

INTRODUCTION

The Environmental Assessment (EA) is a site specific analysis of potential environmental impacts which could result with the implementation of a proposed action. The EA assists the Agency in planning and in making a determination as to whether there would be any "significant" impacts resulting from proposed actions. This EA has been prepared for the Swiftwater Field Office's proposed **BUCK CREEK Commercial Thinning Harvest**. This proposal is in conformance with the *Roseburg District Record of Decision and Resources Management Plan (RMP)* dated June 2, 1995. This proposal is also in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS)* or otherwise known as the "Northwest Forest Plan" (NFP) dated Feb. 1994 and its associated *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD)* and *Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl (S&G)* dated April 13, 1994. The ROD establishes management direction consisting of "... extensive standards and guidelines including land allocations, that comprise a comprehensive ecosystem management strategy" (ROD pg. 1).

The project described in this EA will undergo formal public review. After the completion of public review a "Finding of No Significant Impact" (FONSI) would be signed as appropriate. A signed FONSI would find that no "significant" environmental impact (effect) would occur with the implementation of the proposed actions beyond those already addressed in the FSEIS when the project design features specified in this EA are followed. "Significance" has a strict National Environmental Protection Act (NEPA) definition and is found in regulation 40 CFR 1508.27. The FONSI documents the application of this definition of significance to the proposed action.

A Decision Document would be completed after public review to document the decision and reflect any changes as the result of public review, however, Forest Management Regulation 43 CFR 5003.2 states that "[w]hen a decision is made to conduct an advertised timber sale, the notice of such sale shall constitute the decision document." This notice would be placed in *The News Review* and constitute a decision document with authority to proceed with the proposed action.

I. PURPOSE OF AND NEED FOR ACTION

A. Need for Action

The FSEIS and the RMP respond to dual needs: "... the need for a healthy forest ecosystem with habitat that will support populations of native species and includes protection for riparian areas and waters. ... and the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies ..." (RMP pg. 15). The Swiftwater Field Office proposes to offer the **BUCK CREEK Commercial Thinning Harvest** for auction in fiscal year 1997. The ROD permits "timber harvest and other

silvicultural activities in that portion of the matrix with suitable forest lands, according to standards and guidelines" (S&G, pg. C-39). This proposal would help meet the Swiftwater Field Office's annual harvest commitment or probable sale quantity (PSQ).

B. Description of the Proposal

The proposal is to harvest timber in the Elk Creek watershed, located in Section 3, T. 22 S., R. 4 W., W.M. (see maps, Appendix A through C). A portion of the trees in this stand would be removed to provide additional growing space for the remaining trees. The proposed sale area is approximately 29 road miles north of Sutherlin and 33 air miles north northeast of Roseburg, Oregon. Approximately 520 acres were analyzed for potential harvest activities. This project is within the "matrix" Land Use Allocation and not in a key watershed. The matrix land allocation is one of seven allocations specified by the ROD. "Stands in the matrix can be managed for timber and other commodity production, and to perform an important role in maintaining biodiversity" (S&G, pg. B-6). New (temporary) road construction and renovation or improvement of existing roads would also occur. Section II (pg. 4) of this EA provides a more detailed description of the action alternatives, no action alternative and alternatives considered but eliminated.

C. Background (Watershed Analysis)

The Buck Creek Commercial Thinning occurs across three drainages: Buck Creek (2,133 acres), Thief Creek (2,845 acres) and Lee's Creek. (3,302 acres). These drainages are within the East Elk Creek Watershed which covers approximately 130,366 acres (204 square miles). Watershed analysis for East Elk Creek was used in this analysis.

The ROD requires that late-successional forests be retained in watersheds that comprise 15% or less late-successional forests on federal lands in fifth field watersheds, i.e. watersheds between 20 and 200 square miles (ROD, pg. C-44). Any timber stands greater than approximately 80 years of age are considered late-successional habitat (ROD, pg. B-2). Because the Preferred Alternative in this EA proposes to commercially thin timber stands that are 35 to 45 years of age there would be no change in the amount or percentage of late-successional type forests on federal lands within East Elk Creek Watershed. Currently 7782 ac. (36%) of the federal ownership in the watershed is in late-successional forest.

The Buck Creek commercial thinning occurs within that portion of the matrix which has been designated as "Connectivity/Diversity Blocks". These blocks are to provide connectivity between Late-successional Reserves. Twenty-five to thirty percent of each block is to be maintained in late-successional forest at any point in time (RMP, pg. 34). This block (Section 3) contains 525 acres of federal ownership, therefore 130 -160 acres should be maintained in late-successional forest. Currently only 18 acres (3%) is in late-successional forest (a remanent stand from past harvesting). An additional 123 acres (23%) is a stand of second growth with a residual old growth remnant overstory. The wildlife biologist has determined that this stand, although not in late-successional forest, performs much of the function of late-successional habitat. These areas will be referred through out this EA as late-successional habitat (LSH).

