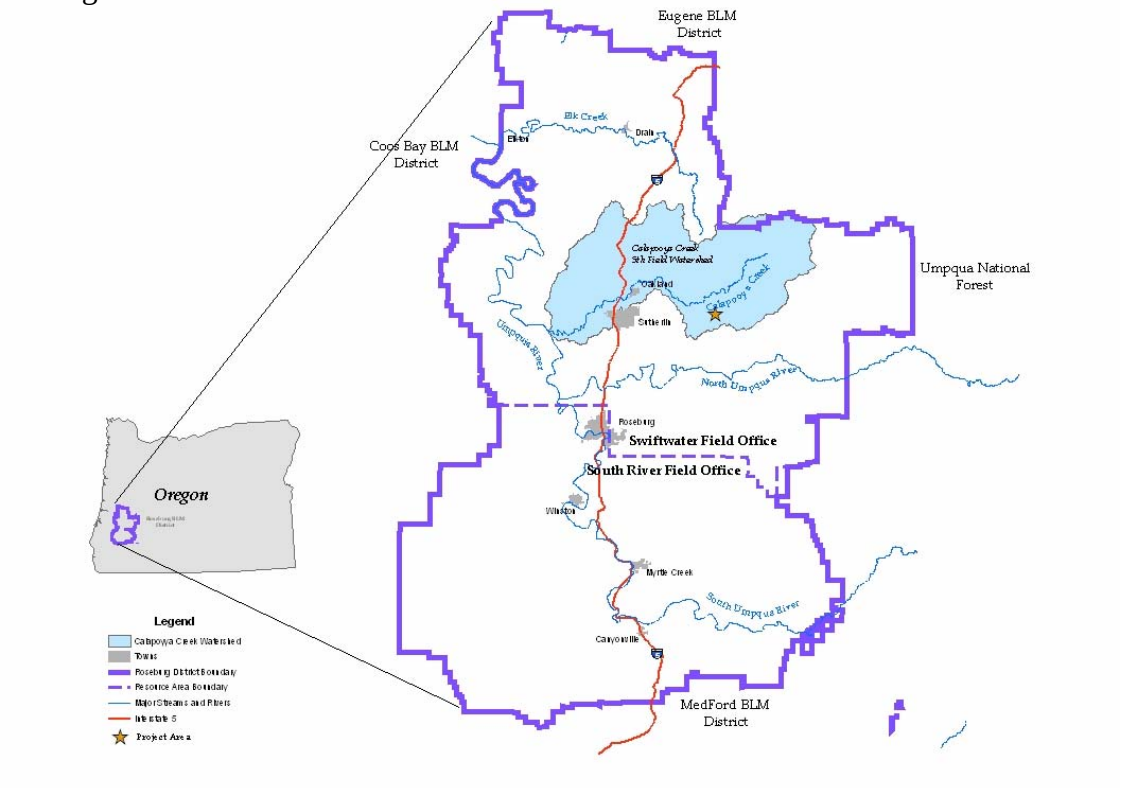
U.S. Department of Interior
Bureau of Land Management
Roseburg District, Oregon

Environmental Assessment for the Swiftwater Field Office

Whatagas Regeneration Harvest

EA #OR - 104 -06-08

This environmental assessment analyzes the environmental impacts associated with the Swiftwater Field Office's proposal for a regeneration harvest project. The proposed regeneration harvest would occur on nine scattered units (approximately 115 acres) of mature and old-growth forest located in the Calapooya Creek Fifth-Field Watershed in Sections 7, and 19; T25S R3W, and Section 13; T25S R4W; W.M. Approximately three additional acres would be removed (2.3 acres on BLM administered lands and 1.0 acre on private industrial timber lands) for the development of temporary spur roads for a total of 118 acres of harvest. This project is within Connectivity/Diversity Block and General Forest Management Area Land Use Allocations and is designed to help meet the Roseburg District's annual allowable sale quantity of 45 million board feet declared in the Roseburg District *Record of Decision and Resource Management Plan* (ROD/RMP, p. 8). This project is in conformance with management direction from the ROD/RMP and also includes road repairs and decommissioning designed to contribute to restoring watershed conditions.



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Comments on this environmental assessment, including the names and street addresses of respondents, will be made available for public review at the above address during regular business hours, 8:00 A.M. to 4:30 P.M., Monday through Friday, except holidays.

Individual respondents may request confidentiality. Such requests will be honored to the extent allowed by the law. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

In keeping with Bureau of Land Management policy, the Roseburg District posts Environmental Assessments, Environmental Impact Statements, Findings of No Significant Impact, and Decision Records/Documentations on the district web page under Planning & Environmental Analysis, at www.or.blm.gov/roseburg, on the same day in which legal notices of availability for public review and notices of decision are published in The News-Review, Roseburg, Oregon. Individuals desiring a paper copy of such documents will be provided one upon request. Individuals with the ability to access these documents on-line are encouraged to do so as this reduces paper consumption and administrative costs associated with copying and mailing.

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I. PURPOSE OF AND NEED FOR ACTION

A. Background

Previous versions of the Whatagas Regeneration Harvest Environmental Assessment (EA) were released June 1999 and December 2005. The Whatagas Regeneration Harvest EA has been revised to consider new information and circumstances including, but not limited to, the following:

- The January 9, 2006, U.S. District Court order in Northwest Ecosystem Alliance *et al. v.* Rey *et al.* which set aside the 2004 Record of Decision *To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (March, 2004) (2004 ROD) and reinstated the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (January, 2001) (2001 ROD), including any amendments or modifications in effect as of March 21, 2004.

- The National Marine Fisheries Service determined that the Oregon Coast coho salmon Ecologically Significant Unit does not warrant listing under the ESA at this time and therefore withdrew the proposed listing (Fed. Reg., Vol. 71 No. 12, Jan. 19, 2006). In conjunction with the determination not to list the Oregon Coast coho salmon, the National Marine Fisheries Service rescinded a previous proposal for designation of critical habitat.

- During the 2006 nesting season, there have been new discoveries of Northern spotted owls, barred owls, and great horned owls which could have an effect on the design of the proposed project.

- Additional clarification regarding Connectivity/Diversity Block Management and Fuels Management.

This July 12, 2006 version of the Whatagas Regeneration Harvest EA replaces previous versions of the EA and will reconsider the consequences of the proposed action.

B. Proposed Action

BLM proposes the regeneration harvest of nine late-successional forest stands (units) in the Calapooya Creek Fifth-Field Watershed (See Appendix A and B). BLM initially analyzed potential harvest of approximately 195 acres in this watershed. After review, approximately 80 acres were dropped from consideration since they were found to be either within unmapped reserves, (i.e., unmapped streams and unstable areas to be included in the Riparian Reserves), unstable areas outside of Riparian Reserves, within a known Northern spotted owl core area (managed Late Successional Reserves), within a great horned owl core area, and areas of

inoperability. As a result, the Interdisciplinary (ID) Team reduced the proposed harvest units to 115 acres. The table below provides a summary of BLM's Proposed Action. Section II (pg. 5) of this EA provides a detailed description of the Proposed Action Alternative.

Table 1. Activity Summary Table

Activity		Total
Timber Harvest	Regeneration (GFMA)	66 acres
	Regeneration (Connectivity/Diversity)	49 acres
	Temporary Spur Right-of-Way	3 acres
Yarding	Cable	90 acres
	Helicopter	25 acres
	Ground Based*	3 acres
Hauling	Wet Season	13.8 miles
	Dry Season	0.4 mile
	Total Haul	14.2 miles
Road Activities	Temporary Road Construction	0.4 mile
	Temporary Roads Re-constructed	0.3 mile
	Road Renovation	13.8 miles
	Road Improvement	0.02 mile
	Road Decommissioning with subsoiling	0.3 mile
	Road Decommissioning without subsoiling	0.8 mile
Fuel Treatment	Broadcast Burn	28 acres
	Hand Pile and Burn	87 acres

*Up to 10 acres of additional, incidental ground-based logging could occur in areas designated for cable logging for a total of 13 acres. This would include activities such as removal of guyline anchor trees and small isolated portions of units not readily yarded with a cable system.

Timber management on the Revested Oregon and California Railroad Lands (O&C Lands) managed by the Swiftwater Field Office is principally authorized and guided by:

- **The Oregon and California Act of 1937:** Section 1 of the O&C Act stipulates that suitable commercial forest lands revested by the government from the Oregon and California Railroad are to be managed for the sustained production of timber.

- **The Federal Land Policy and Management Act (FLPMA):** Section 302 at 43 U.S.C. 1732(a), directs that "The Secretary shall manage the public lands . . .in accordance with the land use plans developed by him under section 202 of this Act when they are available . . ."

- **Roseburg District Record of Decision/Resource Management Plan (ROD/RMP):** The ROD/RMP (USDI, BLM 1995a), approved in accordance with the requirements of FLPMA, provides specific direction for timber management.

The Roseburg District timber management program and annual allowable sale quantity (ASQ) of 45 million board feet (MMBF) are predicated on the following assumptions. On lands allocated to the harvestable timber base in the General Forest Management Area and Connectivity/ Diversity Blocks within the Matrix, regeneration harvest will be conducted in mature and late-

successional forest (ROD/RMP, pgs. 60-61).

The ROD/RMP assumed that suitable lands in the General Forest Management Area and Connectivity/Diversity Blocks would be managed in a manner consistent with the principles of sustained yield timber management. Once this decision was made, the primary unresolved issue regarding management of these lands is not if timber will be harvested, but when and how timber harvest will occur.

The Proposed Action was developed in conformance with and within the scope of impacts anticipated/analyzed by 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* (ROD/RMP) dated June 2, 1995. These documents were written to be consistent with federal statute including the O&C Act, Endangered Species Act, and the Clean Water Act (PRMP/EIS, pg. 1-3).

This EA will consider the environmental consequences of the proposed action and no action alternatives in order to provide sufficient evidence for determining whether there would be impacts exceeding those considered in the Roseburg District PRMP/EIS which would require preparation of a Supplemental Environmental Impact Statement (SEIS). In addition to the PRMP/EIS, this analysis is tiered to assumptions and analysis of consequences provided by:

- The *Final Supplemental Environmental Impact Statement* (FSEIS) *on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (USDA, USDI 1994a);

- The FSEIS *for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2001); and

- The FSEIS *to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA, USDI 2004b).

Implementation of the proposed action would conform to management direction from the ROD/RMP which incorporates as management direction the standards and guidelines of the *Record of Decision for Amendments* (ROD) *to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 1994b). The ROD/RMP is further amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2001) and the *Record of Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA, USDI 2004b).

C. Objectives

The objectives of the proposed action are to:

1. Implement the following management direction from the ROD/RMP, pertaining to timber management on lands in the Matrix land use allocations.

- Provide a sustainable supply of timber and other forest commodities from the identified stands and thereby provide jobs and contribute to community stability (ROD/RMP, pgs. 15 and 33).

- Contribute to the Roseburg District's Allowable Sale Quantity (ASQ) of 45 MMBF (ROD/RMP, pgs. 8 and 60).

- Conduct regeneration harvest of forest stands in the General Forest Management Area that are beyond the age of Culmination of Mean Annual Increment ([CMAI], pg. 61). In the planning area, CMAI is between 80 and 110 years of age (ROD/RMP, p. 61).

- Harvest in Connectivity/Diversity Blocks consistent with management direction to conduct regeneration harvest using 150 year area control rotation while maintaining at least 25 to 30 percent of each individual Block in late-successional forest conditions (ROD/RMP, pgs. 38 and 153).

2. Address issues of effects to aquatic habitat, watershed condition, and Survey & Manage species that were subjects of appeals to the Interior Board of Land Appeals.

3. Minimize sediment delivery to streams from roads (ROD/RMP, pg. 73) by correcting identified road related hydrological failures that are providing a source of sedimentation to Gassy Creek and Field Creek as identified in the Calapooya Creek Watershed Analysis (pg. 8-1).

4. Comply with Section 1 of the O&C Act (43 USC § 1181a) which stipulates that O & C Lands be managed "… for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities…"

D. Decision Factors

Factors to be considered when selecting among alternatives will include:

- The degree to which the objectives previously described would be achieved including: the manner in which timber harvest would be conducted with respect to the type(s) of equipment and method of yarding to be employed, as well as the season(s) of operations; and the manner in which access would be provided, including road renovation, and the type and location of any road construction;

- The nature and intensity of environmental impacts that would result from implementation and the nature and effectiveness of measures to mitigate impacts to resources including, but not limited to wildlife and wildlife habitat, soil productivity, water quality, and air quality; and

- Compliance with: management direction from the ROD/RMP; terms of consultation on species listed and habitat designated under the Endangered Species Act; the Clean Water Act, Clean Air Act, Safe Drinking Water Act and O&C Act; and other programs such as Special Status and Survey & Manage Species).

- How to provide timber resources, and revenue to the government from the sale of those resources while reducing short-term and long-term cost of managing the lands in the project area.

II. DISCUSSION OF ALTERNATIVES

This section describes the No Action and Proposed Action alternative, and alternatives considered but eliminated from detailed analysis. These alternatives represent a range of reasonable potential actions that would meet the reasons for taking this action, and the objectives to be met through taking the action. This section also discusses specific design features that would be implemented under the proposed action alternative.

