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

Environmental Assessment for the Swiftwater Field Office

Bonanza Commercial Thinning Harvest

EA No. OR - 104 - 04 - 07

The Swiftwater Field Office proposes to do a commercial thinning and density management harvest on approximately 200 acres of second-growth forest located in the Calapooya Watershed located in Sections 16, and 17; T24S R3W, W.M. This project is within the Matrix and Riparian Reserves Land Use Allocations and is designed to help meet the Roseburg District's annual harvest commitment and enhance late-successional characteristics.

Acronyms Used:

ACS	-	Aquatic Conservation Strategy
BLM	-	Bureau of Land Management
BMP	-	Best Management Practice
CWD	-	Coarse Woody Debris
DBH	-	Diameter at Breast Height
EA	-	Environmental Assessment
FEMAT	-	Forest Ecosystem Management Assessment Team
GFMA	-	General Forest Management Area
ID Team (IDT)	-	Interdisciplinary Team
NEPA	-	National Environmental Protection Act
NFP or NWFP	-	Northwest Forest Plan
PDC	-	Project Design Criteria
RMP	-	Resources Management Plan
ROD	-	Record Of Decision
S&G	-	Standards & Guidelines
T&E	-	Threatened or Endangered

Definitions:

Coarse Woody Debris: Those portions of trees that has fallen to the ground at least 20" in diameter

Co-dominant Tree: Trees with crowns forming the general level of the crown canopy and receiving full light from above but comparatively little from the sides.

Dominant Tree: Trees with crowns extending above the general level of the crown canopy and receiving full light from above and partly from the side.

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INTRODUCTION

This Environmental Assessment (EA) has been prepared for the Swiftwater Field Office's proposed **BONANZA COMMERCIAL THINNING PROJECT**. An EA is a site specific analysis of potential environmental impacts that could occur as the result of the implementation of a federal action. The EA assists the Agency in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from analyzed actions. "Significance" as defined by NEPA is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a "Finding of No Significant Impact" (FONSI). The FONSI is a document that briefly presents the reasons why implementation of the proposed action will not result in "significant" environmental impacts (effects) beyond those already addressed in the Roseburg District's *Proposed Resource Management Plan / Environmental Impact Statement* (PRMP/EIS, October 1994). After the FONSI is signed, a Decision Document would be completed, 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*, a daily newspaper of general circulation in Roseburg, Oregon and constitutes a decision document with authority to implement the proposed action.

I. PURPOSE OF AND NEED FOR ACTION

This section provides a general overview of the proposed action. Included are: the need for the action, purpose of the action, a general description and objectives of the proposal, and conformance with existing land use plans. The issues that were identified as pertinent to this project are analyzed in Appendix D.

A. <u>Need for Action</u>

The *Roseburg District Record of Decision and Resources Management Plan* (RMP, June 1995) guides and directs management on BLM lands. It "responds to dual needs: the need for forest habitat and the need for forest products" (RMP, pg. 15).

The **need for forest products** can be met by providing ". . . a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies . . . on a predictable and long-term basis" (RMP, pg. 15). The BLM also needs to offer for sale commercial thinnings ". . . after developing stands reach a combination of stem diameter and surplus volume to permit an entry that is economical" (RMP, pg. 149). Silvicultural stand exams indicate that the stands are overly dense with decreasing growth rates and would benefit from a thinning at this time to improve growth potential.

The **need for a healthy forest ecosystem** "is . . . for a healthy forest ecosystem with habitat that will support populations of native species and includes protection for riparian areas and waters." (RMP, pg. 15) and can be met by "Design[ing] and implement[ing] watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems … and attains Aquatic Conservation Strategy objectives" (pg. 28). Much of the riparian areas consist of homogeneous second growth trees resulting from past harvest. Silvicultural practices are needed to reintroduce complexity and accelerate mature forest characteristics within the Riparian Reserve to ". . . acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy [ACS] objectives" (RMP, pg. 25) as well as actions to reduce road related hydrological impacts to reduce sources of sedimentation.

The Calapooya Fifth-Field Watershed Analysis (1999) identifies management opportunities for vegetative treatments for commercial and wildlife purposes (pg. 8-4 to 8-6). The need for the proposed action is based in part on the need as described in this document.

B. Purpose of Action

The purpose of the action described in this EA is to offer the Bonanza Commercial Thinning Timber Sale for auction in fiscal year 2005 or later. This proposal would help meet the Roseburg District's annual harvest commitment. It is also the purpose of this project to accelerate the development of mature forest characteristics (large trees, down woody debris and snags) within the Riparian Reserve areas through density management as well as restoration of past site impacts (see pg. 7). The following objectives would be accomplished by the proposed action:

1. **Timber Management and Production:**
   a. "Produce a sustainable supply of timber and other forest products" (RMP, pg. 60).
   b. Manage developing stands . . . to promote tree survival and growth and to achieve a balance between wood volume production, quality of wood, and timber value at harvest (pg. 60).
   c. Improve stand health by reducing the excess stocking in the forest stand to increase the growth and vigor of the remaining individual trees (RMP, pg. 149).

2. **Ecosystem Management:**
   a. "Restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them . . ." (Aquatic Conservation Strategy) (RMP pg. 19).
   b. "Provide habitat for a variety of organisms associated with both late successional and younger forests." (RMP pg. 33).
   c. Maintain "ecologically valuable structural components such as down logs, snags and large trees" (RMP pg. 33).
   d. Improve and/or maintain soil productivity (RMP pg. 35).
   e. "Maintain or enhance the fisheries potential of the streams . . . " (RMP pg. 40).
   f. Protect, manage and conserve all Special Status Species and Supplemental EIS Special Attention Species and their habitat (RMP pg. 41).
   g. "Improve existing culverts, bridges, and other stream crossings determined to pose a substantial risk to riparian conditions." (RMP, pg. 73).

C. Description of the Proposal

The Swiftwater Field Office of the Bureau of Land Management (BLM) proposes to harvest timber in the Calapooya Watershed located in Sections 16, and 17; T24S R3W, W.M. (see maps, Appendix A through C). Approximately 250 acres were analyzed for potential harvest activities and log hauling on the associated haul route as well as density management within the Riparian Reserve. New 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 Proposed Action Alternative.

D. Conformance with Existing Land Use Plans

The Proposed Action and all alternatives were developed to be in conformance with the *Final - Roseburg District Proposed Resource Management Plan / Environmental Impact Statement* (PRMP/EIS) dated October 1994 and its associated *Roseburg District Record of Decision and Resources Management Plan* (RMP) dated June 2, 1995. The RMP was written to be consistent 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); 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's) dated April 13, 1994; generally referred to as the "Northwest Forest Plan" (NFP). All treatment of noxious weeds would be in compliance with the Roseburg District's *Integrated Weed Control Plan and Environmental Assessment* (January 1995).

The Northwest Forest Plan (ROD, pg. 6) divides the federal landbase into seven land use allocations or categories. This project is primarily within the "Matrix" land use allocations. "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) by providing for biological legacies (snags, large woody debris and retention trees) that bridge past and future forests. The RMP further classifies the Matrix into two categories: the "General Forest Management Area" (GFMA); which are lands available for timber harvest and "Connectivity / Diversity Blocks" which are lands that are available for timber harvest and also provide connectivity between Late-Successional Reserves (RMP, pg. 33). This project is within the GFMA category.

This project is also within the "Riparian Reserves" land use allocation. The "Riparian Reserves are areas along all streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis" (ROD, pg. 7).

II. ALTERNATIVES INCLUDING THE PROPOSED ALTERNATIVE

This section describes the No Action and Proposed Action alternative, and any alternatives considered but eliminated from detailed analysis. These alternatives represent a range of reasonable potential actions that would meet the Purpose and Need. This section also discusses specific design criteria that would be implemented under the action alternatives.

A. The No Action Alternative (Alternative A)

The No Action Alternative is required by NEPA and provides a baseline for the comparison of the alternatives. This alternative represents the existing condition. If this alternative were selected there would be no harvesting of timber within the bounds of the project area. Harvest would, however, occur at another location within Matrix lands under separate NEPA analysis in order to meet harvest commitments identified in the RMP (pg. 7 and 60). Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be analyzed under a subsequent EA. There would be no entry into the Riparian Reserve for the purpose of enhancing conditions of late-successional forest and aquatic ecosystems and applying silvicultural practices to contribute towards meeting ACS objectives in the watershed at this time. Road maintenance would be on a sporadic as needed basis for the primary purpose of keeping roads open to traffic. Decommissioning of roads to reduce road related impacts would be deferred indefinitely.

B. The Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in the harvest of approximately 1.4 MMBF (million board feet) of the Roseburg District's annual harvest commitment of 45 MMBF. A small amount of additional timber could potentially be included as a modification to this project. These additions would be limited to removal of individual trees or small groups of trees that are blown down, injured from logging, are a safety hazard, or trees needed to facilitate the Proposed Action (ex. guyline and tailhold trees, cable yarding corridor trees, trees around helicopter landings, or trees within the road construction prism). Historically this addition has been less than 10% of the estimated sale quantity. An undetermined number of trees would need to be felled prior to the signing of a Decision Document for sampling purposes. This is considered a separate action and was analyzed under the *3-P Fall, Buck and Scale Sampling* EA (EA# OR-100-00-06) and would be in compliance with the Settlement Agreement (January 31, 2003).

Roads - Construction of **temporary road** (roads built, used and decommissioned after use) and **permanent road** would occur on government land. **Road renovation** (restoring the road back to its original design) and **improvement** (improving the road beyond its original design) would occur and consist of installing or replacing culverts, cleaning culvert catch basins and re-establishing ditchlines, reshaping the road surface, and brushing road shoulders. **Full road decommissioning** (roads determined through an interdisciplinary process to have no future need) and **decommissioning** (closing and leaving in an erosion-resistant condition) would occur on BLM roads (TMO, pg. 18).

Timber Harvest - Practices would consist of a combination of commercial thinning and density management. **Commercial thinning** is designed to reduce the density of the forest stand in order to maintain stand vigor and increase wood quality, to promote increased growth on the remaining trees and recover wood fiber that would ordinarily be lost through natural mortality (RMP, pg. 149). **Density Management harvest** (in the Riparian Reserve) is designed to accelerate the attainment of mature forest characteristics by encouraging the development of larger trees more quickly through reducing the stocking of the forest stand around selected trees in order accelerate the growth of the remaining trees. Other trees would be left in dense clumps to promote mortality for stand diversity (RMP, pg. 103).

The Proposed Action would require a mix of skyline cable logging (approximately 84 percent), and ground based (tractor) logging (approximately 16 percent). The Authorized Officer (Contract Administrator) may determine that additional isolated minor ground based logging would be necessary (ex. removal of guyline anchor trees, isolated portions of units, etc.). Up to twenty acres were assumed in the analysis. **Firewood cutting and salvaging** of logging debris (slash) could occur in landing cull decks and near roads.

TABLE 1. Proposed Action Summary (All figures are approximate)

Activity	Total
Timber Harvest	Commercial thinning harvest - 168 ac. (two units) Density management harvest - 39 ac.
Logging	Cable - 154 - 174 ac. Ground based - 33- 53 ac.
Road Construction	Temporary Roads - 0.6 mi.
Road Renovation	Renovation - 0.6 mi. Improvement - 2.0 mi.
Habitat Restoration	RR Treatment (Density Management) - 39 ac. Road Decommissioning - 0.4 mi. Subsoiling Treatment - 1- 2 ac.

Other Actions - The **burning of landing cull decks and slash piles** could occur as a means of reducing fire hazard. **Subsoiling** would occur on selected old existing skid trails used under this action as well as any new trails created.

C. Project Design Criteria and Management Practices as part of the Action Alternative

This section describes measures designed to avoid, minimize or rectify impacts on resources and are included as part of the action alternative. Project Design Criteria (PDC's) are site specific measures, restrictions, requirements or physical structures included in the design of a project in order to reduce adverse environmental impacts. Additionally, the RMP (Appendix D, pg. 129)

lists "Best Management Practices" (BMP's) and the ROD lists "Standards and Guidelines" (S&G's). BMP's are measures designed to protect water quality and soil productivity. S&G's are ". . . the rules and limits governing actions, and the principles specifying the environmental conditions or levels to be achieved and maintained" (S&G, pg. A-6).