D. Objectives

1. For the Matrix portion:
 - a. "Produce a sustainable supply of timber and other forest commodities " (RMP pg. 33).
 - b. "Provide connectivity ... between late-successional reserves" (RMP, pg. 33).
 - c. Improve stand health by reducing the excess stocking in the forest stand to increase the growth and vigor of the remaining individual trees.
 - d. Maintain a minimum of 25% of the block in late-successional conditions
2. For the Riparian Reserve portion:

Accelerate the development of large conifers of various form and structure for large trees and future recruitment of coarse woody debris (CWD) within the Riparian Reserve in order to comply with the ACS objective #8 of 'restoring structural diversity of plant communities in riparian areas'.
3. Implement ecosystem management as outlined in the ROD and RMP.
 - avoid damage to riparian ecosystems and meet the objectives of the "Aquatic Conservation Strategy" (S&G, pg. B-11; RMP pg. 19)
 - "Provide habitat for a variety of organisms associated with both late successional and younger forests." (RMP pg. 33)
 - maintain "ecologically valuable structural components such as down logs, snags and large trees" (RMP pg. 33)
 - improve and/or maintain soil productivity (RMP pg. 35)
 - "Maintain or enhance the fisheries potential of the streams" (RMP pg. 40)
 - protect, manage and conserve all special status and Supplemental Environmental Impact Statement special attention species habitat (RMP pg. 41)

E. Decisions to be made to meet Proposal Objectives

1. The Decision Maker (the Swiftwater Area Manager) will need to decide:
 - if this analysis supports the signing of a FONSI.
 - whether to proceed with the preferred alternative, modify the preferred alternative, or accept the no action alternative.
2. Consultation with the National Marine Fisheries Service (NMFS) will need to be completed for the Cutthroat trout (and Coho salmon if listed). This project may have to be altered as the result of consultation (See section V, para. A; pg. 12).

F. Issues considered but eliminated from Detailed Analysis

The following concerns were identified by the Interdisciplinary Team (IDT) during project design. They were eliminated from further analysis because: (1) project design features (PDF's) were included in the preferred alternative to lessen the anticipated environmental impacts of specific activities, or (2) the concern was not considered significant enough to warrant analysis, or (3) the impacts are within the limits addressed in the ROD/RMP. Section II, paragraph D

(pg. 5) provides a list of specific PDF's incorporated into the preferred alternative to deal with these issues. These issues are summarized in Appendix D ("Scoping Summary") and addressed the Specialist's Reports in Appendix F.

1. Wildlife Concerns
 - a. Possible presence of Red tree voles (RTV) a C-3 survey and manage species
 - b. Possible presence of Megomphix hemphilli (Oregon megomphix) a C-3 mollusk
2. Soils Concerns
 - Areas of slope instability
3. Botanical Concerns
 - Presence of scotch broom, a noxious weed
4. Silviculture Concerns
 - a. Subsoiling causing damage to roots and spreading disease
 - b. Increased blowdown potential
5. Hydrological Concerns
 - Mitigation of sedimentation from derelict road in the northeast corner of section
6. HazMat (hazardous materials) Concerns
 - Mitigation of two dump sites

"Critical Elements of the Human Environment" is a list of elements specified in BLM Handbook H-1790-1 that must be considered in all EA's. These are elements of the human environment subject to requirements specified in statute, regulation, or executive order. These elements are as follows:

1. Air Quality
2. Areas of Critical Environmental Concern
3. Cultural Resources
4. Farm Lands (prime or unique)
5. Floodplain
6. Native American Religious Concerns
7. Threatened or Endangered Species
8. Wastes, Hazardous or Solid
9. Water Quality, Drinking / Ground
10. Wetlands / Riparian Zones
11. Wild and Scenic Rivers
12. Wilderness

These resource values (except for item #7) were not identified as issues to be analyzed because: (1) there were no site specific impacts identified, (2) the resource value does not exist in the analysis area, or (3) the impacts were considered to be sufficiently mitigated through

adherence to the S&G's therefore eliminating the element as an issue of concern. These issues are also briefly discussed in Appendix E ("Critical Elements of the Human Environment"). Item #7 is addressed in the Specialist's Reports (Appendix F).

G. Issues to be Analyzed

The following concerns were identified by the ID Team as having sufficient concern to warrant more detailed analysis and will be addressed in section III, "Affected Environment" and section IV, "Environmental Consequences" (pg. 7-12) as key issues.

1. Mitigation of soil compaction from previous entries
2. Control of tree diseases
3. Prevention of further degradation of water quality and riparian function
4. Maintaining and developing Late Successional Habitat and enhancing connectivity values.

II. ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

This section describes the no action and action alternatives including the preferred (proposed) action alternative as well as any alternatives that were considered but eliminated from detailed study. As such these alternatives represent a range of reasonable potential actions. This section also discusses specific design features which would be implemented under the action alternatives. All action alternatives were designed to be in conformance with the ROD and RMP.

A. The No Action Alternative

There would be no entry for the harvesting of timber within the bounds of the project area under this alternative. Harvest would occur at another location within Matrix lands in order to meet harvest commitments.

B. The Action Alternatives

The ID Team considered four action alternatives:

Alternative A - Density Management

Overly dense stands, including the Riparian Reserves (RR's), would be thinned to retain at least 40% of existing crown closure. Inside the RR's trees within the stream channel and on or near the banks and unstable areas would be reserved to protect bank stability. Thinning in the LSH areas would be varied as needed to enhance LSH objectives. All disease pockets greater than two acres would be cut (patch cut), and minor species (species other than Douglas fir) would be retained and the openings replanted with minor species.

Alternative B - LSH Enhancement

The LSH areas (four areas) would be excluded from the project area and not treated. The young stands in the northeast corner of the section would not be treated and left as a buffer to the LSH area. The RR's outside the LSH's would have a variable width no-cut buffer with the objective of stream bank stability, stream shading and water quality, and to promote the

growth and vigor of the residual trees. Root diseased trees in the RR's would be treated. Outside of the RR's, root disease pockets would be patch cut to control disease leaving resistant species and replanting the openings with minor species.

The f. annosus pocket would be thinned to favor cedar and Douglas fir and replanted with minor species. The rest of the stand would be variable thinned to retain at least 40% canopy closure.

Alternative C - Hydrologic Protection

This alternative is the same as alternative B except there would be no entry into the RR's except to treat root disease pockets.

Alternative D - Stand Health

This alternative is the same as alternative A except all disease pockets would be treated regardless of size.

Features common to all alternatives

1. No tractor logging except possible minor incidental tractor logging (strictly administered).
2. Visible skidtrails from previous entries would be subsoiled were practical and physically possible.
3. Snags, wet areas, unstable areas, wood rat and RTV nests would be buffered.
4. Most existing coarse woody debris (CWD) would be retained.
5. Most trees greater than 24" diameter would be retained except road right-of-way clearcuts.

C. The Preferred Alternative

Alternative B was selected by the ID Team as the preferred (proposed action) alternative. The proposed action would harvest approximately 2.5 MMBF (million board feet) or 3730 CCF (hundred cubic feet) of Swiftwater Field Office's FY 1997 harvest commitment of 23.0 MMBF. Harvest activities would occur on 250 acres of density management and 6 acres of road right-of-way clearcut. Other activities would include: road construction, road renovation and improvement, subsoiling of previously compacted skid trails, and replanting openings with young seedlings.

Road construction would occur on approximately 1.2 miles of public land. All construction would be temporary and tilled after use and returned to the productive land base. **Road renovation and improvement** would occur on approximately 2.3 miles private road and would consist of installing drainage structures (culverts and ditches), reshaping the subgrade and surfacing with crushed rock.

Timber harvest would utilize density management harvest techniques designed to reduce the density (thin) the forest stand to promote increased growth on the remaining trees and recover wood fiber that would ordinarily be lost through natural mortality. The proposed action would require skyline cable logging. **Firewood cutting** of logging debris (slash) might occur in landing cull decks and within 100' of roads on Federal ownership within the project.

Subsoiling (tilling) would occur on approximately 3000' of previously compacted skid trails.

D. Project Design Features As Part Of The Proposed Action

This section describes project design features (PDF's) which would be incorporated in conjunction with proposed action alternative. PDF's are site specific measures, practices, restrictions, requirements or structures included in the design of the project in order to minimize adverse environmental impacts. These are listed in the RMP (Appendix D) as "Best Management Practices" (BMP's) which are measures to protect water quality and soil productivity, and in the ROD as "Standards and Guidelines" that projects must comply with in order to meet the requirements of the ROD. The following PDF's are included with the proposed action:

1. **To meet the components of the "Aquatic Conservation Strategy (ACS)" (S&G's, pg. B-12):**
 - a. **Riparian Reserves** (Component #1) would be established. Riparian Reserves consist of permanently flowing (perennial) and seasonally flowing (intermittent) streams, the extent of unstable and potentially unstable areas and wetlands . The ROD (C-30) and RMP (pg. 24) specify Riparian Reserve widths equal to the height of two site potential trees on each side of fish bearing streams and one site potential tree on each side of perennial or intermittent nonfish bearing streams. Data has been analyzed from District inventory plots and the height of a site potential tree for the Elk Creek watershed has been determined to be the equivalent of 200 ft. slope distance, therefore Riparian Reserve boundaries would be approximately 200 ft. slope distance from the edge of nonfish bearing streams. There are no fish-bearing streams in the project area adjacent to any units. No road construction would occur within the Riparian Reserves.
 - 1) Silvicultural practices (thinning) would be applied within the Riparian Reserve "to control stocking . . . and acquire vegetation characteristics needed to attain Aquatic Conservation Strategy objectives" (RMP pg. 25). The objective is to accelerate tree growth to promote larger trees and canopies, and provide a future source of large woody debris for stream structure. Approximately 48 acres of Riparian Reserve's would be thinned for this purpose.
 - 2) **Streambank stability and water temperature** would be protected by maintaining a variable width no-cut stream buffer (20' - 200').