A. The No Action Alternative

The No Action Alternative provides a baseline for the comparison of the alternatives. This alternative describes the existing condition and continuing trends anticipated in the absence of the proposal but with the implementation of other reasonably foreseeable federal and private projects. Under the RMP, the majority of harvest and silvicultural activities are scheduled to occur within the Matrix land use allocation. If the no action alternative were selected there would be no harvesting of timber within the bounds of the project area at this time. Harvest at this location for purposes of analysis would be assumed delayed for the foreseeable future. Selection of this alternative would not constitute a decision to re-allocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be considered again under a subsequent EA. Decommissioning and repair of roads to reduce road related impacts would be deferred indefinitely. Road maintenance would be on a sporadic "as needed" basis for the primary purpose of keeping roads open to traffic.

B. The Proposed Action Alternative

This alternative proposes the offering of a timber sale contract that would result in a regeneration harvest of approximately 3.315 MMBF (million board feet) of the Roseburg District's annual harvest commitment of 45 MMBF. Timber harvest would be followed with fuel treatment and prompt reforestation (tree planting). Tree planting is not considered part of this action and would be documented under a subsequent categorical exclusion (i.e., an action that has been determined to not require preparation of an EA). The proposed action consists of the following activities (for a summary listing of these actions, see Table 1, page 2):

1. Timber Harvest

Nine units consisting of approximately 115 acres of late-successional forest would be regeneration harvested (See Appendix C). Regeneration harvest removes the forest canopy to allow the re-establishment of a new forest stand (RMP, pg. 110). Approximately three acres of timber would be removed (0.7 acres on Connectivity/Diversity Block, 1.6 acres on GFMA, and 1.0 acre on private industrial timber lands) for the development of temporary spur roads for a total of 118 acres of harvest. A small amount of additional timber could potentially be included as a modification to this project. These additions would be limited to the 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 (i.e. guyline and tailhold trees, trees around helicopter landings that are a hazard to flight operations, or additional trees needed to facilitate road construction). Historically this addition has been less than ten percent of the estimated sale quantity. Firewood cutting and salvaging of logging debris (slash) could occur in landing cull

decks and near roads in the foreseeable future as separate actions not part of this proposal. These actions are categorically excluded from the need for future analysis.

2. Timber Yarding

The Proposed Action would require a mix of skyline cable (90 acres), helicopter (25 acres), and ground-based tractor (three acres in road right-of-way) yarding. Additional isolated, minor ground-based logging may be necessary (i.e. removal of guyline anchor trees, isolated portions of units, etc.) and would occur on gentle slopes (less than 35 percent), during the dry season and in areas assumed as cable yarding. Up to 10 acres of incidental ground-based yarding were assumed in the analysis.

3. Timber Hauling

Approximately 13.8 miles of rocked road and 0.4 mile of unsurfaced road would be used for the hauling of timber (See Appendix A and B), for a total of 14.2 miles of haul route. A total of 13.8 miles of existing road would be renovated (brought back to its original design) and utilized for wet-season haul. Approximately 0.02 miles of existing road would be improved (improved beyond its original design) and used as a landing for helicopter yarding.

4. Fuel Treatment

The prescribed burning of slash (burning under the direction of a written site specific prescription or "Burn Plan") would occur in the proposed units to prepare the site for tree planting by providing plantable spots for seedlings (i.e. clearing away the slash), removing or temporarily retarding competing vegetation, as well as reducing the fuel loading hazard. Burning would be by a combination of broadcast burning and hand pile and burn. Units 7C, 13A, 13B, and 19D would be broadcast burned (28 acres), while units 19AB, 19C, 7A, 7B, and 7E would be hand piled and burned (87 acres). Approximately 7,700 feet of fire trails would be constructed by hand, prior to ignition, around the perimeters of the units to be broadcast burned.

5. Road Activities (Construction, Maintenance, and Decommissioning)

The proposed project would include dry season and wet season logging activities and use existing roads to the greatest extent practical. Existing roads would be maintained (road no. 25-3-7.0, 7.1, 19.3, 19.8, 25-4-2.0, 12.0, 12.1, 13.1, and 24.1). Temporary road construction (0.4 miles) as well as temporary road re-construction (using a historical road bed, [0.3 miles]) would take place to allow access for ground-based and cable harvest on selected units. Road decommissioning would also occur (1.1 miles).

a) Construction

Approximately 2,165 feet (Spurs #1, #2, #3, #4, #5, and #8 [0.4 miles]) of temporary road would be constructed. In addition, approximately 1,710 feet (spurs #4, #6, and #7 [0.3 miles]) of temporary road would be re-constructed using existing old road beds, for a total of approximately 3,875 feet (0.7 mi) of temporary road. Spur 4 would be a combination of both new construction (470 feet) and re-construction (1,085 feet). A majority of temporary road construction would take place within the units; approximately 1,150 feet (0.2 miles) would take place outside of harvest unit boundaries.

b) Maintenance

The 13.8 miles of existing road used for timber haul (see above) would also be maintained. Road maintenance would consist of stabilizing cut and fill slopes, installing or maintaining drainage structures (culverts and drainage ditches), reshaping the road surface, surfacing with crushed rock where deficient, brushing road shoulders, and installing additional culverts. A total of seven existing stream culverts (one perennial and six intermittent) and 13 existing ditch-relief culverts would be replaced (Roads 25-3-7.0, 25-4-12.0, 25-4-12.1, 25-4-13.1, and 25-4-24.1). In addition, a total of six new ditch-relief culverts would be installed on roads 25-3-7.0, 25-3-7.1, 25-4-12.1, and 25-4-24.1. The portion of Road 25-4-12.0 that parallels Field Creek currently has severely degraded drainage features and insufficient rock surfacing. As part of the proposed project, this portion of road would receive major upgrade. Aggregate surfacing would be increased to 12 inches, culverts would be added, and 150 feet of ditch line would be armored with rock fragments. The remaining valley-bottom roads that parallel fish-bearing streams (Road 25-4-2.0 and 12.1) would also receive maintenance necessary to prepare them for hauling activities such as grading, culvert cleaning, and additional rock surfacing.

c) Decommissioning

This project includes the decommissioning of road numbers 25-3-19.7A, and temporary spurs 1 through 8 by blocking with trench barriers, water-barring, subsoiling, and mulching with logging slash where available or with straw if logging slash is not available (0.5 mile). Decommissioning of road numbers 25-3-19.3, 25-4-24.1A4, and 25-4-13.2 would include blocking with trench barriers and water-barring (0.6 mile). The 25-3-7.5 road would be decommissioned by blocking with trench barriers (0.01 mile). The 25-4-12.0 road has been blocked by the Lone Rock Timber Company at its junction with the 25-3-7.0 road and the BLM portion is naturally decommissioned. Roads near the junction of the 25-3-7.0 and 25-3-7.1 roads would be blocked to prevent unauthorized off-road use which is currently a source of road erosion, sedimentation, and soil instability. The roadbed would be water-barred and the ditches maintained to prevent erosion.

C. Project Design Features as part of the Action Alternative

This section describes Project Design Features (PDFs) included as part of the action alternative to avoid, minimize, or rectify impacts on resources. PDFs include what the RMP (Appendix D, pg. 129) lists as "Best Management Practices" (BMPs) and the NWFP ROD lists as "Standards and Guidelines" (S&G's). BMPs are measures designed to protect water quality and soil productivity. S&Gs 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 protect riparian habitat:

a. The RMP (pg. 24) prescribed Riparian Reserve would be established on each side of perennial or intermittent streams. The width of this reserve is equal to the height of two site potential trees on each side of fish-bearing streams and a single site-potential tree on each side of perennial or intermittent non-fish bearing streams. The height of a site-potential tree for the Calapooya Creek Watershed has been determined to be the equivalent of 180 ft. (Calapooya Creek Watershed Analysis, pg. 1-2).

b. Seven acres of unstable or potentially unstable ground were removed from the project and

included in the Riparian Reserve land use allocation (BMP I A2, A4; RMP, pg. 129).

c. The integrity of the riparian habitat would be protected from logging damage by directionally felling trees away from or parallel to the Riparian Reserve (BMP I B2; RMP, pg. 130). Approximately 65 acres are contained within the Riparian Reserve adjacent to the units. No logging or road building would take place within the Riparian Reserve.

d. Prior to attaching any logging equipment to a reserve tree, precautions to protect the tree from damage shall be taken. If, for safety reasons, it would be necessary to fall a reserve tree then it would be left as coarse woody debris.

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 (see Appendix B) to fix drainage and erosion problems. This would consist of maintaining existing culverts, installing additional culverts, stabilizing unstable cut and fill slopes, and replenishing road surface with crushed rock where deficient (BMP II H; RMP, pg. 137). Approximately six additional cross drains would be installed to reduce the effective stream extensions due to ditchline and associated sediment delivery 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) Locating new spur roads outside of Riparian Reserves (BMP II B1; RMP, pg. 132), on ridge tops and geologically stable (0 – 55 percent slope) locations (BMP II B2; RMP, pg. 132), and minimal width (12 feet) construction to minimize disturbance (BMP II C6; RMP, pg. 132).

(3) Restricting road work and log hauling on unsurfaced roads to the dry season (normally May 15 to Oct. 15). Operations during the dry season would 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 wet season haul on surfaced roads, sediment reducing measures (ex., placement of straw bales and/or silt fences) would be placed near stream crossings, if sediment is reaching the streams.

(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 the same dry season as logging, i.e. the roadbed would be subsoiled, water-barred, cut slopes and fills covered with mulch from logging slash where available or with straw if logging slash is not available, and access

blocked (BMP II I; ROD/RMP, pg. 138).

b. **Measures to limit soil erosion and sedimentation from logging** would consist of:
(1) Use of cable logging systems that limits ground disturbance. This would include the use of partial suspension (BMP I C1a; RMP, pg. 130) (i.e., lifting or suspending the front end of the log during in-haul to the landing, thereby lessening the "plowing" action that disturbs the soil). In some limited, isolated areas, partial suspension may not be physically possible due to terrain or lateral yarding. Excessive soil furrowing would be hand waterbarred and filled with limbs or other organic debris. In harvest areas 7B, 7E, 19AB, 19C, 19D, 13A, and 13B, no cable yarding shall be permitted between November 15 of one calendar year and April 15 of the following calendar year, both days inclusive, or during other periods when soil moisture is high (greater than 30 percent), unless waived by the Authorized Officer.

(2) Helicopter logging (Units 7A and portions of 7B and 19AB) where partial suspension for cable yarding or access would not be practical. Logs would be lifted vertically off the ground and flown to landing areas on existing roads.

(3) Limiting ground-based logging to the dry season as described above (BMP I C2d; RMP, pg. 131).

(4) Avoiding broadcast burning on steep (> 65 percent) slopes (BMP III D1b; RMP, pg. 140) to reduce exposure of mineral soil and changed soil properties that contribute to erosion (Units 7B, 7E 19AB and 19C).

c. **Measures to limit soil compaction** (RMP, pg. 37) would consist of:
(1) limiting ground-based logging (right-of-ways in Units 7E, 19D and 13B and incidental) 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 used for incidental ground-based logging in size and track width (BMP I C2j; RMP, pg. 131); limiting new trails to slopes less than 35 percent (BMP I C2b; RMP, pg. 131) confining activities to designated skid trails (BMP I C2c; RMP, pg. 131), and spacing skid trails at an average spacing of at least 150 feet apart where topography allows.

(3) Shovel yarders would walk over as much slash as can safely be negotiated, and avoid more than one pass in swinging logs and piling slash.

(4) All main skid trails (any trail that has more than 50 percent exposed mineral soil) would be subsoiled after completion of current entry. Secondary trails (any trail that has less than 50 percent exposed mineral soil) would be handled in the same manner as main trails unless field evaluation shows that compaction is not extensive enough to need subsoiling.

d. **Measures to protect the duff and surface soil layer** (RMP, pg. 36) would consist of:

(1) Burning of slash during the late fall to mid-spring season when the soil and duff layer (soil surface layer consisting of fine organic material) moisture levels are high (BMP III D1b, pg. 140) and the large down logs have not dried. This practice would protect the soil duff layer and down logs from being totally consumed by fire and the surface layer from being negatively altered (i.e., loss of organic matter, erosion, change of soil physical properties, alteration of soil ecology and soil nutrients).

(2) Handpiling and burning piles in units (7A, 7B, 7E, 19AB, and 19C) which have major components of soils highly sensitive to broadcast burning (Category 1).

(3) The CWD reserved according to RMP guidelines as well as tree tops and limbs would also be a source of organic material that can become incorporated into the soil structure (See para. 3c, below).

e. **Measures to protect slope stability** would consist of:

(1) Removing from harvest consideration those areas (portions of Units 7E and 19AB and the entire Unit 7F) that exhibit potential slope instability (BMP I A2; RMP, pg. 129) and that could ultimately impact aquatic values such as fisheries and water quality.