1. **To meet the objectives of the "Aquatic Conservation Strategy (ACS)" (RMP, pg. 19):** The objectives of ACS are to be met at the fifth-field watershed scale and over the long-term (decades). The following describes how the project level PDC's assist in contributing toward attainment of these broader objectives:

   a. **Riparian Reserves (ACS Component #1)** were established. Riparian Reserves consist of (1) lands incorporating permanently flowing (perennial) and seasonally flowing (intermittent) streams, (2) the extent of unstable and potentially unstable areas that may directly impact streams, and (3) wetlands, ponds, and reservoirs greater than an acre. The RMP (pg. 24) specifies 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 non-fish bearing streams, wetlands greater than an acre, and constructed ponds and reservoirs. Data has been analyzed from District inventory plots and the height of a site-potential tree for the Calapooya Creek Watershed has been determined to be the equivalent of 180 ft. Therefore the Riparian Reserve boundaries would be approximately 180 ft slope distance from the edge of nonfish-bearing streams (Calapooya Creek Watershed Analysis, pg. 1-2). There are no fish-bearing streams or wetlands found within the project area.

      1). Streambank <u>stability and water temperature</u> would be maintained by establishing a no-harvest buffer along all streams. This zone consists of a strip generally 40 ft wide along intermittent and perennial nonfish-bearing streams. The buffer width would be expanded to include areas of instability, wide areas of riparian vegetation, sensitive areas identified during site review, or additional area needed to maintain stream temperature. Likewise the buffer could decrease along first or second order ephemeral or intermittent streams which lack riparian vegetation and where riparian habitat components and potential impacts to downstream fisheries are absent. At the very minimum, one-tree crown width would be maintained on each stream bank for bank stability. Approximately 12 acres would be contained within the no-harvest buffer.

      2). Density management would be applied within the Riparian Reserves "to control stocking . . . and acquire vegetation characteristics needed to attain Aquatic Conservation Strategy objectives" (RMP pg. 25). The objective is to develop late-seral forest structure and enhance existing diversity by accelerating tree growth to promote larger trees and canopies, and provide a future source of large woody debris for stream structure. This would result in a change from approximately 130 to 150 dominant and co-dominant trees per acre before thinning to 65 to 80 trees per acre (120 ft^2 BA/ac) after thinning (except in areas of potential instability (pg. 9) where heavier retention would be prescribed).

      3). <u>Riparian habitat</u> would be protected from logging damage by directionally felling trees within 100 ft of the no-harvest buffer away from or parallel to the buffer (BMP I

B2; RMP, pg. 130) and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams, streambanks, or the inner gorge unless fully suspended through the no-harvest buffer (BMP I B5; RMP, pg. 130)). Approximately 900 ft. of road building would occur within the Riparian Reserve (see Issue #1, Appendix D).

b. Key **Watersheds (ACS Component #2)** were established "as refugia . . . for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species [RMP, pg. 20]." This project is not in a Key Watershed.

c. **Watershed Analysis (ACS Component #3)** for the Calapooya Watershed was used in this analysis and is available for public review at the Roseburg District office.

d. **Watershed Restoration (ACS Component #4)** would be accomplished primarily through the treatment of Riparian Reserves as described in paragraph 1a above. In addition, this particular project includes the full decommissioning of a portion of Road # 25-4-16.2A and approximately 1600 feet of old road inside the Riparian Reserve of Unit 17A and 680 feet of existing road in Unit 16A. Other additional old roads and trails might also be included along with the subsoiling of skid trails used for this project based on post-project evaluation.

2. **To minimize soil erosion as a source of sedimentation to streams and to minimize soil productivity loss from soil compaction, loss of slope stability or loss of soil duff layer:**
a. **Measures to limit soil erosion and sedimentation from roads** would consist of: (1) Maintaining existing roads (Road No. 25-4-8.1, Segments A and B; 24-4-17.2, 17.3 and Spur 8 [see Appendix B]) to fix drainage and erosion problems. This would consist of maintaining existing culverts and installing additional culverts, (BMP II H; RMP, pg. 137). Seven additional cross drains would be installed to reduce the effective stream extensions due to ditchline and one stream-crossing culvert would be replaced. In-stream work would be limited to periods of low or no flow (between July 1 and September 15). (2) Minimizing spur construction in the Riparian Reserves, locating spurs on ridge tops and stable (0 - 35 percent slope) locations (BMP II B2; RMP, pg. 132), and minimal width (12 ft) construction to minimize disturbance. About 400 feet (25 percent) of new temporary road construction (all on stable slopes) would be inside Riparian Reserves. (3) Restricting road renovation and log hauling on unsurfaced roads to the dry season (normally May 15 to Oct. 15). If unacceptable resource damage could occur, operations during the dry season could be suspended during periods of heavy precipitation. This season could be adjusted if unseasonable conditions occur (e.g. an extended dry season beyond October 15 or wet season beyond May 15). (4) Prior to any winter haul on surfaced roads, the stream crossings along the haul route would be evaluated for the need for turbidity reducing measures (ex., placement of straw bales and/or silt fences). If needed, these structures would be put in place prior to haul. (5) Not over-wintering bare erodible spur roads. This would be done by building, using and winterizing (installing necessary drainage features, blocking and seeding and mulching bare cut and fill surfaces with native species, or a sterile hybrid mix if native seed is unavailable) all temporary roads at the end of the operating season. (6) Decommissioning all new construction when logging is completed, i.e., subsoiling of spur #1, 2, 3 and 5, water barring, seeding cut slopes and fills with native species, or a sterile hybrid mix if native seed is unavailable, and blocking access (BMP II I; RMP, pg. 138).

b. **Measures to limit soil erosion and sedimentation from logging** would consist of: (1) requiring skyline yarding where cable logging is specified. This method limits ground disturbance by requiring at least partial suspension (BMP I C1a; RMP, pg. 130) 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). Intermediate supports would be used where necessary. 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. (2) Dry season logging (BMP I C1c; RMP, pg. 130) would be required on portions of Unit 16A and Unit 17A. Ground-based logging would be limited to the dry season as described above (BMP I C2d; RMP, pg. 131).

c. **Measures to limit soil compaction** (RMP, pg. 37) would consist of: (1) limiting ground based logging and subsoiling to the dry season (May 15 to Oct. 15) when soils are least compactable (BMP I C2d; RMP, pg. 130); however, this season could be adjusted if unseasonable conditions occur (e.g., an extended dry season or wet season). Also, operations would be suspended during periods of heavy precipitation if resource damage would occur. (2) Limiting machines in size and track width to reduce compaction and trail width (BMP I C2j; RMP, pg. 131). (3) Using old trails to the greatest extent practical and limiting new trails to slopes less than 35 percent (BMP I C2b; RMP, pg. 131). (3) Confining ground-based yarding activities to designated skid trails (BMP I C2c; RMP, pg. 131) as identified in an approved logging plan. Tractor skidtrails would be spaced at an average spacing of 150 feet apart (about seven percent of the ground surface in trails) where topography allows. If harvester/forwarder is used, the harvester would be required to delimb trees in front of the machine tracks or tires in order to reduce compaction. The forwarder would operate on the branch and limb covered areas traversed by the harvester. (4) Evaluating the need for amelioration by the Soil Scientist after completion of ground-based operations in accordance with RMP criteria (BMP III B3; RMP, pg. 139). All main trails would be ameliorated after completion of current entry or would be documented with a plan for deferred amelioration at final harvest. Amelioration would only be deferred if unacceptable damage to residual trees would occur. Secondary trails (any trail that has less than 50 percent exposed mineral soil) would be handled in the same manner as main trails if field evaluation shows that compaction is extensive. Amelioration would include subsoiling and returning organic debris to the subsoiled surface. **Subsoiling** has been the main type of amelioration. It is a practice that shatters soil compaction and improves water infiltration, by pulling a device known as a winged subsoiler with a crawler tractor or the use of a specially equipped excavator. Any subsoiling of trails for this entry would be done with a winged subsoiler mounted to the arm of a small excavator. The excavator would place organic debris back over the trails. Existing accessible skid trails and haul roads not considered as part of the current transportation would also be subsoiled when evaluation indicates excessive compaction and where practical (e.g., subsoiling saturated or very rocky soils or skid trails with advanced reproduction would not benefit soil productivity and therefore would not be practical). Subsoiling of newly created trails as well as old trails used under this entry would be done at this time. The remaining subsoiling needs would be documented and deferred to final harvest. Existing skid trails would be used wherever possible. (5) Decommissioned roads and temporary spur roads would be subsoiled with a winged subsoiler, either pulled by or mounted on a crawler tractor or mounted to an excavator arm, provided that subsoiling would not contribute to additional sedimentation to streams.

d. **Measures to protect slope stability** would consist of: (1) Locating new roads in stable locations (BMP II B2; RMP, pg. 132) with proper drainage structures (BMP II D; RMP, pg. 133). (2) Retaining extra trees on potentially unstable slopes within the Riparian Reserve and at some possible landslide initiation sites (approximately four sites totaling one acre). (3) Removal from the project of less than one acre of unstable ground (Unit 16A) which met the Timber Production Capability Classification criterion for removal from the timber base (BMP I A2; RMP, pg. 129). NOTE: Dry season yarding with one-end suspension as described previously would also reduce the risk of slope failure.

3. **To provide wildlife habitat components:**

a. Nesting and roosting habitat for cavity dwellers would be provided by reserving all existing hard or soft snags and remnant mature or old-growth trees remaining from the previous stand where possible. Any snag deemed as hazardous to worker safety could be felled at the discretion of the operator and BLM's authorized official (Contract Administrator). Such trees would be reserved and left in place as CWD. Past experience has been that less than five percent of snags need to be felled for this reason.

b. Most existing CWD (at least 16" in diameter and 16 ft. in length) remaining from the previous stand would be reserved (RMP, pg. 38). This consists of blowdown trees and logs remaining from past logging. Occasional existing CWD could be removed if it blocks roads or landings. Blowdown trees from the second-growth stand typically do not meet the above sizes; however, some of these smaller trees would be reserved as interim CWD.

4. **To protect air quality:**

Any burning of landing piles would have an approved "Burn Plan" and be conducted under the requirements of the Oregon Smoke Management Plan and done in a manner consistent with the requirements of the Clean Air Act.

5. **To protect and enhance stand diversity:**

a. Mature and old-growth (RMP, pg. 112) remnant trees in the thinning units would be retained to the greatest extent possible as well as occasional defective (diseased) and deformed trees (trees with broken or multiple tops, and trees with ramicorn branches (large branch clusters)) that could provide future snags and nesting habitat. All hardwoods would be reserved in the Riparian Reserve and large hardwoods would be reserved in the uplands.

b. Snags and CWD would be reserved as described in paragraph three above. Snags would be protected from logging damage by clumping trees around them and directionally falling trees away from the snags.

6. **To prevent and report accidental spills of petroleum products or other hazardous material and provide for work site cleanup:**

During operations described in this proposal, the operator would comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials. 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. Hazardous materials (particularly petroleum products) would be stored in durable containers and located so that any accidental spill would

be contained and would not drain into watercourses. All landing and work site trash and logging and construction materials would be removed from the project area.

7. **To prevent and/or control the spread of noxious weeds:**
Stipulations would be incorporated into the logging contract to prevent and/or control the spread of noxious weeds. This would include the cleaning of logging equipment prior to entry on BLM lands (BLM Manual 9015 - Integrated Weed Management) as well as roadside brushing and/or herbicide application prior to the start of management activities in the proposed project area.

8. **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. The stand would be thinned from below (i.e. removal of the smallest diameter trees first) which would remove mostly suppressed trees and smaller trees that would result in less stand damage during falling.

b. Felling and yarding would be done in a manner to protect the residual stand. No falling and yarding in the cable areas 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. This date could be adjusted based on local conditions (e.g. earlier or later than normal loose bark period).

c. Yarding systems would be designed to match yarder and cable size to the size of the timber in order to minimize damage from an overly large yarding system. Corridors for yarding would be pre-designated and approved by the Sale Administrator. Cable yarding of logs would be done under the canopy to avoid damage to tree crowns.

9. **To protect Special Status and SEIS Special Attention Plants and Animals:**
a. Special Status (Threatened or Endangered, proposed Threatened or Endangered, Candidate, State listed, Bureau Sensitive, Bureau Assessment, or Special Provision) and Special Attention plant and animal sites would be protected where required, according to established management recommendations (RMP, pg. 40). If, during implementation of the proposed action, any Special Status Species are found that were not discovered during pre-disturbance surveys; operations would be suspended and appropriate protective measures would be determined before operations would be resumed.

b. Fifteen (15) acres were removed from Unit 16A to protect habitat for the Townsend's big-eared bat.

