquille WA		NEPA	
Riparian Reserves*			East Fork Coquille WA		NEPA	

* This indicator is evaluated at the entire 5th field watershed level and not at the index stream reach level, based on limited visual observations made in mainstem MF Coquille River and in tributaries to MF Coquille River (i.e. Day Creek, Mill Creek, Bingham Creek, Holmes Creek) during the Summer of 1998.

APPENDIX D
CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order. These resources or values either **not present** or **would not be affected by the proposed actions or alternative** , unless otherwise described in this EA. This negative declaration is documented below by individuals who assisted in the preparation of this analysis.

ELEMENT	NOT PRESENT	NOT AFFECTED	IN TEXT	INITIALS	TITLE
Air Quality					
Areas of Critical Environmental Concern					
Cultural Resources					
Environmental Justice					
Farm Lands (prime or unique)					
Floodplains					
Non-Native and Invasive Species					
Native American Religious Concerns					
Threatened or Endangered Wildlife Species					
Threatened or Endangered Plant Species					
Wastes, Hazardous or Solid					
Water Quality Drinking/Ground					
Wetlands/Riparian Zones					
Wild & Scenic Rivers					
Wilderness					
Visual Resource Management					