(2) Locating new roads in stable locations (BMP II B2; RMP, pg. 132) with sufficient drainage structures (BMP II D; RMP, pg. 133). NOTE: Dry season yarding with one-end suspension and waterbarring yarding trails that can channel water and avoiding broadcast burning on steep slopes listed in paragraph b above would also reduce the risk of slope failure as well as limiting erosion.

3. To retain biological legacies for present and future wildlife components:

a. Green retention trees would be reserved to provide a legacy of mature trees in the early successional stands. These trees provide present and future wildlife habitat components such as future snag and down wood recruitment. Six to eight large (greater than 20" dbh) green conifer trees per acre in the GMFA units (Units 19AB, 19C, 19D, 13A and 13B) (RMP Appendix E, pg. 150) and twelve to eighteen conifer trees per acre as well as a hardwood component of two large trees per acre (where hardwood trees are available) in the Connectivity/Diversity Block (Units 7A, 7B, 7C, and 7E) would also be retained to provide a greater level of habitat features for wildlife dispersal (RMP, pg. 152). Trees would be retained in a scattered arrangement of individual trees as well as occasional clumps of two or more trees (RMP, pg. 38 and 64). Tree selection would be based on features that provide wildlife habitat such as: large "wolf" trees (large, full crowned, limby trees) and fork topped trees. Trees would approximate the pre-harvest relative proportions of species size and composition (RMP, pg. 150).

b. Existing hard or soft snags at least 20" inches in diameter and 15 ft in height (PRMP/EIS, Appendices 226) would be reserved in sufficient numbers to meet the population needs of 40 percent of potential population (RMP pg. 64). This has been assumed to be 1.2 snags per acre (PRMP/EIS, pg. 4-43). Any snag deemed as hazardous to worker safety would be felled. Such trees would be reserved and left in place as CWD. Experience indicates that less than five percent of snags need to be felled for this reason. An interim source of snags would be provided by reserving snags that do not meet the size described previously.

c. Existing down wood (120 linear feet of down wood per acre at least 16 inches in diameter and 16 ft in length) in Decay Classes 1 and 2 would be reserved (RMP, pg. 38). Where down wood is lacking in the above quantities, extra green trees would be reserved for future recruitment (RMP pg. 65). Some recent blowdown trees may be removed to facilitate logging.

4. To protect air quality:

All slash burning 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 (ODEQ, 1992).

5. 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 to BLM lands (BLM Manual 9015-Integrated Weed Management).

6. To protect cultural resources:

If any objects of cultural value (e.g. historic or prehistoric ruins, graves, fossils or artifacts) are found during the implementation of the proposed action that were not found during pre-harvest surveys, operations would be suspended until the site has been evaluated for implementation of appropriate mitigation.

7. To protect Special Status, and SEIS Special Attention Plants and Animals:

a. Special Status (Threatened or Endangered, proposed Threatened or Endangered, Candidate Threatened or Endangered, State listed, Bureau Sensitive, Bureau Assessment, or Special Provision) and Special Attention plant and animal sites would be protected where needed to avoid listing of species and conserve candidate species, according to established management recommendations (RMP, pg. 40).

b. 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 implemented before operations would be resumed.

c. Seasonal restrictions to prohibit logging during the nesting season of the Northern spotted owl from March 1st – September 30th would be applied to all proposed units and temporary road construction; unless protocol surveys indicate: 1) spotted owls not detected, 2) spotted owls present, but not attempting to nest, or 3) spotted owls present, but nesting attempt has failed. Waiver of the seasonal restriction is valid until March 1st of the following year.

d. Seasonal restrictions to prohibit logging during the nesting season of the great horned owl from March 1st – July 15th would be applied to Unit 13A and the temporary construction of the 25-4-13.2 spur; unless surveys indicate: 1) great horned owls not detected, 2) great horned owls present, but not attempting to nest, or 3) great horned owls present, but nesting attempt has failed.

e. If surveys determine that barred owls are nesting, then a 5 acre nest core would be established and seasonal restrictions from March 1st – July 15th would be applied within 0.25

miles of the nest site; unless surveys indicate: 1) barred owls not detected, 2) barred owls present, but not attempting to nest, or 3) barred owls present, but nesting attempt has failed.

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

The operator would be required to comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials. All equipment planned for instream work (stream culvert replacement) would be inspected beforehand for leaks. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Authorized Officer (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 trash and logging and construction materials would be removed from the project area.

9. To reduce the threat of increased fire hazard from slash generated from harvest:

Prescribed burning operations would be conducted in the harvest units to reduce fuel loadings, favorably alter the fuel profile, and lessen the threat of future catastrophic wildfire.

D. Monitoring

The RMP (pg. 85) specifies that management activities would be monitored and the results reported on an annual basis. Monitoring would be done in accordance with the RMP guidelines outlined in Appendix I.

E. Alternatives Considered but not Analyzed in Detail

1. An alternative to fully decommission the 25-4-2.0 Rd., a creek bottom road that accesses Slide Creek, and replace it with a newly constructed ridge system was considered by the ID Team. This proposal was discussed with the permittee (Lone Rock Timber Co.). The permittee agreed that a ridge road was a good option but did not agree to a full decommissioning of the 2.0 Rd. citing the need to maintain access for control of wildfire.

2. An adjacent landowner suggested an alternative to not log the area and manage as an elk habitat area with ODF&W. Eliminating the area from logging would not meet the objectives for timber management on lands in Matrix land use allocations that were described on previously (see Objectives, pg. 4). The management action/direction for Roosevelt elk (RMP, pg. 39) was removed through Plan Maintenance in 2002 (BLM, June 2003; pg. 67) due to the thriving elk population on the Roseburg District. In addition, the ODF&W indicated that the elk herd has caused some problems in the Calapooya Watershed; therefore, they are not interested in managing elk in this area.

3. Public comments were received to defer harvest or consider a partial cut alternative. The ROD/RMP provides management direction (pg. 61) that stands within the Matrix land use allocation to be scheduled for regeneration harvest when they are "at or above the age of volume growth culmination" (i.e. above 80 – 110 years of age). Therefore, a partial cut alternative would not be consistent with ROD/RMP direction.

F. Issues to be Analyzed

The ID Team noted the deteriorating condition of the transportation system within the Gassy Creek drainage of this project, the opportunities for the decommissioning of unneeded spurs and the impacts that the road system is having on water quality. The Calapooya Creek Watershed Analysis (pg. 2-2) also noted that recent studies cite the declining water quality and salmonid populations in the watershed. ODF&W stream habitat surveys show that streams within the watershed are limited by a lack of large woody debris, infrequency of deep pools, high width to depth ratios, and the absence of conifers in adjacent riparian areas. Due to these considerations the ID Team determined that the following concern has sufficient potential to warrant more detailed analysis:

Would this project result in sedimentation to the stream system that would be detrimental to fisheries?

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 description of the current state of the environment inherently includes the effects of natural and human actions that have taken place over many decades. The importance of "past actions" is to set the context for understanding the incremental effects of the proposed action when added to the base-line established by past actions.

This project lies within the Western Cascades Physiographic Province of Oregon. The FSEIS broadly 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 description of BLM administered lands on the Roseburg District. This EA is tiered to these two documents. A further description can also be found in the Calapooya Creek Watershed Analysis which is incorporated by reference. The Analysis File (Appendix F) contains data and additional supporting information used by the interdisciplinary team (IDT) to describe the affected environment.

All references to "project area" refer to the harvest units, the haul roads leaving the site, and the locations of any restoration activities. This is the scale at which site-specific effects will be described. The "action area" refers to the hydrologic catchments encompassing the project (Gassy Creek, which includes the tributaries of Field Creek and Slide Creek, and Gilbreath Creek) including the transportation system and streams leaving the site to an ending point at the Gassy Creek Bridge / Calapooya Creek (see Appendix A, Vicinity Map).

A. General Setting

The action area consists of Gassy, Field, Slide, and Gilbreath Creeks within the Middle Calapooya Creek Sixth-Field Subwatershed which is in the Calapooya Creek Fifth-Field Watershed of the Umpqua River Sub-Basin. 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. A major highway (Interstate-5) and a small town (Oakland) are also located within the watershed. This project is located on lands that the RMP (pg. 53) classifies as Visual Resource Management Class IV ("No specific visual management constraints").

B. Affected Resources

This section describes the relevant resource components of the existing environment. 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 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 Special Status Species and the resources listed below according to established protocols.

1. Timber

a) Stand Description

The predominant conifer species is Douglas-fir, which acts as a pioneer after a significant disturbance event such as fire. Conifer species in association include incense-cedar, western hemlock, western redcedar, grand fir, and Pacific yew. Red alder, madrone, chinkapin, and maple are common hardwoods. Shrubs, grass and forbs are prevalent and include ocean spray, hazel, salal, Oregon-grape, sword fern, and poison oak. Scotch broom and blackberry are noxious weeds that have proliferated along roads and in disturbed areas. Stand age is estimated to be between 150 and 250 years of age. Logging in this area began in the 1940s. Logging slash was occasionally burned prior to planting or seeding with Douglas-fir. Many of the managed stands have been precommercially thinned and fertilized. All of the plantations are fairly uniform in structure and composition. The Silvicultural Prescription (Appendix F) provides a more detailed stand description.

b) Fuels Management

The current fuel conditions, prior to harvest treatment, are best described as residue descriptive code 3-DF-4 in the *Photo Series for Quantifying Natural Residues in Common Vegetation Types of the Pacific Northwest* (Maxwell and Ward, 1980). The Down Dead Woody (DDW) component of this stand (i.e. the material accumulated on the ground) is approximately 27 tons per acre.

The project area currently has a low to moderate risk of wildfire due to accumulation of DDW, tree spacing, and the existence of low limbs and shrubs that can carry the fire from the surface to the crowns of the trees (Appendix F; Fuels Report; June, 2006).

c) Retention of Late-Successional Forests in Matrix.

The ROD/RMP (pg. 34) directs that late-successional forests be retained in watersheds that comprise 15 percent or less late-successional forests on federally administered lands in fifth-field watersheds. Any timber stands greater than approximately 80 years of age are considered late-successional habitat (S&G, pg. B-2).

The Calapooya Creek Fifth-Field Watershed is approximately 157,200 acres in size (Calapooya Fifth-Field Watershed, pg. 1-1). Approximately eight percent (11,973 acres) of the Calapooya Creek Fifth-Field watershed is managed by the BLM and 27 percent (3,272 acres) of this federal land base is currently in a late-successional condition (1997 Interagency Vegetation Management Project [IVMP] dataset). This meets the ROD/RMP standard to retain 15 percent late-successional forest on federally administered lands in the fifth field watershed.

d) Connectivity/Diversity Block Management

Approximately 49 acres of the Whatagas project is within Connectivity/Diversity Block #93. The ROD/RMP designated the Matrix as the portion of the District lands where timber harvest

and other silvicultural activities would be emphasized. The Matrix is composed of the GFMA and Connectivity/Diversity Block land use allocations. The ROD/RMP (pg. 8) allocated 26,900 acres as Connectivity/Diversity Blocks on the entire Roseburg District.

(1) 150 year Area Control Rotation

The ROD/RMP (pg. 34) requires that the Connectivity/Diversity Block Land Use Allocation be managed on a 150 year area control rotation. Area control rotation is a method of scheduling timber harvest based on dividing the total acres by an assumed rotation (ROD/RMP, p. 101). This method of scheduling regeneration harvest within Connectivity/Diversity Block lands is described on page 153 of the ROD/RMP. It says, "Connectivity/Diver[s]ity Block area would be managed using a 150 year area control rotation." The next sentence clarifies this further when it says, "Regeneration harvest will be at a rate of 1/15 of the available acres in the entire Connectivity/Diversity Block land use allocation per decade." This does not set a minimum harvest age for regeneration harvest. What this means is that regeneration harvest would be planned to occur on an area equal to 1/15th of the Connectivity/Diversity Block land use allocation every decade. The ROD/RMP (pg. 8) allocated 26,900 acres as Connectivity/Diversity Blocks on the entire Roseburg District. On a decadal basis, approximately 1,790 acres are available for regeneration harvest ($1/15^{th}$ of the entire land use allocation).

The ROD/RMP was approved and implemented in 1995, establishing the Connectivity/Diversity Block Land Use Allocation and the baseline against which all activities and accomplishments are measured. Therefore, 1995 is the beginning of the "decade" for the purpose of measuring compliance with decadal harvest limitations.

Project accomplishments implemented under the Roseburg District RMP are reported annually in the *Roseburg District Annual Program Summary* (APS) *and Monitoring Report* (USDI, BLM; 2005a). The 2004 APS (Table 17, pg. 33) reports sale volume and acres for the period of fiscal year 1995 through 2004. The 2004 APS summarized that 463 acres of regeneration harvest have been harvested or authorized in the entire Connectivity/Diversity Block land use allocation. (NOTE: Table 17 contains a typographic error and reported the FY99 figures as 36 acres instead of the actual 63 acres. As a result, the nine year total was reported as 463 acres rather than the actual 490 acres). Of the 490 acres sold, 222 acres have been harvested and 268 are un-awarded pending the resolution of administrative appeals or other legal challenges, or are enjoined from harvest by court order. No additional regeneration harvest timber sales were sold in Connectivity/Diversity in FY2005.