10. **To protect cultural resources:**
Stipulations would be placed in the contract to halt operations and evaluate the appropriate type of mitigation needed to provide adequate protection; if any objects of cultural value (e.g. historical or prehistorical ruins, graves, fossils or artifacts) are found during the implementation of the proposed action that were not found during project evaluation.

E. Alternatives Considered but Eliminated

There were no other alternatives considered during the formulation of this project. One public comment suggested that a wildlife restoration alternative be considered. Since this is in the Matrix LUA, timber objectives are primary; therefore a restoration alternative would not be compatible with the RMP and the purpose and need of this assessment. Certain wildlife considerations were made part of the project design.

III. AFFECTED ENVIRONMENT

This section describes the existing environment and forms a baseline for comparison of the effects created by the alternatives under consideration. This section does not attempt to describe in detail every resource within the proposed project area that could be impacted but only those resources which could be substantially impacted. Appendix F (Analysis File) contains data and additional supporting information used by the interdisciplinary team (IDT) to describe the affected environment.

This project lies within the Oregon Western Cascades Physiographic Province. The FSEIS describes the affected environment for this province on page 3&4-19. The Roseburg District Proposed Resource Management Plan/Environmental Impact Statement (PRMP/EIS, pp. 3-3 through 3-71) provides a detailed description of BLM administered lands on the Roseburg District. A further description can also be found in the Calapooya Watershed Analysis.

A. General Setting

Stand Description - The stand originated after logging and is about 50 to 55 years old. The predominant conifer species is Douglas-fir, which acts as a pioneer after a significant disturbance event such as fire or timber harvest. Conifer species in association include incense-cedar, western hemlock, western red cedar, white fir, and Pacific yew. Sugar and ponderosa pine are also common in the Calapooya Watershed. Salal, Oregon grape and sword fern are common on the forest floor. The plant association best describing these areas is a western hemlock or white fir with salal and Oregon grape.

Site Description – This project occurs within the Middle Calapooya Subwatershed of the Calapooya Watershed which covers approximately 157,000 acres. Current landscape patterns include natural stands that are the result of fire, managed stands established following timber harvest, and non-forested agricultural and pasture lands.

B. Affected Resources

The RMP (pg. 41) requires that all proposed actions be reviewed ". . . to determine whether or not special status species occupy or use the affected area or if the habitat for such species is affected." Special Status Species are those listed or proposed for listing as threatened or endangered (T&E), under the under the Endangered Species Act (ESA) of 1973, as amended; or species designated as

Bureau Sensitive or Bureau Assessment. Bureau Sensitive species are species eligible for federal or state listing or candidate status and Bureau Assessment species are species not presently eligible for listing or candidate status under the ESA but are of State concern and may require protection or mitigation in the application of BLM management activities. The affected area was surveyed for the resources listed below according to established protocols:

Botany - There are no BLM special status plant or State listed species in the project area. The Project area was surveyed under past and current survey protocols. A summary of results is located in Appendix F. There are some localized infestations of the noxious weed, Scotch broom, in the project area which is being treated under the District Noxious weed program.

Cultural Resources - No cultural resources were found in the project area.

Fisheries - Aquatic systems within the project area include five intermittent streams (first order) that flow into the Calapooya, and one intermittent stream (first order) that flows into a tributary of Banks Creek. There is one fish-bearing stream (Calapooya Creek) 0.4 miles downstream of the proposed project area, and one fish-bearing stream (Foster Creek) adjacent to the proposed haul route (See Fisheries Map, Appendix F). According to the Calapooya Watershed Analysis, Oregon Coast Coho (*Oncorhynchus kisutch*), Oregon Coast Steelhead trout (*O. mykiss*), Coastal Cutthroat trout (*O. clarki clarki*), Oregon Coast Chinook salmon (*O. tshawytscha*), Pacific Lamprey (*Lampetra tridentata*), and Umpqua Chub (*Oregonichthys kalawatseti*) are present in the watershed. Chum salmon, (*Oncorhynchus keta)* a Bureau Sensitive Species, is not present within the Calapooya watershed. The Calapooya Watershed Analysis (Table 7-1) contains a complete list of fish species present in the watershed. The Oregon Coast Coho has been proposed for listing as a threatened species under the Endangered Species Act. The haul route has approximately four non-fish bearing stream crossings, two fish-bearing stream crossings (both on Foster Creek) and approximately twelve cross drains. Approximately three out of the five wet season haul route stream crossings are on first order streams.

The Oregon Department of Fish and Wildlife (ODFW, 1994) has conducted **aquatic habitat** surveys in the Calapooya Fifth-Field Watershed. Data is available for Calapooya Creek (Reach 3) and was used in this analysis. No information is available for Foster Creek. These surveys generally show that streams within the watershed lack large wood, have a high percentage of fine sediment within the stream channels and substrate dominated by bedrock. Based on Watershed Analysis data, the Riparian Reserve, within 180 feet of non-fish bearing streams, generally consists of overstory and understory components as described above in the stand description (pg. 11). Streams within the proposed thinning units consist of high gradient, non-fish bearing, intermittent streams of the first order. **Essential Fish Habitat** (EFH) is designated by the Magnuson-Stevens Fishery Conservation and Management Act of 1996 as habitat that is currently or was historically available to Oregon Coast coho and chinook salmon (Federal Register 2002 Vol. 67, No. 12). The nearest EFH is located approximately 2,000 feet (0.4 mi.) below the project area in Section 17.

Hydrology - Five small unnamed tributary streams to Calapooya Creek in Section 17 have stream reaches within Unit 17A for a total of approximately 6800 feet. Another small unnamed tributary to Banks Creek (about 300 feet total) is within the unit in Section 16. All streams within the timber sale units are first order intermittent streams which usually stop flowing by late spring. A number of these first order stream segments have stream banks and channels which have been altered by past high density ground-based operations. These include bladed skid trails and primitive haul roads

which angle down stream banks and cross streams with log culverts and stream channels that were filled with earth to accommodate tractor yarding along the stream bottoms. Some of the crossings have washed out leaving deeply cut channels through the compacted fills. Others have become relatively stable but still interrupt stream flow at numerous old crossings.

Beneficial Uses of Water downstream of the project area consist primarily of domestic water supply, irrigation and livestock watering, resident fish and aquatic life, and salmonid spawning and rearing. There are no waterbodies in the project area on the Oregon Department of Environmental Quality's 2002 303(d) List of Water Quality Limited Waterbodies. Calapooya Creek has been identified as water quality limited for summer temperature, dissolved oxygen, pH, and fecal coliform from the mouth (near Umpqua) up to river mile 18.7 which is about five miles downstream of the project area (Oregon DEQ, 2003). The characteristics of climate (e.g. precipitation type and timing), elevation, and geomorphology all contribute to the way watersheds move and store water. Mean annual precipitation amounts of 42 to 46 inches occur within the project area primarily between October and March. Elevation within the project area ranges from 780 to 1720 feet. Precipitation occurs primarily as rain at lower elevations (< 2,000 feet). The Transient Snow Zone (TSZ) is defined as areas between 2,000 to 5,000 foot elevation that may alternately receive snow or rain. Only under unusual weather conditions would snow occur below 2000 feet. None of the project is in the TSZ. The existing haul roads are rocked all weather roads.

Soils and Geology - Soils within the project were developed over the sandstones and siltstones of the Umpqua Group's Tenmile Formation. On slopes greater than 65 percent with concave positions, and greater than 70 percent with convex/planar positions, debris avalanches and debris flow initiation within confined channels are relatively common.

About 95 percent of the project consists of moderate slopes commonly broken by broad, gently sloping benches. Slopes range from 15 to 65 percent. The soils are moderately well to well drained and moderately deep to very deep (20 to greater than 60 inches to bedrock) with loamy surfaces and clayey subsoils. **Landslide** activity during the life of the current stands is not evident indicating these slopes are stable. A high density of old skid trails and unsurfaced haul roads occur with varying degrees of soil displacement (subsoil and bedrock commonly exposed) and residual compaction (light to severe). Some trails went up stream bottoms and also were bladed into steep slopes. Erosion off these trails and roads and sedimentation to streams was substantial in the past, however little to no surface soil erosion is currently occurring, except for some stream crossings and stream bottoms that were used for skidding.

The remainder (about 11 acres on slopes 65 to 85 percent) has the **Timber Production Capability Classification** (TPCC) of FGR-fragile soils due to slope gradient but suitable for timber production with appropriate mitigation. Scattered throughout these 11 acres are potentially unstable sites (can become unstable with changing conditions). A few of the indicators of potential instability are old landslide scars and debris fields at their base, signs of mild creep as indicated by the slight to moderate sweeps in the conifer boles and the slight unevenness of the ground, loamy soils of low cohesion and pockets of deep soil. The northwestern part of Unit 16A has five draws (two with headwalls) on three acres of FGR slopes. One draw extends 400 feet downgrade beyond the unit boundary to a first order stream. The others extend 500 to 800 feet downgrade beyond the unit boundary to the Calapooya Creek floodplain. The draw bottoms have gradients as low as 30 percent. These properties affect the probability of landslides affecting streams (see pg. 20). In Unit 17A

gentle to moderate slopes (25 to 45 percent) that are 300 to 1100 feet in length separate eight acres of FGR slopes from the nearest streams (inception points of two first order streams). A two acre portion of Unit 17A has slopes up to 100 percent but is considered stable due to major components of shallow soil and rock outcrop. Gentle and moderate slopes of 700 feet separate it from the nearest stream.

Wildlife - Federally Threatened and Endangered (T&E) species known to occur in the Roseburg District include the Northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), and bald eagle (*Haliaeetus leucocephalus*). The nearest known northern spotted owl site (Sunset View) is approximately 1.3 miles from Unit 17A. No **spotted owl** sites are within 1.2 miles (provincial home range) of the proposed project area. The Sunset View owl site is provided for with a minimum of a 100 acre Residual Habitat Area (Core Area). None of the project is within designated Critical Habitat for the northern spotted owl. Critical Habitat is defined as a specific geographical area specified by the US Fish and Wildlife Service (FWS) in Recovery Plans as containing habitat essential for the conservation of a Threatened and Endangered species. This project is more than 50 miles from the Coast therefore is not considered to contain suitable marbled murrelet habitat. The nearest known **bald eagle** site (Huntley Creek) is more than three miles away. As of this date, there have been no bald eagle sightings within the project area; therefore, there are no bald eagle concerns. The remaining T&E species do not occur in the project area. There are no terrestrial species documented on the Roseburg District that are currently proposed for listing, or candidates for listing under the Endangered Species Act.

The following Bureau Sensitive Species are suspected to occur within the project area but there are no known sites within the project area: Northwestern pond turtle (*Clemmys marmorata marmorata*), Oregon vesper sparrow (*Pooecetes gramineus affinis*), and purple martin (*Progne subis*). There is a documented sighting of the Columbian white-tailed deer (*Odocoileus virginianus leucurus*) in Unit 17A. The stands in the proposed project are probably serving the **Columbian white-tailed deer** as shelter and/or thermal cover. The forage available for deer in the project area is limited and predominantly associated with canopy openings in the riparian areas. There is no suitable habitat currently within the proposed project for the **Oregon vesper sparrow** but they may be present in adjacent, recent clearcuts and agricultural lands. Currently the project area does not contain suitable nesting habitat for purple martins but they may be present in adjacent early-seral stands which have suitable snags for nesting. There is no suitable breeding habitat or pond habitat for the **Northwestern pond turtle** within the project area. Pond turtles may use upland habitat such as that within the project area for over-wintering. There is a known **Townsend's big-eared bat** (*Corynorhinus townsendii*) roost in an abandoned mine adit in unit 16A. It is unknown at this time if the mine adit is being used as a maternity roost, hibernacula, summer roost, night roost, or an interim roost. However, based on the lack of obvious bat sign (e.g. guano stains) it seems unlikely that the adit receives use from a large number of bats in the recent past. The **Oregon shoulderband** (*Helminthoglypta hertleini*) is not expected to occur within the project area since surveys were conducted in 2000 and no discoveries of the species or its habitat were made.

There are no known Bureau Assessment Species sites within the project area. Although there are no known sites the **fringed myotis** (*Myotis thysanodes*) is suspected to occur within or near the project area. An unknown number of potential fringed myotis roosting trees and snags are expected to occur in Units 16A and 17A.