- 3) Riparian habitat would be protected from logging damage by directionally felling trees within 100' of streams and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams).
 - 4) The riparian vegetation of **wetlands** less than one acre would be protected to the edge of the wetland vegetation. No logging would be allowed through the wetland. Trees designated for harvest, within 100' of the wetland, would be felled and yarded away from the wetland to protect this habitat. Five such wet areas were found within the project area.
- b. This project is not in a **Key Watershed** (ACS Component #2).
 - c. **Watershed Analysis** (ACS Component #3) as been completed for this watershed (see pg. 2).
 - d. **Watershed Restoration** (ACS Component #4) in this watershed would be accomplished primarily through timber sale related projects. This would include road decommissioning, road maintenance and Riparian Reserve treatments in second growth stands.
2. **To minimize the loss of soil productivity (i.e. limiting erosion, reducing soil compaction, protecting slope stability and protecting the duff layer):**
 - a. **Measures to limit erosion and sedimentation from roads** would consist of maintaining existing culverts, installing additional culverts, fixing drainage and erosion problems and surfacing the road with crushed rock on permanent Road No.21-4-33.0. Temporary roads would be built, used and decommissioned the same operating season (i.e. no over-wintering of bare subgrade). Decommissioning (S&G, pg. B-31) would consist of subsoiling the roadbed with a self drafting winged subsoiler, water barring, blocking and seeding with native or sterile hybrid seed mix (if available). Road renovation and log hauling on unsurfaced roads would be limited to the dry season (normally May 15 to Oct. 15), however, operations would be suspended during periods of heavy precipitation. This season could be adjusted if conditions are such that no environmental damage would occur (ex. the dry season extending beyond Oct. 15). These BMP's (RMP, pg. 136-7) are designed to minimize sedimentation and protect water quality.
 - b. **Measures to limit erosion and sedimentation from logging** would consist of requiring skyline yarding where cable logging is specified. This method limits ground disturbance by requiring partial suspension during yarding (i.e., the use of a logging system that "suspends" the front end of the log during in-haul to the landing, thereby lessening the "plowing" action that disturbs the soil). In some limited, isolated areas partial suspension may not be physically possible due to terrain or lateral yarding.

Excessive soil furrowing would be hand waterbarred. No ground based logging, except road right-of-way clearing, is anticipated, however the Authorized Official (Contract Administrator) may determine that isolated ground based logging would be necessary. In such cases, these activities would receive Interdisciplinary review and be limited to the dry season (May 15 to Oct. 15), however, operations would be suspended during periods of heavy precipitation if resource damage would occur. This season could be adjusted if conditions are such that no resource damage would occur (i.e., the dry season extending beyond Oct. 15).

- c. **Measures to limit soil compaction** would consist of subsoiling existing skidtrails from previous entries where practical (e.g., tilling saturated or very rocky soils or skid trails with advanced reproduction would not benefit soil productivity and therefore would not be practical). Subsoiling is a practice that ameliorates soil compaction and improves water infiltration by pulling a device known as a "winged subsoiler" with a crawler tractor.
 - d. **Measures to protect slope stability** would consist of reserving areas that could potentially impact the meeting of ACS objectives from the project (see Appendix D).
 - e. **Measures to protect the duff layer** would consist of reserving CWD. This is in the form of blowdown trees and logs remaining from previous logging. This CWD would be a source of organic material that can become incorporated into the soil structure.
3. **To protect the wildlife legacies:**
- a. Future nesting and roosting habitat for cavity dwellers would be provided by reserving most existing hard or soft snags (at least 20" in diameter and 20 ft. in height). Note: Any snag deemed as hazardous to worker safety could be felled at the discretion of the operator. Such trees would be reserved and left in place as CWD.
 - b. Existing CWD would be preserved for habitat of organisms that require this ecological niche.
 - c. Known and suspected RTV nest trees would receive a protective buffer of adjacent trees whose canopies are in contact with the nest tree. Identified wood rat nests would be protected with a buffer of protective trees around the nest site.
4. **To protect the residual stand and promote stand health:**
- a. As much as possible trees that would most likely survive logging and overall improve the stand condition and health would be selected for retention.