Therefore, in the first decade of the ROD/RMP, 490 acres out of 1,790 acres allowable (27 percent of potential decadal harvest) and 490 acres out of 26,900 acres (1.8 percent of the total land use allocation) have been charged against this commitment falling far short of the ROD/RMP anticipated levels of harvest. The Roseburg District has a planned regeneration harvest of approximately 420 acres in the Connectivity / Diversity Block land use allocation beginning in FY06 (beginning of second decadal commitment) which includes 49 acres proposed in the Whatagas sale.

(2) 25-30 Percent Late-Successional Old-Growth

The resource condition objectives for the Connectivity/Diversity Block land use allocation are: Manage to provide ecotypic richness and diversity and to provide for habitat connectivity for old-growth dependent and associated species within the Connectivity/Diversity Block. Manage to maintain a minimum of 25 percent of each block in late-successional condition both long-term and short term. Late-successional stands within Riparian Reserves and other allocations contribute toward this percentage. (ROD/RMP, p. 151). Connectivity/Diversity Block #93 is 498 acres in size and approximately 177 acres (36 percent of the block) is currently in late-successional forest.

(3) Best Ecologically Functioning Stands

The ROD/RMP gives guidance that the "…best ecologically functioning stands will seldom be entered in the short term" (p. 152). For the Whatagas project area, the Whatagas interdisciplinary team interpreted best ecologically functioning stands as late-successional forest stands (mature and old-growth seral stages, ROD/RMP pp. 106, 112) that exhibit demonstrable structural diversity and are currently and regularly used by the Northern spotted owl for nesting habitat. The Connectivity/Diversity Block regeneration harvest units in the Whatagas timber sale are not considered 'best ecological functioning stands' because they are not currently used as nesting habitat by Northern spotted owls. Historic and current Northern spotted owl nesting activities in the vicinity is limited to the Norris Creek and alternate Field Creek nest sites as described in the wildlife discussion of the Affected Environment below. These areas of spotted owl nesting are more than 0.9 miles away from the harvest units.

Consequently, the Whatagas harvest units are not considered to be best ecologically functioning stands. Since there are no best ecologically functioning stands within the Whatagas project area, they will not be discussed further in this analysis.

(4) Interior Habitat

The ROD/RMP provides guidance that within the Connectivity/Diversity Block land-use allocation to: "Minimize fragmentation of interior habitat within block and in adjacent older stands to provide as effective habitat as possible" (pg. 151). The Calapooya 5th Field Watershed Analysis defined "interior habitat" as that portion of a stand aged 120 years or more that is more than 150 meters form the edge (pgs. 4-1, 4-2). Whatagas is partially within Connectivity/Diversity Block #93 (Units 7A, 7B, 7C and 7E); but there is no interior LSOG habitat within this block. The present size, shape, and arrangement of LSOG stands in Block #93 prevent them from containing interior habitat (i.e. they are all "edge" habitat).

There is a single patch of interior LSOG habitat 18.9 acres in size in Unit 19AB in T25S-R03W-Sec.19 within GFMA. However, there is no corresponding guidance to minimize fragmentation of interior habitat in GFMA as there is in Connectivity/Diversity Blocks.

(5) Landscape Planning Analysis

One of the stand and landscape condition objectives for the land use allocation include: Incorporate Connectivity/Diversity Blocks within landscape planning analysis. Manage

toward a mix of stand conditions and seral patterns with consideration to three levels of scale: physiographic province (river basin / mountain range), landscape block (watershed), and within stand detail (ROD/RMP, p. 152).

(a) Physiographic Province Scale

The strategy in the ROD/RMP is to maintain or restore healthy, functioning ecosystems while providing a sustainable production of natural resources (pg. 18). Land use allocations are the building blocks and are located and configured in the landscape to meet this strategy for management of federal lands (ROD/RMP pg. 19). The Connectivity/Diversity Block land use allocation was located to provide habitat connectivity (along with other allocations such as Riparian Reserves) for old-growth dependent and associated species, such as the Northern spotted owl, between LSRs and within the GFMA (ROD/RMP, pgs. 33, 151).

The ROD/RMP itself considered the larger physiographic province scale in its strategy to manage ecosystems when land use allocations were designated and distributed across the landscape. Since the Whatagas timber sale conforms to direction provided in the ROD/RMP which itself considered the larger scale of the physiographic province, it meets ROD/RMP direction for consideration at this scale.

(b) Landscape Block (Watershed) Scale

The Calapooya Creek watershed has the potential to play an important role in linking the Cascades to the Coast Range; however there are several drawbacks including: large tracts of agricultural land, Interstate-5 bisects the watershed, and BLM administers less than ten percent of the watershed (Calapooya Creek Watershed Analysis v1.1, 1999, pg. 4-6). For these reasons, connectivity between LSRs and CHUs is poor in the watershed and Whatagas project area.

The following paragraph from the Calapooya Creek Watershed Analysis (pgs. 4-6) describes the role BLM administered lands in the watershed for wildlife species:

> "Movement [of wildlife species] across the watershed in an east-west direction would be almost impossible, except for the strongest flyers, or the more habitat generalists. Movement of any species across the landscape is highly dependent upon the conditions of the adjacent private lands. The most important role that [BLM administered lands in] this watershed could play in facilitating movement [of wildlife species] in a north-south direction would be to provide islands of suitable LSOG habitat. These islands are too small to provide suitable habitat by themselves, for the larger species. But in conjunction with private land, as it becomes suitable, intermittent breeding sites may become available. These islands could serve as refuge for those species moving across an otherwise inhospitable landscape. For small species, those with small home ranges, they may serve as refugia. Into which populations recede as the adjacent habitats lose their suitability."

The most important habitat is contained in Northern spotted owl Critical Habitat Unit (CHU) OR-24 in the central portion of the watershed (Calapooya Creek Watershed

Analysis v1.1, 1999, pg. 4-5). Habitat in CHU OR-24 provides a "stepping stone" to link the Coast Range population of spotted owls with the Cascade population (Calapooya Creek Watershed Analysis v1.1, 1999, pg. 4-5), even though this functionality is limited due to the reasons discussed above. The Whatagas harvest units are not within CHU OR-24.

Considering these factors, the Whatagas Connectivity/Diversity Block regeneration harvest units meet the ROD/RMP management direction for the landscape (watershed) scale.

(c) Within Stand Detail

The stand detail effects are considered in Chapter III (Affected Environment) and Chapter IV (Environmental Consequences) of this document.

2. Air Quality

The only potential impact that the implementation of land management activities could have would be from temporary smoke intrusion into populated areas from prescribed burning. Certain areas are of particular concern for air quality and are identified in the Oregon Smoke Management Plan as Designated Areas where smoke intrusion should be avoided. The project area is 17 miles northeast of the Roseburg Designated Area for attainment of federal Clean Air standards.

3. Botany

a) Special Status Species

The following analysis only considers those Special Status Species that are: within the known range of the species, documented or suspected to occur in the project area, or whose habitat is documented or suspected to occur within the project area. Consequently, there are no Special Status Plant species in the project area (refer to Appendix F, Botany Summary). Initial field surveys were conducted in the fall and winter of 1997, and the spring and summer of 1998. Other field surveys were performed in May and June of 2006, to comply with the 2001 ROD for Survey and Manage Botany Species (see below). Since there are no Special Status Plants identified in the Whatagas project area, they will not be discussed further.

b) Survey & Manage Species

The Whatagas project area contains, or is suspected to contain, suitable habitat for three species of Survey and Manage lichens (*Leptogium cyanescens*, *Nephroma occultum*, and *Pseudocyphellaria rainierensis*) and three species of Survey and Manage vascular plants (*Cypripedium fasciculatum*, *Cypripedium montanum*, and *Eucephalis vialis*). Pre-disturbance surveys for these six species were completed June 2006 in accordance with the reinstated 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (January, 2001) (2001 ROD), including any amendments or modifications in effect as of March 21, 2004.

No known sites of botanical Survey and Manage species were found in the proposed project area.

Additional information regarding compliance with the 2001 ROD as stated in Point (3) on page 14 of the January 9, 2006, Court order in Northwest Ecosystem Alliance *et al. v.* Rey *et al.* can be found in the compliance documentation attached to this EA.

Since there are no Survey and Manage botanical species identified in the Whatagas project area, they will not be discussed further.

c) Noxious Weeds

There are some infestations of noxious weeds (Scotch broom and Himalayan blackberry) scattered throughout the project area. Infestations range from light to heavy, and are mostly located within the road prisms or previous used logging landings. The project area has been treated in the past (2002) and will receive future treatment (2006) under the Roseburg District Integrated Weed Control Plan (USDI, 1995). Treatments have been and will continue to be performed by manual removal and/or application of an approved herbicide.

4. Cultural Resources

The project area was surveyed (April 1998) for cultural resources and none were found (see Appendix F). Since there are no cultural resources identified in the Whatagas project area, they will not be discussed further.

5. Hydrology

There are no streams or wetlands within the harvest units. Beneficial uses of water in the project area primarily consist of benefits to aquatic life and wildlife. Beneficial uses of water downstream of the project area consist primarily of livestock watering, domestic water supply, irrigation, and fish and aquatic life. There are no waterbodies in the action area on the Oregon Department of Environmental Quality's 2002 303(d) List of Water Quality Limited Waterbodies (ODEQ, 2003 (b)). Calapooya Creek is listed on the 303(d) list from near the City of Oakland downstream to the mouth (town of Umpqua) for excessive summer temperature, pH, and dissolved oxygen and for excessive year-round fecal coliforms (ODEQ, 2003 (a) and (b)). This area is approximately 13 miles downstream of the project area.

Average annual precipitation in the action area ranges from 52 to 70 inches occurring primarily between October and March; therefore, most of the annual streamflow is concentrated to this period (Harr, et. al., 1979). Elevations range from 1,040 to 2,380 feet. While lower elevations (<2,000 feet) may receive a few snowstorms in a season, precipitation occurs primarily as rain.

The area between 2,000 to 5,000 feet elevation receives alternating rain and snow all winter and is called the transient snow zone (TSZ) (USDI, 1999, pg. 5-2). The TSZ effect is the effect of warm rain-on-melting snow in openings created within the TSZ where there is less vegetation to intercept precipitation. If a large acreage of timber harvest or burned area is within the TSZ, there may be increased peak flows (Christner and Harr, 1982, pg.15; Moody and Martin, 2001, pg. 2990). Five percent of the harvest area (all of Unit 19C [six acres]) is located within the TSZ.

Currently, compacted road surfaces within the project reduce infiltration resulting in runoff being rerouted to ditchlines and culverts. This results in water being transported to streams quicker than what would naturally occur thereby altering the timing of the storm hydrograph by increasing peak flows and decreasing the time between precipitation and peak runoff (Harr, et. al., 1975). There is a spur road north of Unit 7C, unauthorized jeep trails, and the 25-3-19.7 road which are rutted, resulting in reduced infiltration and increased runoff and erosion down the roads.

Existing condition for water yield and base flow in the harvest units has been altered by past timber harvest (vegetation removal) which can result in increases in water yield due to a decrease in evapotranspiration and interception (Satturlund and Adams, 1992). If a forested area is greater than 35 years of age, it is assumed to be hydrologically recovered (i.e., water yield increases have disappeared) since the last harvest (Harr, 1983, pg. 385). Approximately 20 acres of the forested stand draining into Units 7A (East), 7C, and 19C is less than 35 years of age, therefore the outflow from the streams below the units would be expected to have slightly elevated water yields and base flows compared to late-successional forested conditions. The Equivalent Clearcut Acres (ECA) model was used to determine the effects of harvest on the water yield at the action area, sub-watershed, and watershed scales. Results of the model indicate that there should not be a detectable increase in water yield at the action area scale from past management (see Water Yield and Peak Flows [pgs. 40-41] for a description of the model).