IV. ENVIRONMENTAL CONSEQUENCES

This section provides the analytical basis for the comparisons of the alternatives. The reasonably foreseeable environmental consequences (impacts, effects) to the human environment that each alternative would have on selected resources are described. Impacts can be beneficial or detrimental. This section is organized by the alternatives and the effects on any key issue identified in Appendix D, as well as the selected resources. Analysis considers the **direct impacts** (effects caused by the action and occurring at the same place and time), **indirect impacts** (effects caused by the action but occurring later in time and farther removed in distance but are reasonably foreseeable) and **cumulative impacts** (effects of the action when added to other past, present and reasonably foreseeable future actions). The temporal scale assumed in this analysis may vary depending on the subject matter. Generally, short-term refers to the time of the action up to the first year after the action but may be as long as ten years. Long-term may be a year or more but generally more than ten years and up to 200 years.

The Roseburg RMP/EIS analyzes the environmental consequences in a broader context. This EA does not attempt to reanalyze impacts that have already been analyzed in these documents but rather to identify the particular site specific impacts that could reasonably occur. Environmental effects to the "Critical Elements of the Human Environment" are analyzed in Appendix D and E.

When encountering a gap in information, the question implicit in the Council on Environmental Quality regulations on incomplete and unavailable information was posed: Is this information "essential to a reasoned choice among the alternatives"? (40 CFR 1502.22(a)). While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are sufficiently well established that any new information would not likely reverse or nullify understood relationships. Although new information would be welcome, no missing information was determined as essential for the decision maker to make a reasoned choice among the alternatives.

A. <u>No Action Alternative</u>

This alternative would not meet the Purpose and Need (objective) of the EA (pg. 2) of producing a sustainable supply of timber and other forest commodities that would contribute to the local economy. Restoration of past disturbance would not occur. Road densities and conditions would remain unchanged. Only normal programmed maintenance would be performed. There would be no entry into the Riparian Reserves for the purpose of enhancing conditions of late-successional forest ecosystems and applying silvicultural practices to meet ACS objectives.

Stands - The stands would continue to differentiate in time through growth and mortality. Mortality would occur due to competition between trees for growing space. The process of self-thinning occurs only after most of the dominant trees are under competitive stress. At age 120 the Organon growth model (Hann, 1995) projects that the stand would be extremely dense with trees having small live crowns and quadratic mean diameter (diameter of trees of mean basal area) of 25 inches. Tall spindly trees are less likely to stand up in high winds and more likely to break under snow loads. Trees that have developed over long periods of competitive stress are slow to respond to improved growing conditions and may never attain potential growth rates. Modeling shows that between 35 and 190 trees per acre would die. This is far more down wood and snags than would be normally found in a natural stand condition. This amount of dead wood greatly increases the risk of stand damage as a result of fire. Without density management, old-growth characteristics within the

Riparian Reserves would take much longer to develop. An overly dense stand increases the risk of a higher severity wildfire, or an insect or disease epidemic which could result in a stand replacing event. These types of events would affect a much larger area and would cause far greater impacts to the watershed than the proposed action. The Silvicultural Prescription (Appendix F) provides a more detailed stand description.

Wildlife Habitat – There would be no anticipated Direct Impacts to **T&E species**. Two-hundred and seven (207) acres of Northern spotted owl dispersal habitat would continue to function for the foreseeable future. There would be no potential disturbance effects resulting from this alternative to nesting spotted owls (if they occur) within 65 yards of Units 16A and 17A (USDI, 2004). As the stand matures, potential nesting structures are expected to develop for Northern spotted owls in approximately 40 years.

The existing stand of mid-seral habitat would continue to function in its current capacity for **Bureau Sensitive Species** with no expected direct impacts. The stand is expected to continue to function as over-wintering habitat for Northwestern pond turtles with the same effectiveness it does currently. Habitat for the Oregon vesper sparrow and the purple martin would not be removed, modified, nor created under this alternative. The Townsend's big-eared bat roost in the abandoned mine adit is expected to continue functioning for the foreseeable future. The remnant, late-seral trees and snags, that may be potential roosting habitat for Townsend's big-eared bat, would continue to function within the stand. Competitive mortality of live trees would likely provide additional bat habitat in the future. Forage availability for the Columbian white-tailed deer would continue to be limited and predominantly associated with canopy openings in the riparian areas. As the stand matures, there may be a gradual loss of the available shrub layer as it is shaded out by the denser conifer canopy.

The existing mid-seral habitat would continue to function in its current capacity for **Bureau Assessment Species** with no expected direct impacts. The remnant, late-seral trees and snags, that may be potential roosting habitat for the fringed myostis, would continue to function within the stand. Competitive mortality of live trees would likely provide additional bat habitat in the future.

Soil Productivity - "Long-term soil productivity is the capability of soil to sustain inherent, natural growth potential of plants and plant communities over time" (RMP/EIS, pg. 4-12). All in-unit surfaces with **compaction and soil displacement** from past ground-based harvest and timber haul operations would continue to heal very slowly by natural processes. Exposed compacted subsoils and exposed bedrock would be the slowest to heal. Any opportunity for amelioration would be postponed to until no later than final harvest. In-unit surface erosion would continue to be low to none.

The effect of **landslides** on soil productivity would be inconsequential. Under the current canopy and understory cover, the potential for landslides on the FGR slopes are low since there is no evidence that landslides larger than small slipouts have occurred within the life of the current stands. The probability of debris avalanches and debris flows would be low (less than 10 percent) on the steep, potentially unstable FGR soils until a future regeneration harvest or stand replacing fire creates moderate landslide potentials. This assessment is based on the low level of in-unit landslide activity under mid-seral stand canopies within the project area (aerial photo history and field observations). The Oregon Department of Forestry 1996 storm impacts and landslide study (Oregon Department of Forestry, 1999) indicated that failures were least likely in stands in the 31 to 100 year

age class. The assessment is also based on indicators of potential instability seen in the field. The likely size of any landslide occurring under the no action alternative would be small (less than 0.1 acres) based on the lack of evidence of larger in-unit landslides having occurred under a clearcut and subsequent second growth canopies. There is potential for the FGNW site that is failing in Unit 16A to develop into a medium-sized (0.1 to 0.5 acre), fast moving debris avalanche.

Water Quality and Hydrologic Processes - There would be no direct impacts to hydrology or water quality. Vegetation within the Riparian Reserve would continue to slowly develop over time to provide increased shade, bank stability, and large woody debris recruitment. Landslides would have low consequence to water quality. There is no likelihood of any debris avalanche or debris flow reaching a stream in Unit 17A due to the expanse of gentle to moderate slopes buffering the streams. The likelihood of any debris avalanche and debris flow reaching a stream that initiates on the FGR slopes of Unit 16A would be low due to the distances along draws that lack scour and deposition channels and due to the gentle to moderate gradient breaks in these draws. If the FGNW site should become a rapid moving debris avalanche, it would not likely affect water quality for the same reasons stated above. Sediment reaching streams from in-unit surface erosion (primarily from old skid trail and haul roads) would continue to be low.

Fisheries and Fisheries Habitat- There would be no direct impacts**.** Fish species and populations would remain relatively unchanged from current trends. The riparian habitat, adjacent to the aquatic environment on non-fish bearing streams, consists primarily of dense mid-seral stands of Douglas-fir (see silviculture prescription). These stands would continue to mature and develop late-successional characteristics over time. However, due to high tree density, old-growth characteristics would develop slowly (indirect impact) resulting in the continued development of future large wood and coarse woody components which are small in size and structure. Road maintenance activities would occur over time based on request by permittee or on an "as-needed" basis. Current stream temperature, sediment inputs, woody debris and hydrologic processes would be expected to recover gradually as culvert replacements, road treatments, road decommissioning, and fisheries habitat improvement projects occur across the fifth-field. Occasional pulses of increased sediment and woody material would enter the aquatic systems as a result of blowdown, landslides, and road failures. These events would tend to coincide with large wind and/or rain storms.

B. Proposed Action Alternative

Stands - All of the stands include some understory development at this time. The thinning would open the canopy and promote some understory development. Old residual trees from the original stand, standing dead trees, and large down logs would be retained. The Organon growth model (Hann, 1995) projects that at stand age 120, the stand would have a quadratic mean diameter of 28 inches (4 inches greater than the no action alternative).

Wildlife Habitat - Direct Impacts to **T&E species** due to harvest activities would include the modification of 218 acres of Northern spotted owl dispersal habitat. Project Design Criteria included in this analysis (see paragraph II.C.9.b.) are expected to mitigate potential disturbance effects to nesting spotted owls (if they occur) within 65 yards of Units 16A and 17A (USDI, 2004). Thinned stands would continue to function as dispersal habitat, but in a slightly degraded condition (Indirect Impact). As canopy cover recovers and understory vegetation layers develop, functionality of the modified dispersal habitat would improve for the spotted owl in 10 to 15 years.

Commercial thinning and density management on 207 acres of mid-seral habitat would modify the existing stand (direct impact) for **Bureau Sensitive Species.** The proposed action is not expected to inhibit the ability of the stand to function as over-wintering habitat for Northwestern pond turtles. No further impacts to the Northwestern pond turtle. The project is not expected to remove, modify, nor create suitable habitat for the Oregon vesper sparrow. The proposed action is expected to provide more open stands for 5-10 years which may benefit purple martins by providing additional habitat for foraging and potential nesting. Snags are expected to be retained in the proposed units due to the protection afforded snags in the PDC's (see section II.C.3.a.). The 15 acre (600 foot radius) buffer around the Townsend's bog-eared bat roost is expected to limit disturbance near the entrance of the adit and maintain the integrity of the adjacent forested habitat for foraging. It is unknown how commercial thinning and density management within the remainder of Unit 16A may affect foraging opportunities for Townsend's big-eared bats. The proposed action is not expected to remove or modify trees with potential roosting features for Townsend's big-eared bat. Remnant, late-seral trees and snags, that may be potential roosting habitat, are expected to be retained due to the protection afforded them in the PDC's (see section II.C.3.a.). Thinning would be a short-term benefit to white-tailed deer by providing favorable conditions (e.g. reduced canopy closure, increased sunlight exposure) for increased forb and shrub growth available for forage. This benefit would continue until canopy closure (approx. 10-15 years) begins to exclude the availability of forbs and shrubs.

Thinning would modify the existing stand (direct impact) for **Bureau Assessment Species**. The proposed action is not expected to remove or modify trees with potential roosting features for the fringed myotis. Remnant, late-seral trees and snags, that may be potential roosting habitat, are expected to be retained due to the protection afforded them in the PDC's (see section II.C.3.a.).

Soil Productivity - The most common impacts to soil productivity from management activities include: 1) losses due to displacement/compaction, 2) erosion, either surface or mass wasting, and 3) alteration of soil nutrients (PRMP/EIS, pg. 4-14). According to the SEIS, Volume I on page 3&4-112, implementation of appropriate management prescriptions and best management practices should prevent unacceptable degradation of the soil resource and related long-term productivity.

Road building and logging activities would result in **soil compaction and displacement** (a direct impact). About 0.4 acre of existing trail and old natural surfaced road with varying degrees of vegetative recovery and healing from past compaction would be reopened for use. Existing trails would be widened or new construction would occur where no trail or road previously existed. Vegetation would be removed from the travel surfaces and heavy compaction would be reestablished over the entire length. New construction for Spurs 4, 5 and 6 would disturb about one acre of land outside of existing road and trail prisms. This would result in an irretrievable loss to soil productivity on about 0.7 acre because Spurs #4 and #6 and possibly Spur #5 would not be subsoiled since future use would be expected. After subsoiling (Spurs #1, 2 and 3) there would be a slight net loss in long-term soil productivity from natural conditions on 0.2 acre of their newly constructed segments; however, there would be modest to substantial gains in long-term soil productivity due to subsoiling on one acre of old road surfaces (includes reopened segments of Spurs 1 and 3 and other old road surfaces and the decommissioned segment of the 25-4-16.1 road and unnumbered road). These gains would not bring the long-term soil productivity levels back to that of the undisturbed soils. Skyline logging would add small amounts of light, superficial compaction on less than one percent of the skyline yarded ground (Sampson Butte, Coon Creek Hello Folley monitoring). Up to 30 acres were identified as having potential for ground-based logging. Ground-based yarding would be

accomplished primarily using the harvester-forwarder method. Harvester-forwarder trails would cover about 20 to 25 percent of the surface; however, the amount of area in main skid trails, log decks and landings would not exceed the plan maintenance threshold of 10 percent (based on field observations of Coon Creek and Burma Shave commercial thinnings). Some of the trail coverage would overlap old existing trails with residual compaction. About 10% of the ground-based area would have moderate to heavy compaction from the past and current entry and would be substantial enough to reduce the growth of adjacent trees, an indirect affect (About 10 percent growth loss of adjacent trees [Adams, 2003 presentation]). Subsoiling would be practical where the compaction is concentrated, usually the first half of the more heavily used trails and old mainline trails. There would also be some opportunities to subsoil old compacted skid trails not used for this project. This could restore productivity up to about one acre of compacted surface. Where compaction amelioration is deferred the residual and new compaction would continue to heal at a very slow rate and topsoil development through compaction amelioration, microorganism inoculation and seeding or other methods would be delayed. Down woody debris left on site in accordance with RMP guidelines would benefit long-term soil productivity by leaving a nutrient reservoir and a medium for growth of organisms beneficial to the soil.