- b. No falling and yarding would be permitted from April 15 through July 15 when the sap is up in the trees and damage due to bark slippage could occur. If the Sales Administrator determines that, based on local conditions, excessive damage would not occur this date could be adjusted.
 - c. Treat cut stumps in the Annosus pockets with sporax to control root disease.
 - d. Yarder size would be limited to match the size of the yarder to the size of the timber in order to minimize damage from an overly large yarder.
 - e. Minor (disease tolerant) species would be planted in the patch cuts of disease pockets.
5. **To enhance stand diversity:**
- a. All Pacific yew trees would be reserved.
 - b. Small hardwood pockets and wet areas (< 1 ac.) would be retained.
 - c. All tree species that are present would continue to be represented.
 - d. Snags and CWD would be reserved as described in paragraph 3 above.
 - e. The natural meadows would be excluded from the unit and protected from logging damage as much as possible.
6. **To prevent and report accidental spills of petroleum products or other hazardous materials:**
- Hazardous materials (particularly petroleum products) would be stored in durable containers and located so that any accidental spill would be contained and not drain into riparian areas. All landing trash and logging materials would be removed. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Sale Administrator and the procedures outlined in the “Roseburg District Hazardous Materials (HAZMAT) Emergency Response Contingency Plan” would be followed.

E. Alternatives Considered but Eliminated

There were no other alternatives considered by the ID Team during the formulation of this project.

III. AFFECTED ENVIRONMENT

This section describes the existing environment and forms a baseline for comparison of the effects created by the alternatives under consideration. Appendix F (Analysis File) contains Specialist's Reports with supporting information for this analysis.

This project lies within the Oregon Western Cascades Physiographic Province. The FSEIS describes the affected environment for this province on page 3&4-19.

Soils (Key Issue - Mitigation of soil compaction from previous entries)

Soils within the unit are generally deep (>60 inches) and clayey. There are inclusions of rock outcrop, shallow soils and skeletal (> 35% rock fragments) soils. The topography is a complex of nearly level ridge tops to steep (>60%) side slopes. The 1964 Aerial photo shows that much of the area (especially south of the 33.0 road) was tractor logged prior to 1964. Some of the skidtrails are still evident today. For the most part the unit is stable with seven areas with potential slope instability (see Soil's Report, Appendix F).

Silviculture (Key Issue - Control of tree diseases)

The proposed unit encompasses three prominent stand types. An old growth area (approx. 18 acres), a second growth stand with some remnant old growth trees (approx. 123 acres), and a second growth stand (approx. 380 acres). The second growth stand is a dense, closed canopy, even-aged, managed stand.

Pathologists from the Southwest Oregon Forest Insect and Disease Technical Center (SWOFIDTC) have surveyed and mapped general areas in this stand. There is an extensive amount of root diseases with one area mapped as severe. The root diseases noted in this stand are: laminated root rot (*Phellinus weirii*), annosus root disease (*Heterobasidion annosum*) and some armillaria root disease (*Armillaria ostoyae*). Expansion rates average about one to two feet per year for all three root pathogens (Filip, Gregory M. and Schmitt, Craig L. Rx for Abies: Silvicultural Options for Disease Firs in Oregon and Washington, p.5). There is a bark beetle population present in this area. The main beetle in the stand that will cause a problem is the Douglas-fir beetle (*Dendroctonus pseudotsugae Hopkins*) (Don Goheen, personal conversation, 1996).

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

The proposed project is in the headwaters of Buck, Lee's, and Thief Creek. There are numerous domestic and agricultural surface water rights downstream on all these creeks. Additional downstream beneficial uses of water from these creeks are by cold water fish and other aquatic life. None of the creeks in the proposed project are perennial fish bearing streams. About two thirds of Section 3 is drained by a tributary to Buck Creek, Thief Creek drains about 1/6 of the section, and Lee's Creek the remainder. Buck Creek flows into Pass Creek then into Elk Creek. Lee's Creek flows into Thief Creek then into Elk Creek. Precipitation in the area occurs mostly as rain and averages more than 50 inches per year, 85% occurs from October to April; summer precipitation averages about 6 inches. Snow melt is not significant in the area. Land ownership in the watershed is both private and BLM.