6. Soils and Geology

The project is in the transition zone between the Coast and Cascade Ranges resulting in complex geology, topography and soils with high variability in slope stability, erosion and sedimentation potentials, and soil productivity. The topography is characterized by a stair-stepping of gently to moderately sloping ground (15 to 60 percent) and steep to very steep slopes (60 to 90 percent). This stair-stepping pattern can be attributed in part to large, ancient slump-earthflow events. About 15 acres (Units 7B, 7E, 13A, 13B and 19AB) are classified under the Timber Production Capability Classification (TPCC) system as having soils considered fragile due to slope gradient (classified as FGR) but suitable for forest management with mitigation (see pg. 7-9) for surface erosion and landslides. About 15 acres of the moderate slopes (Units 13A, 13B, and 19AB) have soils on slump-earth flow topography and are suitable for forest management with mitigation for slump-earth flow movements (classified as FPR). Four acres in Unit 19C have fragile soils due to moisture deficiencies caused by shallow, rocky soils on south facing slopes but are suitable for timber production with mitigation (classified as FSR). About 25 acres of the project area have soils (Category 1) that are highly sensitive to broadcast burning due to shallow soil depths and slopes over 70 percent.

a) Landslides

An analysis of landslide events for both the BLM and private lands was done using aerial photo interpretation covering 1958 to 2004 and field reconnaissance. Of the 167 management-related landslide incidents that were identified in the action area, 60 percent were of small size (<0.1 ac), 31 percent were of medium size (0.1-0.5 ac) and nine percent were of larger landslides (up to 4 ac). Most of the harvest related landslides had limited travel distances (most less than 200 ft.) and did not reach channel courses. Those of highest impact to streams were the debris torrents (fast moving landslides, highly charged with water, that can flow long distances down steep-graded, confined stream channels). Large harvest-related debris torrents were widely scattered

and few in number (six identified over the 6,900 acre action area). Large harvest-related debris torrents were widely scattered and few in number (six identified over the 6,900 acre action area). The road-related debris torrents were more frequent and mostly large in size (half an acre to four acres). All action area debris torrents (harvest and road-related) ranged from 300 to 2,000 feet in length and delivered sediment into stream channels (mainly to first and second order streams). Landslide frequency currently is much lower than 1950s and 1960s. This is in-part attributed to improved management practices and the relatively low levels of current road construction and harvest activity. The decline has been the most dramatic for the road-related landslides. However, on the older roads there are still undersized culverts, culverts partially filled with soil and debris, culverts not capturing flow, and unstable cuts and fills that create potential for future failures.

b) Erosion and Sedimentation

Erosion and sediment delivery from roads occurs along road segments that parallel streams and at stream crossings. Existing valley-bottom haul roads parallel Gassy Creek and Field Creek (perennial fish-bearing streams) for 5.5 miles with 3.6 miles within 150 feet and often within 50 feet of the water course. The road surfacing contains gravel with high amounts of fines. Cross-drain spacing is in the range of 500 to 700 feet apart with inlets partially or fully blocked with soil and debris. All of the above factors contribute to increased sedimentation to the streams along these road segments. An erosion and sediment transport analysis using the Water Erosion Prediction Project model (WEPP) indicates that the amount of fine sediment delivered to the streams from these valley bottom haul roads ranges between 1.7 and 4.5 cu yd per year for the four miles of valley bottom roads, depending on traffic levels and recurring storms. In addition, the total sediment delivery from the 27 stream crossings within the upland road system would range between 1.0 cu yd and 2.0 cu yd, depending on traffic levels and recurring storms. Some erosion and sediment delivery from uplands also occurs, especially during large storm events (i.e., 20-year and larger storm recurrence). The natural background rate is estimated to be in the range of 0.45 cf/ac/year (Benda, 1997) to 1.4 cf/ac/year.

7. Fisheries

Oregon Coast coho salmon, Oregon Coast Steelhead, coastal cutthroat trout, Oregon Coast chinook salmon, Pacific lamprey, and Umpqua chub are present in the Calapooya Creek fifth-field watershed (see Appendix F, Table 5 for a complete list of fish species present in the watershed). The National Marine Fisheries Service determined that the Oregon Coast coho Ecologically Significant Unit does not warrant listing under the ESA at this time and therefore withdrew the proposed listing (Fed. Reg., Vol. 71 No. 12, Jan. 19, 2006). However, under OR/WA BLM guidelines the OC Coho is considered Bureau Sensitive. There are no fish-bearing streams adjacent to any of the proposed units. The shortest distance between any proposed unit and the extent of salmonid distribution is 0.15 miles downstream from Unit 13B (see fisheries map, Appendix F).

The proposed haul route parallels Field Creek and Gassy Creek and contains five fish-bearing stream crossings, 10 perennial non-fish bearing stream crossings, and 13 intermittent stream crossings. Three of these fish-bearing stream crossings are on the portion of Road # 25-4-12.0 that parallels Field Creek. This segment has improperly functioning drainage features (e.g., plugged cross-drain culverts) and deficient rock surfacing and is currently contributing sediment

to Field Creek during portions of the rainy season. With few exceptions, the haul route ditch lines are well vegetated or armored and would remain ungraded. The portions of the haul route within close proximity to fisheries habitat are located in the valley bottom. These areas lie on relatively flat topography and the well vegetated ditch lines appear to be filtering and trapping any road derived sediment. There are several areas in close proximity to the stream with potential to deliver sediment. These areas represent a combined total length of approximately 300 feet (or one percent of the 5.5 mile valley bottom haul road), and are spread out at different areas along the haul route.

Oregon Department of Fish and Wildlife (ODFW, 1994) has conducted stream habitat surveys for several streams in the Calapooya Creek watershed. Data is available for Field Creek, Slide Creek, and Gassy Creek. Lower portions of Field Creek and Slide Creek are limited by a lack of large woody debris (LWD), infrequency of deep pools, high width to depth ratios, and the absence of conifers in adjacent riparian areas. Lower Gassy Creek is also limited by a lack of LWD and riparian conifers, but deep pools are more frequent and width to depth ratios tend to be within properly functioning limits. High width to depth ratios can lead to increased stream temperature and excessive bank erosion. All three systems are dominated by gravel and cobble. While LWD and high width to depth ratios are limiting factors in lower reaches of these streams, occurrence of LWD, riparian conifer density, and width to depth ratio improve further up in the stream system closer to the project area. Increased conifer density in combination with steeper topography creates more shade for these upper stream reaches. This is a typical pattern for most stream systems in the general vicinity of the project area. Streams directly adjacent to proposed units tend to be stable, high gradient, non-fish bearing, intermittent and perennial streams with riparian vegetation sufficient to prevent stream bed and bank erosion caused by high stream flow.

a) Essential Fish Habitat

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). There is no EFH adjacent to any proposed timber sale unit. The nearest EFH is located approximately 0.15 miles downslope of Unit 13B in Section 13.

b) Aquatic Conservation Strategy

The proposed action meets the objectives of the Aquatic Conservation Strategy (ACS) as described in the ROD/RMP (pg. 19) based on the following rationale:

(1) Riparian Reserves (ACS Component #1)

Riparian Reserves were established. The ROD/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. The height of a site-potential tree for the Calapooya Creek Watershed has been determined to be the equivalent of 180 feet. (Calapooya Creek Watershed Analysis, pg. 1-2). There are no fish-bearing streams adjacent to any units and no wet areas were found within the proposed sale units.

(2) Key Watersheds (ACS Component #2)

Key Watersheds 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.

(3) Watershed Analysis (ACS Component #3)

The Calapooya Creek Watershed Analysis was used in this assessment and is available for public review at the Roseburg District office or can be viewed on the Roseburg District website at www.or.blm.gov/roseburg.

(4) Watershed Restoration (ACS Component #4)

The Calapooya Creek Watershed Analysis (pg. 8-1) states: "Calapooya Creek 5th field watershed was ranked as low priority for restoration by the Umpqua Basin Watershed Council Technical Advisory Committee. Thus, from a strategic standpoint as well as in light of budgetary constraints, restoration activities will not be focused in this watershed except as financed through the sale of timber." Restoration activities included as part of this project include:

- Decommissioning of road number 25-3-19.7A and temporary spurs 1 through 8 by blocking with trench barriers, water-barring, subsoiling, and mulching with logging slash where available or with straw if logging slash is not available (0.5 mile).
- Decommissioning of road numbers 25-3-19.3, 25-4-24.1A4, and 25-4-13.2 would include blocking with trench barriers and water-barring (0.6 mile).
- Decommissioning of the 25-3-7.5 road by blocking with trench barriers (0.01 mile).
- Roads near the junction of the 25-3-7.0 and 25-3-7.1 roads would be blocked to prevent unauthorized off-road use which is currently a source of road erosion, sedimentation, and soil instability. The roadbed would be water-barred and the ditches maintained to prevent erosion.
- The maintenance of 13.8 miles of existing road to fix hydrologic problems.

8. Wildlife

The following analysis only considers those Special Status Species that are: within the known range of the species, documented or suspected to occur in the project area, or whose habitat is documented or suspected to occur within the project area. The remaining Special Status Species are briefly addressed in Appendix F (Table 3 -"Bureau Sensitive, Assessment, & Tracking Species").

a) Federally Threatened & Endangered Species

Federally threatened and endangered species known to occur in the Roseburg District include the Northern spotted owl, marbled murrelet, and bald eagle.

(1) Northern Spotted Owl

A pair of Northern spotted owls that are not nesting in the 2006 nesting season have been detected near the southeast corner of Unit 7C (Connectivity/Diversity Block). In addition, there have been detections of potentially a second pair of spotted owls that are not nesting in the 2006 nesting season in the western-half of Unit 19AB (GFMA). At this time it is unknown if there are two separate pairs of spotted owls in the project area or if there is a single pair of owls that is traveling throughout portions of the project area.

Two Northern spotted owl sites (Field Creek and Norris Creek) are within 1.2 miles (provincial home range) of the harvest units. The Field Creek spotted owl also has an alternate nest site established that is within 1.2 miles of the harvest units. The original Field Creek nest site is approximately 0.1 mile away from of Unit 7E, but the stand containing that site was harvested and replanted in 1994 so it is not currently considered a functional nest site. The Norris Creek and alternate Field Creek nest sites are over 0.25 mile from the proposed harvest units (approximately 1.1 miles and 0.9 miles respectively). The Norris Creek and alternate Field Creek owl sites each have an established 100 acre Known Owl Activity Center (area of concentrated activity of either a pair or territorial single owl; S&G, C-10).

Known Owl Activity Centers have been designated to minimize impacts and protect nest sites found before 1994 (USDI, 2005). The Field Creek and Norris Creek activity centers are currently impaired in their ability to support successfully reproducing owl pairs since they have approximately 6-11 percent (166-325 acres) suitable habitat (see Appendix F; Table 2 -"Northern Spotted Owl Habitat") within the home range.

This project does not occur within spotted owl designated Critical Habitat (a specific geographical area designated by the US Fish and Wildlife Service as containing habitat essential for the conservation of a Threatened and Endangered species). There is 117 acres of unsurveyed, suitable nesting, roosting, and foraging habitat within the project area. There is 530 acres of unsurveyed, suitable spotted owl habitat within 0.25 mile of the harvest units.

(a) Red Tree Voles as Prey Item for Northern Spotted Owls

Public comments were raised regarding the red tree vole as an important prey base for Northern spotted owls. The 2003 Annual Species Review eliminated the need to survey for and manage known red tree vole sites in the mesic portion of the species' range that includes the Roseburg District.

Northern spotted owls are known to prey upon red tree voles but their importance as a prey item varies among geographic regions and individual owl pairs (Forsman et al., 2004). In the Central Cascades, which includes the Whatagas project area, red tree voles comprised 7.7 percent of the spotted owl diet based on number of prey items consumed and 2.2 percent of the diet based on biomass of prey items consumed (Forsman et al., 2004). By comparison, the predominant prey item in the Central Cascades is the Northern flying squirrel which comprised 34.6 percent of the spotted owl diet based on number of prey items consumed and 45.5 percent of the diet based

on biomass of prey items consumed (Forsman et al., 2004). In this portion of the Northern spotted owl range, red tree voles are not an important part of the Northern spotted owl prey base. Any effects this project may have on red tree voles would therefore not have a significant effect on the Northern spotted owl.

The loss or displacement of prey base from the regeneration harvest units is consistent with the loss of foraging habitat for Northern spotted owls as consulted with U.S. Fish and Wildlife Service. The biological opinion (Ref. No. 1-15-05-F-0512) covering this project considered the removal of nesting, roosting, and foraging habitat. The Whatagas timber sale was included in the Biological Analysis as part of the consultation package with the U. S. Fish and Wildlife Service regarding the *FY2003-2008 Programmatic Assessment for Disturbance Activities and Management Activities Which Remove Habitat* (USDI, 2002b). The effect on Northern spotted owls by removing suitable habitat in the Whatagas timber sale through regeneration harvest was determined to be "may affect: likely to adversely affect." In its Biological Opinion, the U.S. Fish and Wildlife Service issued a "take" statement associated with the removal of suitable habitat in association with regeneration harvest (USDI, USFWS, 2003).

(2) *Marbled Murrelet*

The project area occurs more than 50 miles from the Coast, beyond the inland range of the marbled murrelet; therefore, there is no marbled murrelet habitat or concern for the species.

(3) *Bald Eagle*

Based on current surveys (2006) the nearest known bald eagle nest site (Huntley Creek) is approximately 1.6 miles away. As of this date, there have been no bald eagle sightings within the action area. Since there are no bald eagle nests or sightings known within the Whatagas project area, they will not be discussed further.

b) Survey & Manage Species

The Whatagas project area is within the known range of the great gray owl and Unit 19C is range of the Crater Lake tightcoil. Pre-disturbance surveys for great gray owls are not required since there is no suitable nesting habitat within the project area. The required habitat characteristics of suitable habitat for great gray owls include: (1) large diameter nest trees, (2) forest for roosting cover, and (3) proximity [within 200m] to openings that could be used as foraging areas (*Survey Protocol for the Great Gray Owl within the range of the Northwest Forest Plan v3.0*, January 12, 2004). The stands in the project area do not have proximity to natural-openings (McGraw, staff review, 2006) and pre-disturbance surveys are not suggested in suitable nesting habitat adjacent to man-made openings at this time (pg. 14, *Survey Protocol for the Great Gray Owl within the range of the Northwest Forest Plan v3.0*, January 12, 2004).