The indirect effect of landslides on soil productivity would be inconsequential. **Landslides** due to new spur construction would not occur since the spurs would be located on stable gentle to moderate slopes on a ridgetop and two benches. The project would result in a slight short-term (ten years) increase in the probability of harvest-related debris avalanches on the 11 acres of FGR slopes. This would be due to a short-term decrease in root strength and canopy interception of precipitation. The increase in risk would be hard to quantify. Although the probability of debris avalanches would increase, it would still be in the low range (<10 percent) as under the no action alternative and would be expected to be within the range of natural variation. The mitigation of retaining extra trees at three possible landslide initiation sites, dry season skyline yarding with at least one-end suspension, placing hand-dug waterbars on skyline yarding trails that can channel water, and not harvesting trees on the small FGNW site in Unit 17A would help keep the risk low. The likely size of any harvest-related landslide occurring under the action alternative (low probability event) would be small (less than 0.1 acres) based on the lack of evidence of larger in-unit landslides having occurred under a clearcut and subsequent second growth canopies.

Water Quality and Hydrologic Processes - Effects from management activities that potentially impact water quality and hydrologic processes include: 1) change in water chemistry from slash burning; 2) increase in stream sedimentation, transport, and storage from timber felling, yarding, and hauling; 3) increase in water temperature from stream forest canopy reduction; 4) increase in water yield from timber harvest; and 5) increase in peak flows and change in timing of peak flows from timber harvest and road construction (FEMAT, beginning pg. V-14).

Given the filtering capacity of the forest floor and the distance to the streams, there would be no change in **water chemistry** from burning landing piles. No change in any chemical or physical parameter would occur due to the buffering effect of the no harvest buffer along all streambanks (see pg. 6). All streams in the project area have a stream-side no-harvest buffer of approximately 40 feet.

In the absence of harvest-related landslides (indirect impact), virtually no sediment would reach streams from thinned stands due to the "no-harvest" buffer acting as a filter strip (Sampson Butte, Hello Folley, and Coon Creek monitoring observations). Some direct pathways for short-term soil

displacement and potential sediment delivery may occur as a result of localized soil disturbance from cable yarding, and ground-based equipment operations. The few yarding trails that could pose **sedimentation** risks would be waterbarred and covered with slash. A 40 foot stream-side buffer would be sufficient to maintain bank stability since half a tree crown diameter is an estimate of the extent to which root systems affect soil stability (FEMAT, 1993, pg. V-26). Approximately 900 ft of temporary natural surface roads would be constructed occur within the Riparian Reserve. About 500 ft would be new construction and 400 ft would be built on an existing old road bed. This road would cross a stream at one point then closely parallel this stream for about 300 ft. The affected stream is not typical of normal stream features. This intermittent stream channel is 1000 feet long with no surface connection to downstream waters. This stream flows about 700 ft from the headwaters to the proposed spur crossing where the channel is filled in from an old road crossing. This fill is partially washed out and surface flow is interrupted (forced subsurface) by the old road fill. Below this crossing, surface flow resumes intermittently for about 300 ft and then disappears into a small hole in the stream channel. Below this point, there is no evidence of a stream channel or surface hydrologic connection to any stream. No adverse impact from the spur road construction would occur because sediment transport would not occur since all sediment would be filtered out when the stream goes subsurface. The probability of harvest-related landslides (indirect low risk events) reaching streams is low. Landslides that might initiate in the three acres of FGR slopes in 16A are unlikely to impact the first order stream to the west on private or the Calapooya flood plain due to the absence of connecting streams and due to the draw bottom segments with gently sloped gradients that would help arrest landslide movement. The likely size of any landslide would be small; therefore the likelihood of landslides impacting water quality in Unit 16A would be negligible. Any landslide initiating on the steep FGR slopes in Unit 17A (eight acres) has no chance of reaching a stream because of the expanse of gentle to moderate slopes separating these FGR slopes from streams. In summary there would be a slight short-term increase in the potential for sediment input and transport. This increase would be within the range of existing background levels. In the long-term there would be a possible decrease due to road improvements. Sediment storage in the long-term would have a slight increase due to recruitment of large down wood.

There would be no increase in **stream temperature** as a result of the proposed project. All streams within the project area are seasonal intermittent streams (i.e., stop flowing by late spring). These streams do not contribute to elevated water temperature in Calapooya Creek. A reduction in canopy from thinning near these streams would have no effect on downstream stream temperature. Over time, shade levels near these streams would increase as the canopies of the residual trees expand and close in the openings created by thinning. Additional shade may be provided by new undergrowth stimulated by increased light levels after thinning. These responses would accelerate the development of late-successional characteristics near these streams and would provide greater riparian habitat in the long-term. Stream temperature would not be affected by the road in the Riparian Reserve because the stream dries up during the summer months. Riparian habitat is currently lacking at this site. Treating this stand through density management would improve stand health and may promote development of riparian habitat. Construction of temporary spur roads in the Riparian Reserve is necessary in this case to allow access for treatment. Except for the road described above, all other temporary spur roads are located well away from streams and would not cause any adverse impact.

Indirect impacts of vegetation removal during density management could result in short-term increases in **water yield and peak flows** due to a decrease in evapotranspiration and interception. Removal of trees tends to increase soil moisture and base streamflow in summer when rates of

evapotranspiration are high; these summertime effects only last a few years (Ziemer and Lisle, 1998). Slight increases in summer flow would benefit riparian areas, which are often moisture limited during the summer. With the onset of the rainy season in the fall, the soil becomes recharged with moisture. Several studies have shown that the first storms of the fall have the most increase in peak flow from pre-logging conditions (Rothacher, 1973, pg. 7; Harr, et al. 1975, pg. 441; Harr, et al. 1979, pg. 11; Ziemer, 1981, pg. 916). These fall storms are typically small and geomorphically inconsequential. Large peak flows occur mid-winter after soil moisture deficits are satisfied in both logged and unlogged watersheds (Ziemer and Lisle, 1998, pg. 60). Increases in peak or storm flows in winter and spring can alter channel morphology by flushing smaller substrate, causing the channel to downcut and increase stream bank failures. Studies on increased peak flows are varied in their findings on how much increase in flow would result from a given amount of timber harvest. Most studies agree that the effects of harvest treatment decreases as the flow event size increases (Rothacher, 1971, pg. 51; Rothacher 1973, pg. 10; Wright et al., 1990) and is not detectable for flows with a two year return interval or greater (Harr, et al., 1975, pg. 443; Ziemer, 1981, pg. 915; Thomas and Megahan, 1998, pg. 3402; Thomas and Megahan 2001, pg. 181). After examining 94 watershed experiments conducted worldwide, Bosch and Hewlett (1982) concluded that water yield increases are usually only detectable when at least 20 percent of the forest cover has been removed. The relationships described above are based on the results of studies in which a large percentage of small watersheds were clearcut logged with minimal stream buffers. To date, no research has been published that describes the effect Northwest Forest Plan designed timber sales has on changes in stream flow. It is expected that thinning as described in the proposed action would have less effect on peak flow or base flow than what was described in the research cited previously. At the project level, decreases in base flow are not expected from density management activities within Riparian Reserves because the conversion of stream-side vegetation to hardwood dominated species which transpire more water would not occur. Increases in base flow are also not expected because extra available moisture, if any, would likely be consumed by the residual riparian vegetation (Satterlund and Adams 1992). Increases in peak flows due to thinning activities are also not expected since large openings would not be created. A hydrologic effect known as the Transient Snow Zone (TSZ) effect is the effect from a warm rain-on-melting snow event that contributes to increased peak flows due in part to openings created within the TSZ. If a large portion of the harvest area is within the TSZ, there may be increased peak flows. Since none of the project is in the TSZ, no measurable increase in peak flows as a result of rain-on-snow events is expected. Roads and landings may modify storm flow peaks by reducing infiltration on compacted surfaces, allowing rapid surface runoff, or by intercepting subsurface flow and surface runoff, and channeling it more directly into streams (Ziemer, 1981, pg. 915). However, effects from peak flows have been shown to increase significantly only when roads occupy at least 12 percent of the watershed (Harr, et al. 1975, pg. 443), which is not the case in this watershed (Middle Calapooya Creek road area is about three percent). This phenomenon is due to the increased speed of delivery of water from road surfaces, ditches, and culverts (Harr, et al., 1975, pg. 441). Road maintenance and improvements would decrease the effects of roads on changing the timing of the storm hydrograph.

Fisheries - Effects from management activities that could potentially affect the fisheries habitat include: 1) altering amounts of large woody debris within the riparian areas (PRMP/EIS, pg. 4-48), 2) changes in the water temperature regime, and 3) stream sedimentation adversely impacting fish habitats and riparian ecosystems (FEMAT, pg. V-16 and 19).

Density management within the Riparian Reserves is specifically prescribed to enhance the development of late-successional conditions (increase in **large woody debris**, litter fall, root strength, shading and associated microclimate conditions) within the adjacent aquatic environment. No direct or indirect impacts are anticipated from management activities (see previous water quality discussion, pg. 20) that would affect the stream channel by sedimentation or a reduction in shade from trees being felled adjacent to streams. Impacts within the variable width streamside no-harvest buffer would be negligible since stand densities would remain unchanged. The dense stand within the no-harvest buffer would provide adequate coarse woody material in the short-term and also retain existing stream shade; therefore no adverse impacts would be expected due to coarse wood removal or increase in **water temperature**. Although the short-term impacts would be inconsequential, the long-term impacts would enhance the riparian resources within the project area by providing future large woody debris and improved shade conditions.

The impact of **sedimentation** from the haul road activity to the aquatic environment was considered, however is difficult to quantify or measure (Brown, 1985). Research has shown that road networks "are the most important source of . . . delivery of sediment to anadromous fish habitats" (FEMAT, 1993; pg. V-16); however, in-stream sedimentation from road construction, maintenance of existing roads, and timber haul is not expected to be measurable in streams and would not be above existing background levels for the following reasons:

1) Research has shown that the greatest amount of fine sediment from timber haul comes from roads within 200 feet of streams (WDNR, 1995). Approximately 1.9 miles out of the 4.7 miles of haul road (40 percent) would be within 200 feet of streams. Beyond this distance there is very little sediment impact to streams from hauling. Any increased level of sediment production at the stream crossings would be a temporary condition that would return to pre-hauling levels after completion of hauling.
2) All segments of naturally surfaced roads (both existing and newly constructed) would have dry season haul followed by decommissioning (pg. 8, para. 2a) the same dry season as logging. Any sediment from these segments would filter onto the forest floor and not reach fish-bearing streams. The stream segment below the only crossing of a naturally surfaced spur within Unit 17A is highly interrupted and therefore does not have the capacity to carry the sediment downstream (See pg. 21). No new permanent roads would be constructed that would extend or interrupt the hydrologic path.
3) Overall, rock quality is good and ditch lines are adequately vegetated to filter sediment or would be renovated to prevent ditch erosion from the haul roads. Drainage would be improved by adding seven additional cross drains and replacing one stream-crossing culvert.
4) For the wet season haul portion, all culvert crossings would be inspected prior to haul for implementation of PDC's (pg.8) that would lessen sedimentation concerns (i.e., use of hay bales, sediment curtains, etc.).
5) The wet season haul would only cross five streams (three first order and two third order stream which generally have good sediment filtering capacity) before reaching paved road.
6) Dry season haul generates considerably less sediment than wet season haul. Operations during the dry season could be suspended during periods of heavy precipitation (pg.8);
7) There is potential for a small amount of sediment delivery to the streams when the culverts on haul roads are replaced; however, the effects are minimal, short-term, and would not extend to the downstream fish-bearing streams due to the distance (approximately 3,500 ft at the closest site) of the culvert actions from fisheries habitat and the capacity of these stream systems to store sediment.

No direct impacts to the aquatic environment are expected from haul road activities. Any sedimentation from wet or dry season haul would not be measurable and is not expected to be above existing background levels within the stream channels; therefore, sedimentation resulting from the haul road activity would not have an affect on habitat for coho salmon, as well as habitat for cutthroat and steelhead trout.