Peak flows have caused many stream channel and physical habitat problems within the proposed project boundaries. Past stream cleaning probably removed much large woody debris from the sale area. The State of Oregon Department of Environmental Quality (DEQ) 1988 Non Point Source assessment observed moderate problems in Pass Creek (turbidity, low dissolved oxygen (DO), nutrients, streambank erosion, decreased stream flow, and insufficient stream structure) and observed moderate problems in Elk Creek (turbidity, low DO (with data), nutrients, sedimentation, streambank erosion, decreased stream flow (with data), and insufficient stream structure). Pass Creek has also had historical impacts from agricultural practices (primarily grazing). Impacted beneficial uses identified by DEQ are irrigation, cold water fish, and other aquatic life with probable cause of problems due to traffic and vegetation removal.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

The area in which the proposed action would occur is known as the I-5 / Willamette Area of Concern for dispersal of late successional habitat-associated wildlife, specifically the northern spotted owl. The land allocation given to federal lands in this area is matrix (connectivity/dispersal blocks), reflecting the concern for maintaining LSH in this area over time. The section in which this project is located is typical of the forests developing LSH conditions consisting of residual pockets of older forest types. Approximately 20% of the federal ownership in this section currently exhibits some or all of the characteristics of LSH. It currently provides both dispersal/foraging habitat for spotted owls as well as approximately 80 acres of suitable nesting habitat. Other late successional species may occur here as well. One species of mollusk, Megomphix hemphilli, is associated with LSH and is on the C-3 list of the ROD and has been located in similar habitat less than one mile northeast of this section, however, local surveys have not shown this species to occur within the project area.

IV. ENVIRONMENTAL CONSEQUENCES

This section forms the scientific and analytical basis for the comparisons of the alternatives. The probable consequences (impacts, effects) each alternative would have on selected resources are described. This section is organized by the alternatives and the effects on resources by the key issues identified in section I paragraph G as well as the direct (effects caused by the action and occur at the same place and time), indirect (effects caused by the action and occur later in time or farther removed in distance) and cumulative (impacts of the action when added to other past, present and reasonably foreseeable future actions) impacts on the other resource values. The environmental consequences for these resources are more fully analyzed in Appendix F (Analysis File). This Appendix contains Specialist's Reports and the supporting information for this analysis. The EIS and FSEIS analyzes the environmental consequences in a broader and more detailed context. This EA does not attempt to reanalyze all possible impacts that have already been analyzed in these umbrella documents but rather to identify the particular site specific impacts that could reasonably occur. Implementation of this project would result in the irretrievable commitment of the use of fossil fuels for either of the

alternatives. NOTE: The Biological Assessment for the Endangered Species Act consultation contains a detailed analysis of how this project complies with the Aquatic Conservation Strategy Objectives and is contained in the Analysis File (Appendix F).

A. No Action Alternative:

This paragraph describes the anticipated consequences of the "no action" alternative.

Soils (Key Issue - Mitigation of soil compaction from previous entries)

Skidtrails would remain compacted. Natural amelioration of compaction is a very slow process, dependent on biological activity (root penetration, burrowing animals and insects). Stress on trees increases as nutrient demand increases with growth. This results in those trees affected by compaction as generally having less growth. As trees are stressed for nutrients, their growth slows down and trees become stressed. This stress **may** contribute to the tree's susceptibility to root diseases and insect attack. Slope stability would remain the same, subject to the forces of nature (i.e. precipitation and wind).

Silviculture (Key Issue - Control of tree diseases)

The present stand is currently at risk due to a high stocking level and the associated competitive stresses, widespread pockets of root diseases (approximately 70 acres or 13% of the area) of which approximately 20 acres are categorized as "severe" (Goheen, Ellen; SWOFIDTC; 1996), with an endemic insect population. No action would result in decreased tree vigor, an increased susceptibility to the diseases present, and a high probability the insect population would be maintained or increased (Knight and Heikkinen, Principles of Forest Entomology, McGraw-Hill Book Co., 1980, pp 331-349). Nontreatment of this area could result in a high mortality rate, an endemic insect population, and loss of more than half the predicted harvest volume after two or three rotations of a highly susceptible host like Douglas-fir (Thies & Sturrock, Laminated Root Rot in Western North America, USDA Forest Service, PNW-GTR-349, 1995).

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

No further degradation of the water resources by management practices would occur. The 22-4-33.0 road would continue to erode and be a source of sediment to Pass and Thief Creeks. The old derelict road along stream in the northeast corner of the section would continue to erode and provide a source of sediment into Buck Creek. Disease in the tree stand would continue to spread resulting in more blow down, opening up the canopy and exposing more soil that could erode and wash into streams.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

Overstocked stands would develop along a normal time line and natural mortality and blowdown would create openings in the canopy, resulting in the release of the residual trees.

The dead trees would contribute to the natural food base for invertebrates and bird species as they decay. The variability of the stand density would rely on natural forces such as root rot and wind action. Stand variability would result from the difference in strength and health of the individual tree's resistance to disease and stress. The stand would progress through normal seral stages and eventually develop LSH characteristics, but at a later time than if it were treated.