Suitable habitat for the Crater Lake tightcoil is "perennially wet situations in mature conifer forests, among rushes, mosses and other surface vegetation or under rocks and woody debris within 10 meters of open water in wetlands, springs, seeps and riparian areas…" (pg. 43, *Survey*

Protocol for S&M Terrestrial Mollusk Species v3.0, 2003). There are no habitat features matching this description within proposed harvest Unit 19C. Consequently, there is no suitable habitat for this species within the project area. Furthermore, mollusk surveys were completed May 1999 and no Crater Lake tightcoil sites were discovered based on version 2.0 (1997) of the protocol. The May 1999 mollusk surveys also comply with version 3.0 (2003) of the protocol.

There are no known sites of Survey and Manage wildlife species known in the proposed project area. Additional information regarding compliance with the 2001 ROD as stated in Point (3) on page 14 of the January 9, 2006, Court order in Northwest Ecosystem Alliance *et al*. *v*. Rey *et al.* can be found in the compliance documentation attached to this EA.

Since there are no Survey and Manage wildlife species identified in the Whatagas project area, they will not be discussed further.

c) Bureau Sensitive & Assessment Species

Although there are no known sites within the harvest units, the Columbian white-tailed deer, fringed myotis, Townsend's big-eared bat, and Northern goshawk may occur since suitable habitat features are present and it is within the known range of those species.

(1) Columbian White-Tailed Deer

Columbian white-tailed deer are suspected within the project area since Units 7A, 13A, and 13B lie within the known range. The primary habitat of the deer is pastures/grasslands, oak savannah/woodlands, and shrub riparian habitat. White-tailed deer forage predominantly on forbs and shrubs. The late-successional conifer stands in the proposed project are not typical white-tailed deer habitat but they may occasionally use these stands for shelter and thermal cover due to the proximity of the agricultural lands and pastures to the west.

(2) Fringed Myotis and Townsend's Big-Eared Bat

The fringed myotis and Townsend's big-eared bat can roost in snags and/or trees with deeply furrowed bark, loose bark, cavities, or with similar structures, typically in late-successional conifers. Potential bat roosting trees and snags occur in all of the proposed units. Survey results indicate that there are currently 2.3 conifer snags/acre $\geq$ 20 inches dbh and > 15ft tall in the harvest units (McGraw, field review 03/2005) that are suitable for bats. It is unknown if the Townsend's big-eared bat or the fringed myotis is present because surveys are not practical since potential bat roosts are in the canopy. No caves were found within the harvest units during field review.

(3) Northern Goshawk

There are currently no known Northern goshawk nest sites within the project area. Nesting habitat for Northern goshawks is typically open stands of mature and late successional conifers such as those found in the proposed units. Foraging habitat for this species tends to be in stands of open conifers. Broadcast surveys for Northern goshawks in Units 7A, 7B, 7C, 7E, 19AB, 19D, 13A, and 13B were conducted in June-July 2005.

Pre-dawn surveys for Northern goshawks were conducted in all Units in March-April 2006. No Northern goshawk activity, nests, or sign were detected.

(4) Oregon Vesper Sparrow

The Oregon vesper sparrow is a ground nesting bird that makes its nest in a depression of loose grasses and forbs in open areas such as grasslands, farmlands, and recently harvested clearcuts. Oregon vesper sparrows also forage in open habitats. There is no suitable habitat currently within the proposed harvest units but purple martins and Oregon vesper sparrows may be present in adjacent, recent clearcuts.

(5) Purple Martin

Although the project area does contain snags they are not located in open areas typical of purple martin colonies. There are currently no known purple martin sites within the project area. The nearest known purple martin colony is approximately five miles away. Purple martins nest in colonies within snag cavities located in forest openings, meadows, and other open areas.

d) Other Species of Interest

(1) Barred Owl

A pair of barred owls have been detected (2006) in Unit 19AB but they have not exhibited behaviors that would indicate nesting during the 2006 nesting season. As for spotted owls, the stands in the project area are suitable nesting, roosting, and foraging habitat for barred owls.

There is some evidence that barred owls may have had a negative effect on Northern spotted owl survival in the northern portion of the range (i.e. Washington). Little evidence has been found for such effects in Oregon and California, however. The threat from barred owl competition has not yet been studied to determine whether it is a cause or a symptom of spotted owl declines (USDI, 2005c).

(2) Great Horned Owl

On February 9th, 2006, a great horned owl nest tree was discovered in the northwest portion of Unit 13A. The RMP directs that known and future raptor nest sites not protected by other management recommendations will be protected by providing suitable habitat buffers and seasonal disturbance restrictions (pg. 39).

e) Coarse Woody Debris and Snags

Approximately 5,662 linear feet of existing Class 1 and 2 down logs (coarse woody debris) were found in the proposed harvest units and were reserved from harvest. This equates to approximately 49 linear feet per acre.

9. Healthy Lands Initiative

This project would be consistent with the Healthy Lands Initiative. This project would be in compliance with the ROD/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. Therefore, the Healthy Lands Initiative will not be discussed further in this EA.

10. 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. Therefore, the President's National Energy Policy will not be discussed further in this EA.

11. 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. Therefore, Indian trust resources will not be discussed further in this EA.

12. Critical Elements of the Human Environment

"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. Consideration of "Critical Elements of the Human Environment" is given in Appendix E of this EA.

13.Environmental Justice

The proposed action is consistent with Executive Order 12898 which addresses Environmental Justice in minority and low-income populations. The BLM has not identified any potential impacts to low-income or minority populations, either internally or through the public involvement process, arising from this type of activity.

C. Unaffected Resources

The following resources or concerns are either not present or would not be affected by any of the alternatives (see Appendix E for further detail and rationale). These resources or concerns include:

Special areas (Areas of Critical Environmental Concern, Research Natural Areas, etc...)

Minority populations or low income populations
Farm Lands (prime or unique)
Floodplains/ Wetlands
Native American Religious Concerns
Hazardous Waste
Wild and Scenic Rivers
Wilderness

IV. ENVIRONMENTAL CONSEQUENCES

This section provides the analytical basis for comparison of the alternatives. The reasonably foreseeable environmental consequences (impacts, effects) to the human environment that each alternative would have on selected resources are described. This section is organized by the effects on the key issue (i.e. Would this project result in sedimentation to the stream system that would be detrimental to fisheries?) as well as resources potentially impacted. Impacts can be beneficial or detrimental. 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 used in assessing impacts may vary depending on the subject matter. Short-term is assumed to be from the time of implementation up to ten years (RMP, pg. 112). Long-term is assumed to be ten years up to 100 years after implementation (RMP, pg. 106). The spatial scale is assumed to be at the project area (site) scale or action area scale and may differ by resource. Analysis of effects is considered to be in this context unless otherwise noted.

The Roseburg PRMP/EIS, to which this EA is tiered, analyzes the environmental consequences in a broader context. Because this EA is tiered to other NEPA documents it is not necessary to reanalyze impacts that have already been analyzed in those documents but rather to identify the particular site specific impacts that could reasonably occur. Cumulative impacts are broadly described for federal lands in the Pacific Northwest in the FSEIS beginning on page 3&4-4 and the Roseburg BLM District in the PRMP/EIS in Chapter 4 under the resource affected. The analysis of cumulative effects is assessed at scales beyond that of the immediate project area. The scale at which these interactions are appropriately assessed varies depending on the nature of the resource in question. The identification of issues for this project did not identify any need to exhaustively list individual past actions or analyze, compare, or describe the environmental effects of individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the proposed action.

The resources that could be potentially impacted are: changes to the **forest stands**; affects to **wildlife and its habitat**, as the result of the manipulation of these stands; and changes to **soil productivity**; **water quality and hydrologic processes**; and **fisheries habitat**, as the result of management activities. Air quality, cultural resources, and botany / noxious weeds will not be discussed further because the resource was surveyed for and not found or the resource specialists determined that the Project Design Features were sufficient to avoid any unanticipated environmental impacts to these resources. These considerations are briefly presented in Appendix D and E under effects to the "Critical Elements of the Human Environment".

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. BLM provided an opportunity for the public to submit any information they believe essential to our analysis (see pg. 41). BLM has not received any comments from public response that would suggest new information which would nullify current understanding and thereby prevent the ID Team from analyzing a full range of reasonable

alternatives.

Furthermore, this analysis assumes that timber on private lands would continue to be harvested at or near current levels and following established practices.

1. Key Issue

The ID Team reviewed issues pertinent to this project. These issues were derived from public comments as well as issues specified by regulations and planning documents. The ID Team prescribed project design features to lessen impacts to certain resources thereby removing these issues from the need for detailed analysis. These minor issues are addressed in Appendix D (Issue Identification Summary). The following issue was identified as having sufficient potential to warrant more detailed analysis and was framed in the following question:

Would this project result in sedimentation to the stream system that would be detrimental to fisheries?

a) No Action

(1) Road Effects

The two delivery sources of sediment from roads are: (1) road segments that are adjacent to and parallel streams, with narrow (less than 200 ft) buffer strips between the road and the stream, and (2) road/stream crossings, especially those located mid-slope on the landscape. In particular, the severely degraded segment of the 25-4-12.0 road that parallels Field Creek would continue to contribute to sediment to streams. Roads can have the potential to add 50 percent to 150 percent extra sediment above the natural background level depending on the road density and their proximity to streams (Geotechnical Report, pg. 2; Appendix F).

The poor surface condition of the 25-3-19.7 road would remain and off-road use would continue, resulting in rutting and erosion along the 25-3-7.1 road and the spur north of Unit 7C. Sediment from these roads might enter the stream drainage system but would not reach any fish-bearing water due to the distance from fish-bearing streams and the filtering capacity of lower order streams. Most road stream crossings and drainage features are in poor condition (i.e., undersized culverts, culverts not capturing flow, unvegetated ditchlines) and would become nonfunctional within five to ten years, followed by increasing likelihood of road failure resulting in an introduction of sediment into streams. The amount of sediment would vary depending on the condition of the road and the size of the storm event; the poorer the road condition and the larger the storm event (e.g., 100-year event) could result in the loss of the entire road at the crossing due to water saturation within the road fill acting as an uncontrolled dam. A road fill failure could result in a debris torrent. The frequency of this occurrence under large storm conditions (i.e., 20-year event or larger) would be one to two failures per storm per sixth-field watershed (Geotechnical Report, pg. 4; Appendix F). Consequently, the short-term effects of sediment to streams would be within natural background levels (Geotechnical Report, Appendix F; pg. 3); however, long-term catastrophic inputs could occur if road conditions are not repaired.

(2) Proposed In-Unit Effects

Since units would be uncut, surface erosion would continue at very low background levels (0.45 to 1.4 cf/ac/year) (Geotech Report, pg. 3; Appendix F). No sediment would reach streams except during long-return interval storm events when ephemeral channels become active and carry water from the proposed harvest units because uninterrupted overland flow on the forest floor is rare in the Pacific Northwest (Childs, et al, 1989).

Under natural conditions the impacts to fisheries habitat associated with landslides that could occur within proposed units are very unlikely for the short-term (<10 years). This would be due to: (1) the low probability of landslide occurrence (< one percent); (2) the distance between proposed units and fish-bearing water; (3) the presence of gentle and moderate slopes that separate the potentially unstable portions of harvest units from stream segments (4) inclusions of potentially unstable areas within the Riparian Reserve on the steeper slopes making stream-impacting debris flows unlikely; and (5) the likely less than 0.1 ac. size of any landslides that might occur based on landslide inventory, field reconnaissance, and geotechnical analysis (Geotechnical Report, pg. 3; Appendix F).

b) Proposed Action

(1) Road Effects

In-stream sedimentation from the proposed road construction and maintenance/upgrades of existing roads, and timber haul is not expected to be measurable in streams and therefore would not cause an impact to fisheries for the following reasons:

- Road maintenance and upgrades would reduce the amount of sediment delivered to the streams, particularly along the severely degraded segment of the 25-4-12.0 road that parallels Field Creek. Replacement of aggregate surfacing, armoring of 150 feet of ditch lines on the road paralleling Field Creek, and adding drainage structures along the valley bottom roads would reduce the amount of sediment delivered into the streams by 65 to 75 percent below existing levels; and applying ten inches of 1.5 inch minus gravel would reduce the impacts of forest-road sedimentation by 99 percent (Burroughs, 1993). The proposed culvert upgrades and removal of unstable fills would reduce debris torrent potential.
- Nearly all of the ditch lines along the permanent, surfaced portions of the haul route are well vegetated, giving them the ability to trap and filter fine sediment, therefore preventing stream sedimentation (Luce, 1999).
- The estimated average amount of sediment delivered from the five fish-bearing stream crossings would be between 0.1 and 0.2 cu ft / year (Geotechnical Report, pg. 3).
- Dry season construction would minimize construction-associated sediment delivery.
- Only new temporary spurs would be constructed and would have adequate drainage features and be placed on stable locations (ridge tops or near ridge tops on gentle to moderately sloping topography not exceeding 55 percent) and outside the Riparian Reserve. These spurs would not be hydrologically connected to first order streams; therefore, no sediment delivery would be expected.