Indirect impacts from harvest related landslides are not reasonably certain to occur, due to: 1) low probability of occurrence (less than 10 percent), 2) size of potential landslide would likely be less than 0.1 acre (see p. 20) and; 3) harvest units with potential harvest related landslide areas as identified by the soil scientist are located approximately 1000 ft from fish-bearing waters (Foster Creek) and 2600 ft from coho bearing waters (Calapooya Creek). If any landslide should occur, the effect of sediment would have a very low probability of being detectable in the stream beds more than a few hundred feet outside the project area and would not be detectable in the identified fish-bearing streams downstream.

In conclusion the risk of adverse direct, indirect impacts to fish populations and aquatic habitats would be expected to be inconsequential. This low risk evaluation is based on: 1) project design criteria in place to reduce sediment from roads, 2) establishment of Riparian Reserves and streamside no-harvest buffers along all streams that would effectively filter any sediment potentially generated from ground disturbance, and 3) the majority of the proposed actions are located well upstream from fish bearing habitat.

Irreversible and Irretrievable Commitment of Resources - An irreversible commitment is a commitment that cannot be reversed whereas an irretrievable commitment is a commitment that is lost for a period of time. An irreversible commitment of petroleum fuels for road building, logging and timber hauling would result from the proposed action. The construction of new roads would result in long-term loss to soil productivity and modification of hydrologic function and is considered an irretrievable commitment.

C. Cumulative Impacts Analysis

The following paragraphs discuss the cumulative impacts of the action. These impacts are described for federal lands in the FSEIS beginning on page 3&4-4 and throughout the chapter based on the resource affected. The Calapooya Creek Watershed Analysis provides baseline information with which to assess potential future cumulative impacts. Unless otherwise noted, these effects are described in the context of the fifth-field watershed scale.

Harvest Activity Impacts on Wildlife Habitat - The Calapooya Creek watershed contains approximately 157,200 acres. Private landowners control over 90 percent of the Calapooya Creek Watershed of which 34 percent are industrial forestlands with the remainder managed by private landowners with varying agricultural and forestry objectives (Calapooya Creek Watershed Analysis, pg. 1-2). BLM manages approximately 11,700 acres (seven percent) in the watershed. Private forestlands managed for timber production are normally harvested in accordance with state forest practice standards between 40 and 60 years of age. As these areas are harvested and replanted they will maintain a mosaic pattern of forest stand ages across the landscape. The majority of private lands will maintain early and mid-seral forest type characteristics. The following describes expected impacts to key wildlife and their habitat resulting from these activities.

1. **Wildlife Habitat – Late-Successional Forests -** The following table shows the acreage of late seral type forests within the Calapooya Creek watershed based on 1992 data in the Calapooya Creek Watershed Analysis.

TABLE 2. Late-Successional Forests

Land Ownership	Late-Successional Forest Acres	Percent of Watershed
Private Lands	23,400	15%
BLM	4,400	3%
TOTAL	27,800	18%

As stated above, late-successional forests on private lands have been or are in the process of being harvested. These forest lands most likely will be replanted and managed for timber production on a 40 and 60 year rotation. Approximately 1,800 acres of late seral forests are within BLM reserves representing a little over 15% of federal lands in the watershed. Roseburg BLM has a 44-acre sold - unawarded regeneration timber sale (Pine Creek) and another 135 acres planned for regeneration harvest (Whatagas Timber Sale) all of which could be harvested within the next 10 years. BLM's regeneration harvest would convert less than one percent of the total watershed into early seral forests. This project would not harvest late-successional forests.

2. **Wildlife Habitat – Mid and Early-Seral Forests –** The following table shows acreage of early and mid seral type forests within the Calapooya Creek watershed based on 1992 data (Calapooya Creek Watershed Analysis).

TABLE 3. Mid and Early-Seral Forests

Land Ownership	Mid-Seral Forest Acres	Early Seral Forest Acres
Private Lands	39,800	41,700
BLM	4,300	2,900
TOTAL	44,100	44,600

Most of these forestlands are managed forest plantations and can function as foraging and dispersal habitat for northern spotted owls, as well as provide habitat for early-seral-dependent species. The Calapooya Creek Watershed Analysis identified approximately 1,000 acres of potential commercial thinning over the next 10 years on BLM lands. Of this about 500 acres would be harvested toward the objective of a sustainable supply of commercial timber and the other 500 acres would be thinned in Late-successional and Riparian Reserves for the purpose of creating future late-successional habitat. Of these potential harvest acres, approximately 217 acres are planned to be sold in the next five years as identified in this EA. On private lands, some of these types of forests may be commercially thinned but the majority is expected to be clearcut and replanted within the next 30 years. Mid-seral forest stands on private lands will add to foraging and dispersal spotted owl habitat, as well as provide habitat for early seral-dependent wildlife species within the watershed.

Consultation with USFWS under the 2003-2008 Biological Opinion Programmatic Assessments for these types of activities concluded that actions on BLM lands were "not likely to jeopardize" spotted owl, marbled murrelet, or bald eagle. Some known spotted owl sites within Calapooya Creek Watershed are located on state or private land. Under state regulation, spotted owl nest sites are protected for at least three years following the last year of occupation. Known spotted owl sites would be protected with 70-acre core areas on private lands. Except for these core areas, private forestlands are not expected to provide spotted owl nesting, roosting and foraging habitat or murrelet nesting habitat (FWS Programmatic Biological Opinion, February 21, 2003).

Impacts to Soil Productivity - Past forest management on BLM and private lands has reduced soil productivity by taking lands out of production for roads, landslides/mass wasting, compaction / topsoil displacement during ground-based operations, and hot broadcast burning. On balance, soil productivity on BLM lands are expected to be maintained or improved as the natural healing process slowly progresses and best management practices are applied to project areas.

Impacts to Aquatics/Water Quality - The following describes the expected cumulative impacts due to harvest and management activities.

1. **Sediment from Landslides Related to Harvesting and Roads -** Landslides have naturally occurred on the landscape, however past human caused activities had substantially increased their frequency. Landslide activities above natural levels generally have been decreasing as best management practices for road construction and forest practices have been implemented (Calapooya Creek Watershed Analysis, Geology and Soils, Chapter 6). Because mid-seral forest canopies would be maintained and because best management practices would be applied to help maintain stable slopes, occurrence of management related landslides on BLM lands would be low relative to historical levels, possibly within natural variation. Private forest practices are regulated under the Oregon Forest Practices Act, which provide protection to riparian and aquatic habitat. Landslide frequencies and effects from private clearcutting would be lower than the average levels experienced on similar ground over the past 50 years. Based on the projected trends, landslide rates from new and existing roads would decline due to management practices regulated under the Oregon Forest Practices Act and BLM best management practices. For the entire Calapooya Creek Watershed, combined harvest and road-related landslides and their sedimentation rates in the short-term would be maintained at least at current levels. Sedimentation from landslides on both private and public lands would decrease in the long-term compared to the past 50 years because of best management practices and road improvements on private and public lands. This trend includes periods of increased landslide activities during high intensity storm events. Thus, the overall sedimentation rates from harvest and road-related landslides would be expected to decrease compared to levels from the last 50 years.

2. **Sediment Related to Agriculture and Hauling Activities -** Agricultural practices in the watershed are expected to remain the same in the short-term. As a result, fine sediment inputs into streams are expected to remain the same as the past. The Oregon Forest Practices Act will regulate any winter hauling and resulting elevated fine sediment inputs. Analysis has shown that these regulations are sufficient to maintain water quality within legally acceptable levels (Oregon Department of Forestry and Department of Environmental Quality Sufficiency Analysis, 2002). In the short-term, as shown in this EA, fine sediment input to streams due to BLM harvesting and roads could increase slightly. The duration of this input would likely be very short, occurring during the season of wet weather haul or briefly following larger rain events. Upon

cessation of haul or a return to drier weather, sediment inputs would likely return to background levels. At the watershed scale it would be indistinguishable from background levels and would be within the range of natural variation. Over the long-term (next 100 years), fine sediment delivery due to BLM and private roads would decrease because of road improvements and renovations throughout the watershed. Any sediment added to the streams as a result of the proposed action cumulatively would be indistinguishable from background levels. Therefore sedimentation would have very little cumulative impacts at the watershed scale and would be within the range of natural variation. As a result, associated embedment from fine sediment within the stream substrate would likely decrease resulting in improved spawning habitat and substrate quality.

3. **Other Hydrologic Processes -** Seven percent of riparian areas within the watershed, are on an improving trajectory due to Riparian Reserve management. Density management activities are designed to improve forest health and encourage the development of late-successional characteristics. As these characteristics develop, improvements in riparian health, riparian vegetation, instream wood amounts, small channel capacity to store water and sediment, summer low flows, stream temperatures, and the delivery of upland nutrients to stream and hyporheic zones may occur. The long-term cumulative effects of these types of current and future federal activities would promote aquatic habitat complexity and stability in these areas. Under current forest conditions and forest practices rules, the potential for peak flow increases as a result of timber harvest patterns is low (Upper Calapooya Creek Watershed Analysis- Weyerhaeuser, Module Report Hydrology, pg 10).

4. **Aquatic Habitat** - The proposed project area contains Riparian Reserves and streamside no-harvest buffers designed to minimize adverse impacts to the aquatic environment. Other related management activities likely to occur within Calapooya Fifth-Field Watershed include both BLM and private timber harvest and silvicultural treatments. Approximately 43% of the Calapooya Watershed (157,200 acres) is managed for timber production. The portion of the proposed timber related activities within the Calapooya Fifth-Field Watershed represent less than one percent of the entire watershed respectively. Remaining timber related activities within the above referenced watersheds, would comply with the Northwest Forest Plan (BLM activities) or Oregon Forest Practices Act (private timber management), governing timber related impacts to water quality and fisheries habitat. Therefore, current conditions should be maintained within the fisheries habitat and improve over time.

V. CONTACTS, CONSULTATIONS, AND PREPARERS

A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with certain federal and state agencies (40 CFR 1502.25).

1. **Threatened and Endangered (T&E) 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.

a. The Roseburg District's consultation for T&E wildlife species is covered under the **US Fish and Wildlife Service** (FWS) *Formal Consultation and Written Concurrence on FY 2003-2008 Management Activities* (Feb. 21, 2003) (see Table 1a). The Biological Opinion (pg. 29) concluded that the project would ". . . not likely to jeopardize the continued existence of the spotted owl, murrelet and bald eagle, and are not likely to adversely modify spotted owl or murrelet critical habitat . . ." 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. The FWS has stipulated terms and conditions for the Incidental Take having to do with seasonal restrictions for the northern spotted owl and the marbled murrelet.

b. The Roseburg District's Biological Assessment (BA) for candidate T&E fish species conferencing was submitted to the **National Oceanic and Atmospheric Administration** (NOAA - fisheries) on November 10, 2004. The BA made the determination that this project would result in a "may effect, not likely to adversely affect " for the Oregon Coast coho salmon. Federal agencies are required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to consult with NOAA Fisheries regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect Essential Fish Habitat (EFH). Activities associated with the proposed project would not adversely affect EFH for coho and chinook salmon therefore consultation is not required.

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 October 25, 2000 with a "No Effect" determination.

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.

2. A letter was sent to eight **adjacent landowner**s. No comments were received (see Appendix G - Public Contact).

3. The **general public** was notified via the *Roseburg District Planning Update* (Winter 2000 and Spring 2004) which was sent approximately 150 addressees. These addressees consist of members of the public that have expressed interest in Roseburg District BLM projects. Comments were received from the Oregon Natural Resources Council (see Appendix D - Issue Identification Summary).

4. Notification will also be provided to certain **State, County and local government** offices (see Appendix G - Public Contact).

5. A 30-day **public comment period** will be established for review of this EA. A Notice Of Availability will be published in *The 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 News-Review*.