B. Alternative A - Density Management

Soils (Key Issue - Mitigation of soil compaction from previous entries)

Under the proposed action and all alternatives, specified skidtrails would be tilled. Specified skidtrails are generally less than 20% slope, identifiable as skidtrails and lack reprod (trees) growing in trails (skidtrails are 30 years old). Tilling compacted soils is beneficial to the productivity of the soil. Tilling increases water infiltration, permeability, root growth and aeration. Compaction may be a stress factor that contributes to the stand's susceptibility to the root disease infestation.

Silviculture (Key Issue - Control of tree diseases)

Thinning to maintain or increase tree vigor should reduce the chance of an insect outbreak and the spread of some root diseases. The prompt utilization of recently killed or dying timber will often prevent insect outbreaks (Knight and Heikkinen, 1980). Only treating disease pockets greater than two acres would help control the major disease areas but, would allow the other disease pockets to persist and expand in the stand. The untreated areas would experience a high mortality rate, and may lose more than half the predicted harvest volume after two or three rotations of a highly susceptible host like Douglas-fir (Thies & Sturrock, 1995).

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

Thinning of trees in the RR's has the potential of de-stabilizing channels and increasing sedimentation. Streams were evaluated for stability. A variable 20-200 ft. no-cut buffer would remove from thinning those RR's or portions judged to be unstable. Thinning would also remove a source of woody debris (short term) that might otherwise end up as structure in streams or a source of nutrients for the aquatic life.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

In alternatives, A and D, some manipulation of older stands currently functioning as LSH would be allowed. Harvesting activities, together with removal of canopy cover, would cause a short-term loss of functionality in these areas and disrupt the present pattern of connectivity, but in the long-term would accelerate the growth of the remaining trees and encourage the growth of understory vegetation that would increase diversity. The effects of this type of entry into LSH would possibly last several decades until the second canopy begins to close. Management guidelines for connectivity/diversity blocks is to maintain 25-30% of each block in late-

successional forest at any point in time (RMP pg. 34). Since this section/block currently contains only about 3% late-successional forest, an additional 22-27% of the block needs to be maintained and developed into future late-successional forest.

C. Alternative B - LSH Enhancement (Preferred Alternative)

Soils (Key Issue - Mitigation of soil compaction from previous entries)

See paragraph B, above.

Silviculture (Key Issue - Control of tree diseases)

Some disease areas located within the LSH (approximately five acres) would be left untreated. By not entering these areas the laminated root rot inoculum may stay at a relatively low density by natural processes. Some of these stands have fewer but larger trees than does the second-growth stand, therefore relatively few trees would be infected. As a tree reaches advanced stages of the disease, it usually is windthrown, thereby effectively removing the root collar and often a lot of infected root material from the soil, reducing the amount of inoculum, and disrupting residual roots. The openings created by falling trees may well support less susceptible conifers, nonhost shrubs, or hardwood tree species for many years before highly susceptible host species reoccupy the site.

However, all the areas but one that were identified as functioning LSH, are second-growth stands with some old growth residuals. The forest vegetation present in this stand would not readily regenerate enough hardwood and shrub species to occupy the site long enough before highly susceptible host species reoccupy the site. The laminated root rot openings would be continually regenerated by susceptible conifer species and little change is likely to occur in inoculum density from one generation to the next (Thies & Sturrock, 1995).

Given the objective of biological diversity in Connectivity/Diversity blocks this may be acceptable. *Phellinus weirii* is a disturbance agent that generally increases ecosystem diversity. It selectively kills susceptible conifers and thus provides growing space for less susceptible conifers and immune hardwoods and shrubs.

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

This alternative would exclude entry into the LSH areas and limit entry into the RR's maintaining the distribution, diversity and complexity of watershed and landscape scale features. The movement of water through the watershed is greatly influenced by the vegetation cover. Water absorbency is enhanced with greater vegetation cover. Minimizing tree removal in RR's should minimize increases in peak flows which would maintain and improve stream bank stability.

Under this alternative no degradation of the water resources in the areas tagged out as LSH or in the RR's would occur. There would likely be no significant changes in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows. The physical integrity of the aquatic system and more specifically streambank stability would be maintained by not entering

and removing trees within 50 to 100 ft of steep, downcut stream channels. Wood is extremely important to streams that contain fine sediment. Log jams and individual pieces of wood act as a source of roughness that traps sediment and helps to moderate its progression down a stream channel. Water quality concerns such as the observed "milky water" could be reduced short term by allowing dense stands in the RR's to self thin. The fallen logs would be adding structure to streams that could filter out sediment, allowing the sediment regime to be maintained.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

In alternatives B and C no entry would be allowed in the LSH areas and the stands would continue to function as they currently do with normal maturation rates. Species which use this mosaic of habitat in which to disperse would continue to have the connectivity of existing habitat in its present distribution for the short term and would benefit from increased development of LSH in the thinned stands adjoining and connecting them.

D. Alternative C - Hydrologic Protection

Soils (Key Issue - Mitigation of soil compaction from previous entries)

See paragraph B above.