(2) In-Unit Effects

The Forest Ecosystem Management Assessment Team (FEMAT) report (pg. V-28) cites a case study in which a one site potential tree buffer (in this case 180 feet) was deemed adequate to prevent harvest-related sediment increases in stream channels. The risk of measurable sediment delivery into a first order stream due to after-harvest erosion would be small and for the first year after harvest is calculated to be 0.05 to 0.1 cy/ac for a 20 year storm event (five percent probability). These figures do not fully account for the ability of duff and woody debris to act as filters. Uninterrupted overland flow on the forest floor is rare in the Pacific Northwest (Childs, et al, 1989). Review of the Hello Folley Timber Sale (logged 1998) revealed no evidence of overland flow or penetration of sediment into the Riparian Reserve (Dan Cressy and Denise Dammann, personal observations; 2003). Even if sediment enters the Riparian Reserve, the forest floor would filter out all or nearly all of the sediment before it reaches the stream due to the lower gradient, duff layer, and dense vegetation and ground cover. Therefore, in-unit sediment to streams, if it occurs, would be within natural background rates (0.5 cu ft/ac-year to 1.5 cu ft/ac-year [Geotechnical Report, pg. 7; Appendix F]).

The potential of erosion and in-unit landslides impacting streams and fish habitat would be low based on the following:

- After-harvest erosion would be within natural background rates.
- The landslide risk assessment (see Geotechnical Report, Appendix F) indicates low (less than one percent) likelihood of potential harvest-related failures from large storm events.
- The likely size of landslides that might occur would be small (less than 0.1 acre) and the likely reach would be short (less than 200 feet) based on landslide inventory, field reconnaissance, geotechnical analysis, and PDFs (pg. 9) that would be applied.
- Only three first order, nonfish-bearing streams could be directly impacted.

(3) Cumulative Effects

The outstanding point sources of sediment delivery to the water courses are along road segments that are located within riparian areas, and at stream crossings along mid-slope roads. In the action area there are 79 road/stream crossings, and 3.6 miles of valley-bottom road that have potential for sediment delivery. Erosion and sediment transport analysis indicates that the average total sediment delivered to the streams from the stream crossings is approximately 4.5 cubic yards per year, for a normal year. This amount constitutes less than two percent of the total sediment yield for the action area. The amount of sediment delivered from the 3.6 miles of valley-bottom roads located in riparian areas was assessed at one cubic yard per year for a normal year, which is less than 0.5 percent of the total sediment yield for the action area. These small additional sediment yields are within the natural variability limits, and would be difficult to detect and measure at the fifth-field watershed level (Geotechnical Report, Appendix F; pg. 7). The proposed road upgrade measures would have only local, site specific benefits.

The potential non-point sources of sediment from uplands include disturbed (e.g., harvest units) or denuded uplands (e.g., burned fire areas). The background sediment yields for landscapes in Southern Oregon are in the range of 0.5 cu ft/ac-year (Benda, 1997) to 1.5 cu ft/ac-year. The incremental sediment delivery rates under the 20-year recurrence (five

percent probability) range between 0.5 and 1 cu ft/ac-year for the first year after harvest for the first order streams located below proposed harvest units. These increases in sedimentation at the mouth of the first order streams range between one and four percent, above the natural sedimentation. When projected on a larger scale, the sediment delivery increases at the second or third order streams are theoretically small, and practically immeasurable. These sediment yields would dissipate with time as the ground vegetation is restored.

At the watershed scale, an in-depth landslide assessment in the Calapooya Creek Watershed Analysis (BLM, 1999) showed a downward trend in landslide frequencies over the last 20 years (pg 6-8). The aerial photo landslide inventory for the action area (see pg. 15) indicates that the average incidence and coverage of identifiable management-caused landslides was about four (0.8 acres) per year over a 46 year span ending in 2004. The overall trend in the landslide incidence has declined from an average of ten (3.2 acres) per year from 1956 to 1965, to two (0.4 acres) per year from 1989 to 2004. This declining trend likely in part reflects the decrease in road building, better road building practices, decreased harvesting and improved harvest methods. The biggest decline has been in road-related landslides. Clearcut harvest of mid-seral stands on private timberlands would likely increase in the near future causing harvest-related landslides to increase to an unknown degree. This increase would be expected to be considerably less than the peak period of 1958 to 1965. The proposed harvesting and road building activities have low risks and probability occurrence associated with them. The likely size of any landslide that might occur would be small (less than 0.1 acre; based on landslide inventory, field reconnaissance and geotechnical analysis). As a result, any potential effects of landslide and surface erosion would not extend beyond the first order stream channels in any measurable way (see Geotechnical Report, pg. 7; Appendix F). Consequently, the trends of declining incidence and effects of landslides would not be slowed or reversed due to proposed project design features.

Therefore, sediment delivery from roads would be within the range of natural variability and any sediment delivery from landslides would not reach fish-bearing streams; the proposed action would not add any measurable cumulative impact to fish habitat and aquatic species populations.

2. Timber

a) No Action

(1) Stand Description

If BLM does not treat the identified stands at this time, the stands will continue to decline in growth and vigor resulting in decadent stands with reduced timber quality and value. The desired future condition of placing these stands on a trajectory of long-term management for timber production would not be realized. As these stands decline in vigor they become more susceptible to windthrow, fire, insects, and disease. Ultimately, the spread of fire, insects, or disease may jeopardize the health of adjacent forests and delay the regeneration of a new stand, reducing the availability of these lands to produce a sustained volume of timber to meet the needs of future generations.

(2) Fuels Management

DDW would continue to gradually accumulate adding to the existing fuel conditions of 27 tons per acre. The risk of wildfire would also gradually increase beyond its current risk of low to moderate as fine fuels continue to accumulate.

(3) Retention of Late-Successional Forests in Matrix.

This watershed would continue to meet ROD/RMP direction to retain 15 percent of federally administered forest land in a late-successional condition (pg. 34). Approximately 27 percent (3,272 acres) of federal forest land would remain in a late-successional condition (1997 Interagency Vegetation Management Project [IVMP] dataset).

(4) Connectivity/Diversity Block Management

(a) 25-30 Percent Late-Successional Old Growth

Connectivity/Diversity Block #93 would maintain the 177 acres (36 percent of the block) of late-suucessional forest it currently has for the short-term. As additional stands in the block mature for the foreseeable future, the amount and proportion of late-successional habitat would increase. Connectivity/Diversity Block #93 would meet the ROD/RMP standard of 25-30 percent late-successional forest (pg. 34).

(b) Interior Habitat

No interior habitat would be removed, modified, or fragmented in either Connectivity/Diversity Block #93 or in GFMA within the project area. As stands continue to mature, the amount of interior habitat is expected to increase over time.

(c) Timber Production

This alternative would not meet the objective of providing a sustainable source of forest commodities from the identified stands and they would not serve their purpose of contributing to the Roseburg District's annual harvest commitment as declared in the ROD, now that those stands have reached an average age class that makes them available for that purpose.

b) Proposed Action

(1) Stand Description

The Proposed Action would result in the conversion of late-seral forest into an early-seral stand with some residual components of the late-seral stand (older retention trees, large snags, and large down wood); that is, a modified even-aged stand.

In the GFMA regeneration harvest units, 559 retention (green) trees would be reserved from harvest. This equates to 8.5 green trees per acre. Therefore, this would meet the ROD/RMP (pg. 34) requirement to retain between 6 to 8 green trees per acre in GMFA

units. The average GFMA retention tree diameter is approximately 31" diameter breast height (DBH). An additional 201 conifers greater than 8" but less than 20" DBH would also be reserved to protect down logs and snags, although not required by the RMP, equating to an additional 3.0 trees per acre in GFMA. Additionally, 84 hardwoods would be reserved in GFMA equating to 1.3 trees per acre.

In the Connectivity/Diversity Block units, 661 green retention trees would be reserved. This equates to 13.5 green trees per acre. This would meet the RMP (pg. 34) requirement to retain between 12 to18 green trees per acre in Connectivity/Diversity Block units. The average Connectivity/Diversity Block retention tree diameter is approximately 32" diameter DBH. A representative sample of large incense cedar trees in the project area would be retained. The cruise information shows that 54 incense cedar trees greater than 32 inches DBH would be retained in the units. An additional 142 conifers greater than 8" but less than 20" DBH would also be reserved to protect down logs and snags, although not required by the RMP, equating to an additional 2.9 trees per acre in Connectivity/Diversity Block units. Additionally, 156 hardwoods would be reserved equating to 3.2 trees per acre.

In both GFMA and Connectivity/Diversity Blocks, retention trees would be reserved in a scattered arrangement of individual trees as well as occasional clumps of two or more trees.

(2) Fuels Management

After regeneration harvest, the DDW of the unit would almost double to 53 tons per acre as depicted in the photo 6-DF-4-PC from *Photo Series for Quantifying Forest Residues in the Coastal Douglas-Fir – Hemlock Type* (Maxwell and Ward, 1976). These photo series documents are somewhat subjective which may contribute to differing estimates from different fuels specialists. The actual tonnage produced would vary depending on market conditions and harvest practices.

After harvest has been completed, portions of the unit would be broadcast burned. This prescribe fire treatment would consume most of the small, less than 1 inch diameter, DDW and portions of the larger diameter DDW. Down woody debris with diameters larger than 9 inches would most likely not be consumed in a prescribed fire. This would result in a total DDW tonnage to approximately 43 tons per acre after burning. This increase in tonnage from pre-treatment conditions would not increase the wildfire risk of the area because of the fuel composition. Wildland fires begin in the small diameter pieces of wood that must generate enough heat before larger diameter logs will catch fire. Therefore, the main contributor to fire risk are the small and fine fuels, less than 1 inch in diameter, which will be significantly consumed in the prescribe burn.

Portions of the project are scheduled for pile burn treatment rather than broadcast due to the sensitive nature of the soils in the unit or accessibility. These areas would have an increase in total tonnage that may increase fire risk. One of the primary sources of fire in this area are roadside ignitions from cigarettes, vehicles, and arsonists. The increase in fire risk is therefore mitigated by targeting pile burning along roadsides.

(3) Retention of Late-Successional Forests in Matrix.

The proposed regeneration harvest would reduce the amount of federally administered forest in a late-successional condition by 117 acres. This would reduce the amount of federally managed late-successional forest in the Calapooya Creek Watershed by one percent to approximately 26 percent of BLM land. This watershed would continue to meet ROD/RMP direction to retain 15 percent of federally administered forest land in a late-successional condition (pg. 34).

(4) Connectivity/Diversity Block Management

(a) 25-30 Percent Late-Successional Old Growth

This project would harvest 49 acres of late-successional forest from Connectivity/Diversity Block #93 leaving 128 acres of late-successional forest (26 percent of the block) after harvest. Connectivity/Diversity Block #93 would meet the ROD/RMP standard of 25-30 percent late-successional forest following harvest (pg. 34).

(b) Interior Habitat

The Whatagas project would not remove or modify interior LSOG habitat in the Connectivity/Diversity Block. Therefore, Whatagas complies with ROD/RMP guidance to minimize fragmentation of interior LSOG habitat within Connectivity/Diversity Blocks (pg. 151).

The proposed Whatagas project would remove or modify a total of approximately 18.4 acres of interior LSOG habitat from a single patch within GFMA. Approximately 4.9 acres of interior habitat would be removed through the harvest of Unit 19AB in T25S-R03W-Sec.19. An additional 13.5 acres of interior habitat would remain intact but would become edge habitat by the openings created from harvest of Units 19AB and 19D. Therefore, the patch of interior LSOG habitat removed/modified by Whatagas would be 18.9 acres in size prior to harvest and would be reduced to 0.5 acres following harvest (*Interior Late Seral Habitat in Whatagas*, March 07, 2006). However, there is no corresponding guidance to minimize fragmentation of interior habitat in GFMA as there is in Connectivity/Diversity Blocks.

(c) Timber Production

This alternative would meet the objective of providing a sustainable source of forest commodities from the identified stands and they would contribute 3.315MMBF to the Roseburg District's annual harvest commitment. By harvesting the identified forest stands, the treated acres would become available for the establishment of a new forest stand that would contribute to sustainable timber production.

(5) Cumulative Effects

Since implementation of the ROD/RMP in 1995, regeneration harvest in the Matrix allocations has been substantially less than anticipated in the ROD/RMP (pg. 8) which projected 1,190 acres annually in the first decade of the plan. The Roseburg District Annual Program Summary (APS) and Monitoring Report (USDI, 2005) shows that for the period from Fiscal Year 1995 through 2004 only 3,130 acres of regeneration harvest have been authorized (Table 17, pg. 33). This represents approximately 29 percent of the 11,991 acres that were assumed to be harvested during the first decade of the plan. Of the 3,130 acres authorized, fewer than 1,200 acres have been harvested. These stands would continue to decline in quality and value in the short and long-term due to disease and mortality. The harvest of 117 acres under this project represents about ten percent of the annual acreage assumed for harvest on the Roseburg District. For the Calapooya Watershed approximately 1,850 acres have had or are planned to have commercial thinning / density management harvest (Coon Creek, Timothy Ridge, Copeland Divide, Boyd Howdy, Bonanza, and Boyd Too Timber Sales). No regeneration harvest timber sales are planned through 2009.