C. List of Preparers

Core Team

Bruce Baumann	Layout Forester
Mike Crawford	Fisheries
Dan Cressy	Soils
Dan Dammann	Hydrology
Al James	Silviculture
Jim Luse	EA Coordinator / EA Preparer
Rex McGraw	Wildlife
Ron Wickline	Botany

Expanded Team - Consulted

Isaac Barner	Cultural Resources
Kevin Cleary	Fuels Management
Dan Couch	Watershed Analysis
Fred Larew	Lands
Ron Murphy	Recreation / VRM

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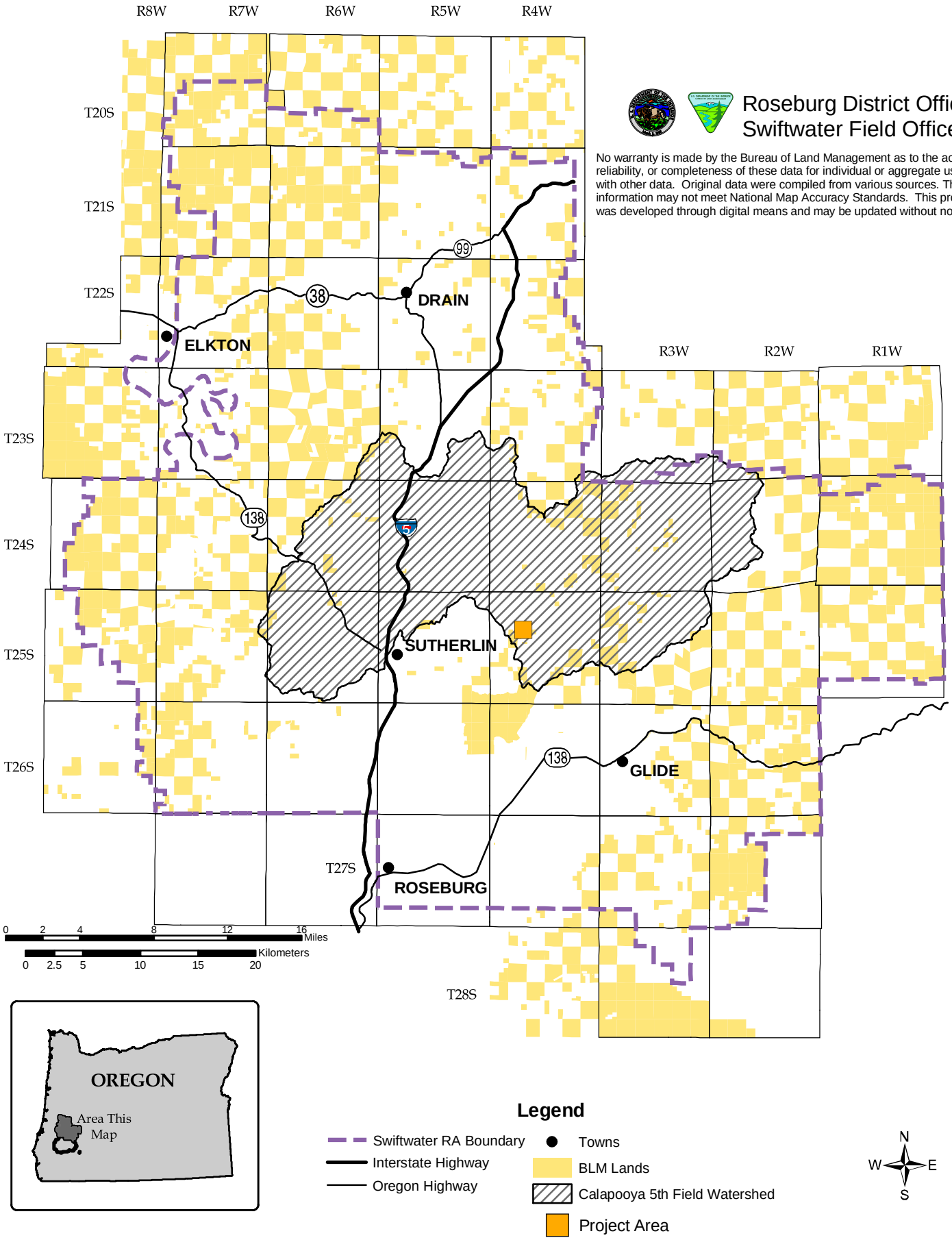
Other references as cited in the individual Specialist's Reports (Appendix F - Analysis File)

Appendix A
Vicinity Map

Bonanza Commercial Thinning

EA No. OR-104-04-07



Appendix B

Project Location Map

Roseburg District Office
Swiftwater Field Office

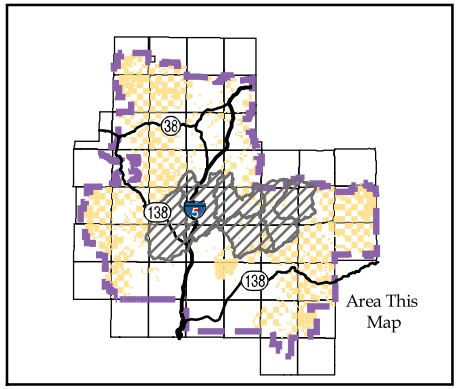
Bonanza
Commercial Thinning

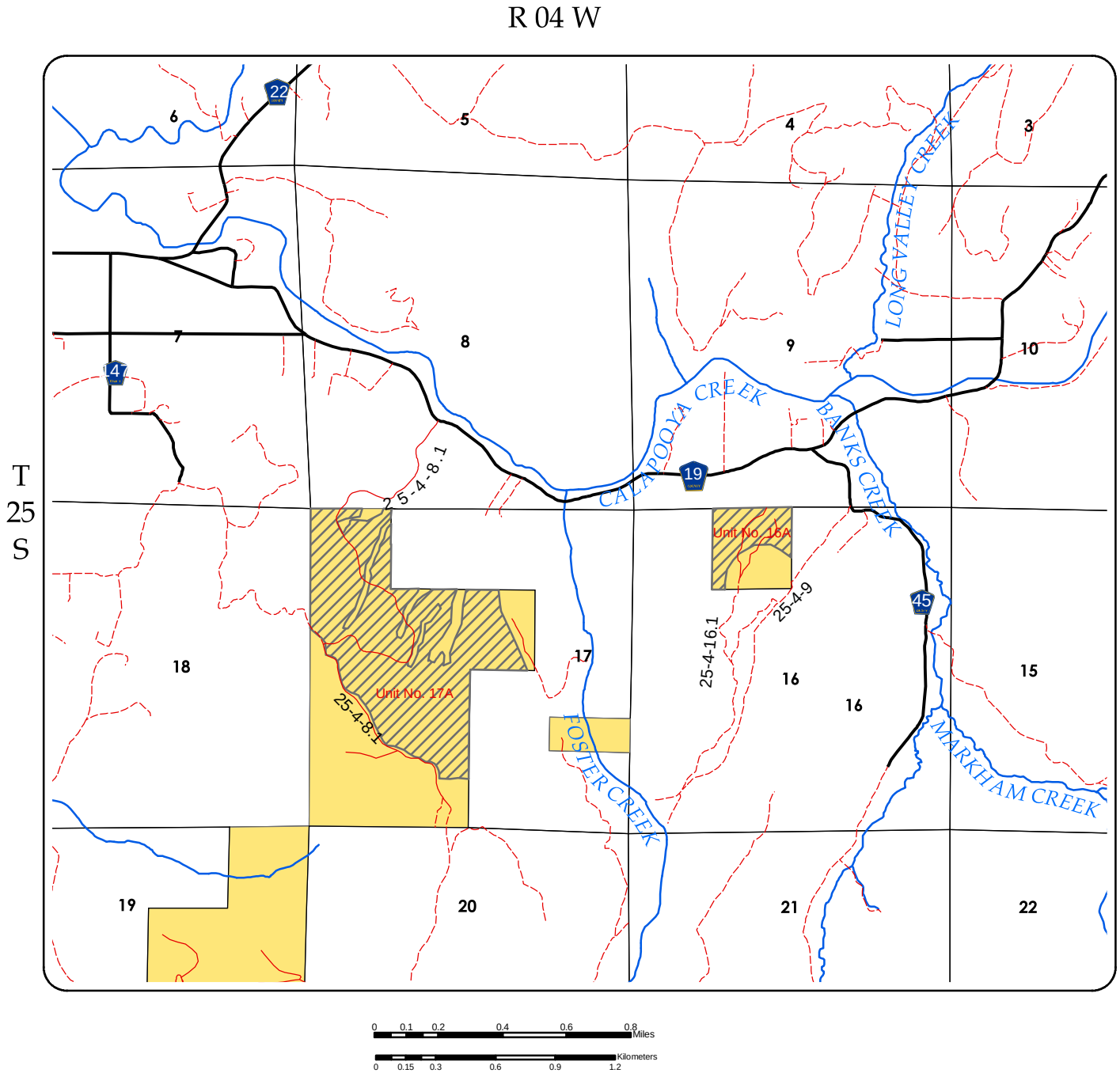
EA No. OR-104-04-07

N
W E
S

Legend

- Streams
- County Road
- **Woods Road**
- BLM
- PVT
- BLM Managed Land
- Private Land
- Bonanza Commercial Thinning





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APPENDIX C

INDIVIDUAL UNIT DESCRIPTION

Project Summary Table

EA Unit	Project Area	Acres	Yarding System (ac.)			Fuel Treat.	Remarks
			Aerial	Cable	Ground		
17A	1	181		OES (157)	DST (21) ROW (3)	P&BL	
16A	2	26		OES (17)	DST (8) ROW (1)	"	15 ac. reserved for Townsend's big-eared bat
Total		207		174	33		

Yarding System
OES = Cable Yard, One End Suspension Required
ROW = Ground Based, Yarding of Road Right of Way Timber
DST = Ground Based, Designated Skid Trails Required

Fuel Treatment
P&BL = Pile and Burn Landings

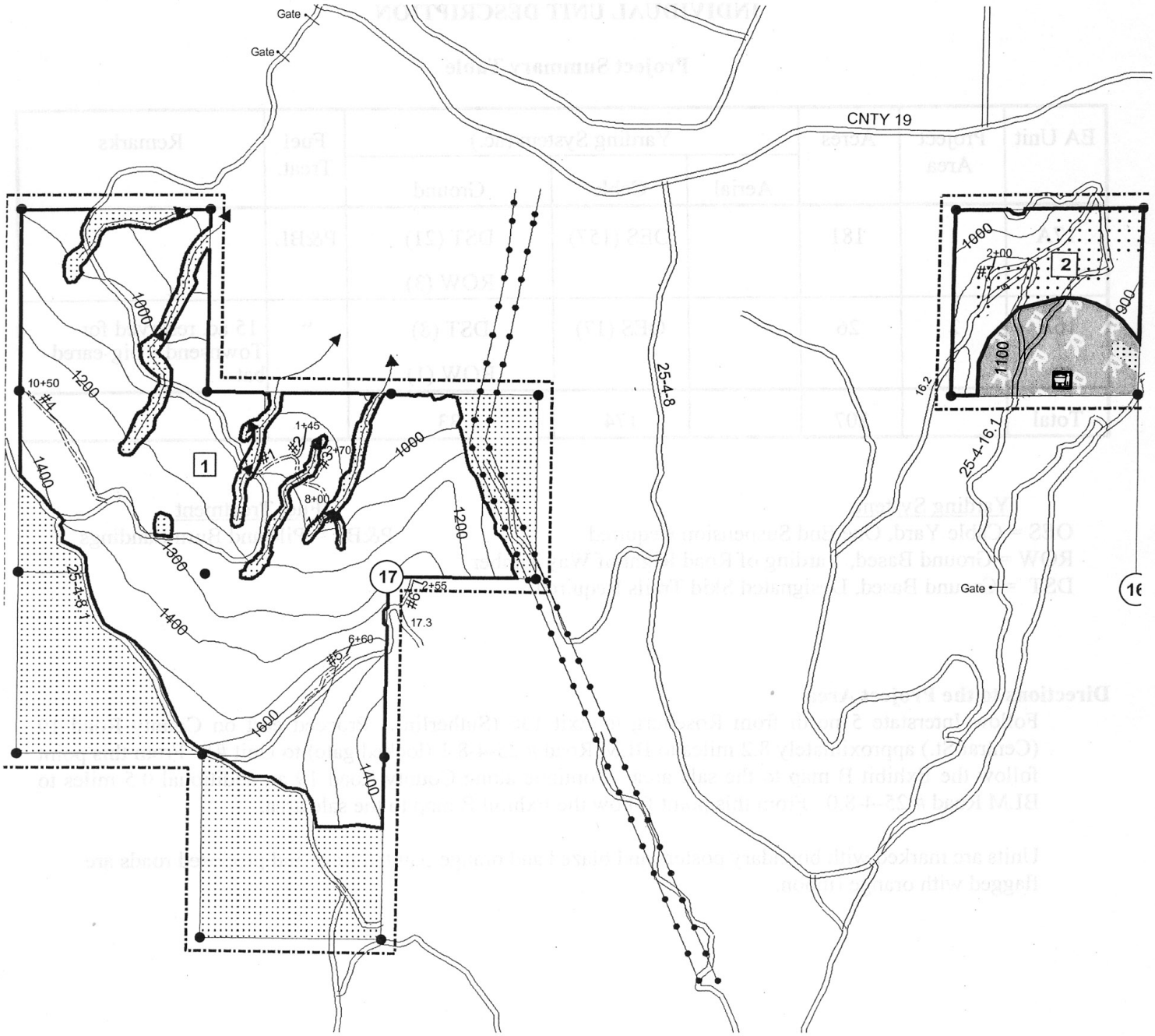
Directions to the Project Area

Follow Interstate 5 north from Roseburg to Exit 136 (Sutherlin). Proceed east on County Road 19 (Central St.) approximately 8.2 miles to BLM Road # 25-4-8.1 (locked gate) to Unit #1. From this point follow the Exhibit B map to the sale area. Continue along County Road 19 an additional 0.5 miles to BLM Road # 25-4-8.0. From this point follow the Exhibit B map to the sale area.