Silviculture (Key Issue - Control of tree diseases)

Treating the root disease areas in the RR's would promote stand health. Foregoing thinning of the stand in the RR's, however, would result in a continued slowing of stand growth, an increase of associated competitive stresses on the trees, and probable insect attack or out break. This would not allow the Aquatic Conservation Strategy (ACS) objectives of structural diversity (objective #8, ROD, B-11) to be met within the RR's long term through controlling stocking and acquiring desired vegetation characteristics needed to attain of ACS objectives.

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

The results under this alternative would be identical to alternative B except that achieving old growth characteristics in the RR's would require a longer time. The tree stand in the RR's would continue to consist of smaller diameter trees until it was able to self thin. This alternative, as compared to alternative B, would probably add smaller diameter wood debris to the streams.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

See paragraph C above.

E. Alternative D - Stand Health

Soils (Key Issue - Mitigation of soil compaction from previous entries)

See paragraph B, above.

Silviculture (Key Issue - Control of tree diseases)

Thinning to maintain or increase tree vigor should materially reduce the chance of insect outbreaks in any stand. The prompt utilization of recently killed or dying timber will often prevent insect outbreaks (Knight and Heikkinen, 1980). By treating the diseased areas we would utilize the timber that would be lost through mortality, reduce the endemic insect population, increase tree growth and vigor, increase diversity and control the loss of susceptible conifers remaining in the stand (Thies & Sturrock, 1995).

Hydrology (Key Issue - Prevention of further degradation of water quality and riparian function)

See paragraph B, above.

Wildlife (Key Issue - Maintaining and developing Late Successional Habitat and enhancing connectivity values)

See paragraph B, above.

IV. CONTACTS, CONSULTATIONS, AND PREPARERS

A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with the following federal and state agencies (40 CFR 1502.25):

1. **Threatened and Endangered Species Section 7 Consultation** - The Endangered Species Act of 1973 (ESA) requires consultation to ensure that any action that an Agency authorizes, funds or carries out is not likely to jeopardize the existence of any listed species or destroy or adversely modify critical habitat. The required ESA consultation was accomplished with the **US Fish and Wildlife Service (USF&WS)** and the Biological Opinion (BO) was received on June 16, 1997. The USF&WS concluded that the proposed action is " . . . not likely to jeopardize the continued existence of the bald eagle, peregrine falcon, spotted owl or murrelet or adversely modify designated critical habitat for spotted owls or murrelets" and an "Incidental Take Statement" was issued. "Incidental Take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency . . . " (BO, pg. 18). The USF&WS has stipulated terms and conditions for the Incidental Take having to do with seasonal restrictions for the northern spotted owl and the marbled murrelet. The Roseburg District's Biological Assessment (BA) for Endangered Species consultation has been submitted to the **National Marine Fisheries Service (NMFS)**. The BA was a "likely to adversely affect" (LAA) for Umpqua River (UR) cutthroat trout and Oregon Coast (OC) steelhead trout. The Level 1 Team concurred with this determination. A BO has not been received from NMFS.

2. **Cultural Resources Section 106 Consultation** - Consultation as required under section 106 of the National Historic Preservation Act with the **State Historical Preservation Office** (SHPO) was completed on June 26, 1996 with a "No Effect" determination.
3. Although not required, Donald and Ellen Goheen, Entomologists / Pathologists with the Southwest Oregon Forest Insect and Disease Technical Center (U.S. Dept. of Agriculture) were consulted on stand disease problems.

B. Public Notification

1. Notification was provided to affected **Tribal Governments** (Confederated Tribes of the Coos, Lower Umpqua and Siuslaw; Grande Ronde; Siletz; and the Cow Creek Band of Umpqua Indians). No comments were received. Six letters were also sent to **adjacent or nearby landowners**. No comments were received.
2. This project was included in the Roseburg District Planning Update (Spring 1996). No comments were received.
3. A 30-day **public comment period** will be established for review of this EA. A Notice Of Availability will be published in the Roseburg News Review. This EA and its associated documents will be sent to all parties who request them. If the decision is made to implement this project, a notice will be published in the Roseburg News Review. Notification was provided to certain State, County and local governments (See Appendix G - Public Contact).

C. List of Preparers

Lyle Andrews	Engineering
Isaac Barner	Cultural Resources
Bruce Baumann	Project Lead
Dan Couch	Resources Forester
Lowell Duell	Hydrology
Nancy Duncan	Wildlife
Dave Erickson	Recreation / VRM
Jeanette Griese	Silviculture
Ralph Klein	Soils
Fred Larew	Mining Claims / Land Resources
Jim Luse	EA Coordinator / EA Preparer
John Patrick	Presale Forester
Elijah Waters	Fisheries
Ron Wickline	Botany