Units are marked with boundary posters and blazed and orange painted trees and proposed roads are flagged with orange ribbon.

APPENDIX C

INDIVIDUAL UNIT MAP



LEGEND

Scale: 1= 1000 Ft.

- Harvest Area - Cable Yarding
- Harvest Area - Ground Based
- Reserve Area
- Old Mine Adit
- Reserve Area - Bat Habitat
- Existing Road
- Temporary Spur To Be Constructed
- Boundary of Contract Area
- Stream
- Found Corner
- Powerline Right-of-Way

0 250 500 Feet

APPENDIX D

ISSUE IDENTIFICATION SUMMARY

This appendix summarizes the issues that were identified pertinent to this project. A given issue can be eliminated from further analysis for one or more of the following reasons: (1) it is beyond the scope of this analysis, (2) the impacts were anticipated and analyzed in the FEIS, (3) Project Design Criteria (PDC) included in the preferred alternative would be adopted to mitigate the anticipated environmental impacts of specific activities, and (4) the issue does not meet the objectives and purpose of the project.

A. Issues Identified During Project Design

The following issues were identified during project design. These issues arose from Specialist input as well as public comments that were received. Section II, paragraph C (pg. 5) provides a list of specific PDC incorporated into the preferred alternative to deal with these issues.

Issue #1: The riparian area in Section 17 has need of restorative actions (road decommissioning, stream rechanneling). (IDT #2; April 29, 2004)

Discussion: Construction of temporary spurs within the Riparian Reserve would provide an opportunity for restoration in this area. About 1600 ft of old spur roads within the Riparian Reserve would be treated by subsoiling to ameliorate the compacted surface of these features. The temporary stream crossing fill material and any drainage structures would be removed and the channel reshaped when this project is complete. This would restore surface flow through this stream crossing which is currently interrupting surface flow and remove a potential source of erosion.

Rationale: The restoration of surface flow, combined with the amelioration of old road surfaces and the density management treatment, would result in a long-term benefit to the riparian areas at this site.

Issue #2: Potentially unstable area in headwall area in Unit 16A

Discussion: One of the very steep headwalls (0.05 acres) in Unit 16A has tension cracks, recent displacement scarps and conifer boles with strong sweeps and S curves (signs of being unstable). The TPCC is FGNW – fragile due to slope gradient and unsuitable for timber production (IDT #1; March 31, 2004).

Mitigation: This area would be protected by retaining all trees within the unstable area essentially reserving the area from harvest.

Rationale: The RMP (BMP 1A3, pg. 129) requires that the TPCC be used to exclude areas unsuitable for timber production.

Issue #3: Does this project need creation of interim snags and CWD to met short-term shortfalls?

Discussion: The ID Team raised the issue of an expected lack of interim snag and DWD (IDT #1; March 31, 2004) and whether these features need to be added through snag and CWD creation. The project area was surveyed to determine current levels. The RMP (pg. 64) specifies that existing snags would be reserved in sufficient numbers to meet the population needs of 40% of the potential cavity nesting population. This has been determined to be 1.2 snags per acre ≥ 11 inches dbh (Nietro *et al*., 1985). Approximately 1.7 snags per acre (≥ 11 inches dbh) were found in the commercial thinning portion of the units and 0.5 snags per acre (≥ 11 inches dbh) were found in the density management portions. Additionally the Organon stand projection model (Hann, 1995) estimates an expected mortality of an additional two trees per acre (≥ 14 inches dbh) within 30 years that would provide for future snags and coarse woody debris. This does not consider additional snags and CWD that may result from logging damage. The population needs of 100% of potential population (RMP pg. 46) should be provided in the long-term.

Mitigation: None required. The RMP goals would be met.

Public Issues:

Comments were received from one organization with two pages of comments. Most of the issues identified were also noted by the ID Team. The main focus of these Issues is summarized as follows:

Issue #4:

Discussion: "In particular, we support **variable density thinning** which allows young stands into more complex and resilient forests. This means that thinning should be done in a way that creates ¼ to ½ acre gaps, dense patches, lightly thinned, moderately thinned, and heavily thinned patches in every stand." (ONRC, March 11, 2004).

Consideration: The suggested prescription would be wholly consistent for stands within the Late-successional Reserve where the objective is to reintroduce diversity and complexity back into the stands. However this project is within the Matrix Land Use Allocation whose objective is to manage for timber with 80 year rotations; therefore, variable density thinning would not be appropriate for stands less than 80 years old. The Riparian Reserve would have a prescription that enhances diversity within the riparian area.

B. Issues Specified by Regulation

"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 (ACEC)
3. Cultural Resources
4. Environmental Justice
5. Farm Lands (prime or unique)
6. Floodplains
7. Invasive, Nonnative Species
8. Native American Religious Concerns
9. Threatened or Endangered Species
10. Wastes, Hazardous or Solid
11. Water Quality, Drinking / Ground
12. Wetlands / Riparian Zones
13. Wild and Scenic Rivers
14. Wilderness

These resources or values (except item #9) were not identified as issues to be analyzed in detail because: (1) the resource or value does not exist in the analysis area, or (2) no site specific impacts were identified, or (3) the impacts were considered sufficiently mitigated through adherence to the NFP S&G's and RMP Management Actions/Direction 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 #9 is previously addressed in this EA and the Biological Assessment was prepared for consultation required by the Endangered Species Act (Appendix F).

The following items are not considered a Critical Element but have been cited by regulation or executive order as an item warranting consideration in NEPA documents:

Healthy Lands Initiative - This project would not violate the Healthy Lands Initiative. This project would be in compliance with the RMP which has been determined to be consistent with the standards and guidelines for healthy lands (43 CFR 4180.1) at the land use plan scale and associated time lines.

National Energy Policy - Executive Order 13212 provides that all decisions made by the Bureau of Land Management will take into consideration adverse impacts on the President's National Energy Policy. This project would not have a direct or indirect adverse impact on energy development, production, supply, and/or distribution and therefore would not adversely affect the President's National Energy Policy.

Indian Trust Resources - Secretarial Order No. 3175 (November 8, 1993) requires that any significant impact to Indian Trust resources be identified and addressed in NEPA documents. There are no known Indian Trust resources on the Roseburg District therefore this project is expected to have no impacts to these resources.

C. Watershed Analysis and Retention of Late-Successional Forests

Issue: Retention of Late-Successional Forests

Discussion: The RMP (pg. 34) requires that late-successional forests be retained in those watersheds that contain 15% or less late-successional forests on federal lands in fifth-field watersheds, i.e., watersheds between 20 and 200 square miles (S&G, pg. C-44). Any timber stands greater than approximately 80 years of age are considered late-successional habitat (S&G, pg. B-2). Because the Proposed Action Alternative in this EA proposes to commercially thin timber stands that are 30 to 40 years of age there would be no change in the amount or percentage of late-successional type forests on Federal lands within the Calapooya Creek Watershed.

APPENDIX E

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

Element	Relevant Authority	Environmental Effect
Air Quality	The Clean Air Act (as amended)	**Minimal** - Drift smoke within the local airshed from pile burning is possible. Dust particles may be released into airshed as a result of road construction /renovation and timber hauling.
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (FLPMA)	**None** - Project area is not within or near a designated or candidate ACEC.
Cultural Resources	National Historic Preservation Act of 1966 (as amended)	**"No Effect"** - See SHPO Report 10/25/00
Environmental Justice	E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 2/11/94. ***This EO requires that agencies insure that adverse health or environmental effects do not disproportionately affect minority or low-income populations.***	**None** - The proposed project areas are not known to be used by, or disproportionately used by, Native Americans, minorities or low-income populations for specific cultural activities, or at greater rates than the general population. According to 2000 Census data approximately six percent of the population of Douglas County was classified as minority status (*Oregonian*, Pg. A-12; March 15, 2001). It is estimated that approximately 15% of the county is below the poverty level (Frewing-Runyon, 1999).
Farm Lands (prime or unique)	Surface Mining Control and Reclamation Act of 1977 ***This act seeks to identify and restore prime farmlands and other unique federal land characteristics.***	**None** - "No discernable effects are anticipated" (PRMP pg. 1-7)
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77 ***This EO requires agencies to determine if a proposed action will occur in a floodplain and that the action will avoid adverse impacts associated with occupancy and modification of floodplains and avoids floodplain development.***	**None** - Project is not within 100 yr. floodplain.

Element	Relevant Authority	Environmental Effect
Invasive and Nonnative Species	Lacey Act, as amended; Federal Noxious Weed Act of 1974 as amended; Endangered Species Act of 1973, as amended; and EO 13112 on Invasive Species dated February 3, 1999. ***This EO requires the prevention of introduction of invasive species and to provide for their control to minimize their economic, ecological, and human health impacts.***	Project Design Criteria would be included in the proposed action to prevent or control the spread of noxious weeds (EA, pg. 10).
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 ***This act seeks to protect and preserve for American Indians the right of exercise of traditional religion including access to religious sites.***	No concerns were noted as the result of public contact including impacts to Indian Trust Resources.
Threatened or Endangered Species	Endangered Species Act of 1973 (as amended) The Pacific Coast Recovery Plan for the American Peregrine Falcon, 1982 Columbian White-tailed Deer Recovery Plan, 1983 Recovery Plan for the Pacific Bald Eagle, 1986 Recovery Plan for the Marbled Murrelet, 1997	**Botanical** - No T&E species noted (Specialist Report) **Animals** - See wildlife and fisheries tables, Appendix F. T&E species not specifically mentioned do not exist in the analysis area.
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended ***These laws regulate hazardous waste that endangers public health or the environment.***	**None** - Applicable HazMat policies would be in effect.
Water Quality, Drinking / Ground	Clean Water Act of 1987; Safe Drinking Water Act Amendments of 1996; EO 12088, Federal compliance with pollution control standards (October 13, 1978) EO 12589 on Superfund implementation (February 23, 1987); and EO 12372 Intergovernmental review of federal programs (July 14, 1982)	**None** - Project is not in a municipal watershed or near a domestic water source.

Element	Relevant Authority	Environmental Effect
Wetlands/Riparian Zones	E.O. 11990, Protection of Wetlands, 5/24/77 ***This EO requires federal agencies to avoid destruction or modifications of wetlands and to avoid undertaking or providing assistance for new construction located in wetlands.***	**None** - "The selected alternative [of the FEIS] complies with [E.O. 11990]..."(ROD p. 51, para.7).
Wild and Scenic Rivers	Wild and Scenic Rivers Act of 1968 (as amended) The North Umpqua Wild and Scenic River Plan (July 1992)	**None** - Project is not within the North Umpqua Scenic River corridor.
Wilderness	Federal Land Policy and Management Act of 1976 Wilderness Act of 1964	**None** - "There are no lands in the Roseburg District which are eligible as Wilderness Study Areas." (RMP pg. 54).

OTHER RESOURCES CONSIDERED

Resource	Environmental Effect / Concerns
Land Use (Leases, Grazing etc.)	**None** - Project has no conflicting land uses (Specialist's Report 5/21/01).
Minerals	**None** - Project has no mining claims (Specialist's Report 5/21/01).
Recreation	**Minimal short-term impacts** - ". . . will not impact recreation use. Public access has been restricted by gates on the roads leading to these areas . . ." (Specialist's Report 9/24/04).
Visual	**None** - Both units fall within the Visual Resource Management Class IV, where no specific visual management constraints apply." (Specialist Report 9/24/04)
Other (Adjacent Landowners)	**None -** Eight small adjacent landowners and four registered domestic water use are in the vicinity of this sale.