The Calapooya Watershed Analysis shows that approximately 92 percent of the Calapooya Watershed is in private ownership and eight percent is in federal ownership (Chart 1-1, pg. 1-13). The scheduling of harvest on private timberlands is assumed to be on a 50-80 year cycle based on current practices and all merchantable timber is assumed to be available for harvest. Approximately 23,400 acres of mid to late-seral forest exists on private lands within the watershed (Table 3-4 [1992 data]). The Interagency Vegetation Management Project dataset (1997) shows that approximately 3,500 acres have been harvested on private by 1997. Based on this rate of cutting, approximately 7,000 acres of late-seral forest may have been subjected to final harvest within a ten year period (three percent of holdings per year). Approximately 34 percent of private land (13 percent of watershed) is in a late-seral condition. Watershed analysis (Table 1-5 and 1-6) shows that approximately 2,300 acres of late-seral forest is within the Matrix land use allocation on federal lands and available for harvest. No late-seral forest has been harvested on federal lands in the watershed within the past ten years.

The ROD (pg. 8) allocated 26,900 acres as Connectivity/Diversity Blocks on the entire Roseburg District. On a decadal basis, approximately 1,790 acres are available for regeneration harvest (1/15 of the entire land use allocation). During the first decade of the ROD/RMP, 490 acres out of 1,790 acres allowable (27 percent of potential decadal harvest) and 490 acres out of 26,900 acres (1.8 percent of the total land use allocation) have been charged against this commitment, falling far short of the ROD/RMP anticipated harvest (see Appendix D, pg. 7). This proposal would result in the harvest of 49 acres of Connectivity/Diversity lands and represent 27 percent of the annual commitment called for in the ROD. Approximately 128 acres of late-successional forest (26 percent of the block) would remain after harvest

3. Botany

a) No Action

(1) <u>Noxious Weeds</u>

Noxious weeds currently located in the project area are being controlled through the application of herbicides and manual removal (USDI Roseburg District Integrated Weed Control Plan, as amended. 1995; EA #OR-100-94-11). Therefore, over time the distribution and abundance of noxious weeds in the project area would decline due to continued and repeated treatments following the weed control plan.

b) Proposed Action

(1) Noxious Weeds

There would be a short term increase in the distribution and abundance of noxious weeds in the project area following the timber harvest. Soil disturbance related to the proposed action (e.g. ground based yarding, cable yarding corridors, spur construction, slash pile burning, etc.) would create areas of exposed mineral soil which could serve as habitat for noxious weeds to take seed and germinate. These new infestations on exposed mineral soils are expected to be short lived (less than 10 years) since the weeds would eventually be overtopped and out-competed for sunlight, soil moisture, and soil nutrients as the conifer stand regenerates. In addition, PDFs are included to help control and prevent the spread of noxious weeds in the project area through the cleaning of logging equipment prior to entry on to BLM lands.

4. Hydrology

a) No Action

There would be low risk of impacts to hydrologic processes or water quality as a result of the no action alternative.

(1) Water Yield and Peak Flows

Assessment of the present risk of increased peak flows due to current conditions of the project drainages were evaluated using a model developed for the Oregon Watershed Assessment Manual (Watershed Professional Network, 1999, pg. IV-11). Peak flow was evaluated because increases in peak or storm flows in winter and spring can alter channel morphology by flushing smaller substrate, cause the channel to downcut and increase stream bank failures.

With the Oregon Watershed Assessment Manual model, a small portion of land in the Transient Snow Zone (TSZ), combined with a small portion of land in the TSZ with less than 30 percent canopy closure, would result in a low risk of increased peak flow (Appendix F, Table 4). Peak flow was analyzed at a broad scale (action area drainages) and at fine scale analysis areas (Gassy Creek above Norris Creek and Upper Gilbreath Creek) which are catchments above the point furthest upstream in a fish-bearing stream that is influenced by all proposed harvest units. Results of the model indicate that any potential peak flow increase during rain-on-snow events due to previous harvest activities in the action area or in the fine scale analysis areas should be below detectable levels (Appendix F, Table 4). Within the next 30 years, all land upslope of the units (all federally owned) would be hydrologically recovered from the last harvest with existing water yield and base flow returning to natural levels for late-successional forested conditions.

Given that the model is used to predict peak flow increases from rain-on-snow events (Watershed Professional Network, 1999), and that only a small portion (i.e. less than 31 percent depending on the analysis area; see Appendix F Table 4) of the analysis areas is in the TSZ, additional analysis was completed to determine further risk of peak flow enhancement. The results from peak flow studies in three watersheds (ranging from 150-750 acres in size) in Western Oregon where 25 percent of the watershed was harvested showed no increase in large peak flows (Harr, 1976, pg. 15). Large peak flows, those with return intervals exceeding the mean annual peak, are those that may be capable of resulting in channel erosion (Harr, 1976, pg. 16). Two of the three watersheds studied showed no increase in average peak flows; however, average peak flows would be of little consequence to channel erosion (Harr, 1976, pg. 15-16). Gassy Creek above Norris Creek and Upper Gilbreath Creek are 11.1 percent harvested and 10.0 percent harvested respectively and the action area is 9.0 percent harvested (see Appendix F, Table 4). Since these values are all less than 25 percent, increases in large peak flows would be unlikely given the conclusions in Harr (described above). Therefore, there would be a low probability of effect to channel erosion.

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). However, roads occupy only two percent of the land within the Calapooya watershed. Therefore, no statistically significant increase in peak flows would occur from roads. In addition, since no road decommissioning or road-related drainage correction would occur, the existing stream network would remain the same.

(2) Stream Temperature, Water Chemistry, and Beneficial Uses of Water

There would be no change to stream temperature, water chemistry, or Beneficial Uses of Water under the No Action alternative.

b) Proposed Action

The Calapooya Fifth-Field Watershed Analysis (October 1999) was used in this analysis and reviewed for issues to be considered in the design of projects. The watershed analysis evaluated the BLM road system and identified roads having high risk to the aquatic environment (i.e. a source of stream sedimentation [Table 8-3]) as well as candidates for decommissioning (Table 8-4).

This project would result in the maintenance to existing Roads No. 25-3-7.1, 19.3, 25-4-2.0, 12.0, 12.1, 13.1 and 24.1 that were identified in the watershed analysis. This project also includes the recommended decommissioning of Road No. 25-3-19.7A. The watershed analysis recommended the decommissioning of the 25-4-12.0 road. This road has been blocked by the Lone Rock Timber Company and the BLM portion is naturally decommissioning.

(1) Water yield and peak flows

The impact of vegetation removal could result in a short and long-term increase 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, pg. 61). 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 usually small and geomorphically inconsequential (Ziemer, 1981, pg. 916). 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). At the project level, there may be short and long-term increases in peak flows of smaller (less than two year return interval) storm events; this effect would decrease over time.

The Equivalent Clearcut Area (ECA) model was used to determine the effects of harvest on the water yield at the action area, sub-watershed, and watershed scales (see Cumulative Effects below). Results of the ECA model indicate there would be no detectable increase in water yield at the action area scale from the proposed action

Proposed road decommissioning would result in a small decrease in the existing stream network density and would increase infiltration and decrease peak flows on these streams. This phenomenon is due to the increased speed of delivery of water from road surfaces, ditches, and culverts (Harr, et al., 1975, pg. 441), thus changing the timing of the storm hydrograph by increasing peak flow and decreasing the lag time from precipitation to peak runoff. Road maintenance and decommissioning would decrease the effects of roads on changing the timing of the storm hydrograph. Since the amount of roads in the watershed would remain at two percent of the land within the watershed, which is still less than 12 percent (see No Action above) under the proposed action, there would be no change in peak flows due to roads.

Since some of the project is in the TSZ, an analysis was conducted to determine if increased harvest would increase the risk of peak flow enhancement. The results from the TSZ model (described under No Action) indicate that there should be no detectable change in peak flows from pre-harvest conditions in the action area or in the fine scale analysis. Any potential peak flow increase during rain-on-snow events due to the proposed action should be below detectable levels as described in Appendix F Table 4. Given that the TSZ model is used to predict peak flow increases during rain-on-snow events (Watershed Professional Network, 1999), and that only a small portion (i.e. 31 percent or less depending on the analysis area; see Appendix F Table 4) of the analysis

areas are in the TSZ, further analysis was completed to determine further risk of peak flow enhancement.

The results from peak flow studies in Western Oregon showed no increase in large peak flows where 25 percent of the watershed was harvested (Harr, 1976, pg. 15). Large peak flows, those with return intervals exceeding the mean annual peak, are those that may be capable of resulting in channel erosion (Harr, 1976, pg. 16). Two of the three watersheds studied showed no increase in average peak flows; however, average peak flows would be of little consequence to channel erosion (Harr, 1976, pg. 15-16). After harvest, Gassy Creek above Norris Creek and Upper Gilbreath Creek would be 14.6 percent harvested and 17.2 percent harvested respectively and the action area would be 10.8 percent harvested (Appendix F, Table 4). Since these values are all less than 25 percent, increases in large peak flows would be unlikely given the conclusions in Harr (described above). Therefore, there would be a low probability of an effect to channel erosion.

(2) Stream Temperature, Water Chemistry, and Beneficial Uses of Water

Summer stream temperature would not be altered by the proposed action due to the 180 foot Riparian Reserve between any stream and the proposed harvest activities (USDA and DOI, 2004, pg. 20).

In addition, there would be no change in water chemistry from slash burning due to the filtering capacity of the forest floor, the distance to the streams, and the buffering effect of the Riparian Reserve. There would be no change to the Beneficial Uses of Water as a result of the proposed action (see sediment discussion under Key Issue: Proposed Action).

c) Cumulative Effects

(1) Peak Flows and Water Yield

There would be no detectable increase in peak flows to the drainages from the proposed action. If harvest on private land occurs in the same drainages in the near future, peak flows may be slightly increased as a result of combined reduced stand densities on private and BLM administered lands. This could result in short and long-term increases in peak flows for small storms with less than a two year return interval. However, the limited size and spatial scattering of treatment areas on BLM lands, road drainage repairs, and Oregon Forest Practices Act regulations on size of harvest units on private land would help mitigate these potential effects. Given that 17 percent of the Calapooya Watershed is in the TSZ and that a small amount of land has less than 30 percent crown closure in the TSZ, there would be no detectable peak flow increase during rain-on-snow events at the watershed level.

If a large portion of a watershed is in forested stands less than 30 years of age, there is a potential for increased water yield. The ECA method (Galbraith, 1975) is used as a means to assess for the risk of increased water yield in watersheds dominated by rain-on-snow events. The Calapooya fifth-field watershed is not dominated by rain-on-snow events, but does contain some land in the TSZ. The ECA analysis accounts for acres of created forest openings and uses partial recovery coefficients for regrowth of young

forest stands that have been either harvested or burned. In addition, water yield increases can be attributed to burns and agricultural lands that have canopy removal (Satturland and Adams, 1992, pg. 253). In this analysis, ECA was coupled with an Aggregate Recovery Percentage (ARP) which also accounts for other open areas in the watershed such as burned areas, agricultural land, urban areas and roads. An increasing percentage of the watershed harvested indicates a risk of increased annual water yield.

NOAA Fisheries, et al. (2003, pg. 20) considers an ECA index above 15 percent to be not properly functioning. This baseline is low compared to research. After reviewing 94 watershed experiments from around the world, of which 14 were from the Pacific Northwest, Bosch and Hewlett (1982, pg. 16) concluded that water yield increases are usually only detectable when at least 20 percent of the forest cover has been removed. Stednick (1996, pg. 88) evaluated twelve studies in the Pacific Coast hydrologic region and determined there is no measurable annual water yield increase until at least 25 percent of the watershed is harvested.

Table 2. Calculated ECA index (data for calculations from Healey, *et al*, 2003)

	ECA Index No Action Alternative	**ECA Index Action Alternative**
Action Area[1]	9.0%	10.8%
Middle Calapooya Sub-Watershed[1]	26.6%	27.1%
Calapooya Watershed[2]	28.5%	28.8%

[1] Includes Copeland Divide Timber Sale
[2] Includes Copeland Divide, Boyd Howdy, Timothy Ridge, Bonanza, Boyd Too, and Pine Creek timber sales.

As shown in Table 2 above, the proposed action would raise the ECA less than one percent at the sub-watershed and watershed scales and 1.8 percent for the action area (see Appendix F for detailed analysis). The existing ECA Indices for the subwatershed and watershed exceed the thresholds in the published literature (previous paragraph). However, the causal factor for the high ECA values is agricultural land in the lower reaches of the stream valleys. The upper reaches of the action area primarily contain forested stands older than 30 years of age. The action area has an ECA value for the action alternative below the published thresholds (Table 2). Furthermore, the ECA model was developed for areas where snowpack-snowmelt is the dominant water yield process. It has not been calibrated to rain dominated watersheds such as the Calapooya which has 83 percent of its area in rain-dominated terrain. Therefore, no incremental increase to peak flow or water yield at the sixth-field sub-watershed or fifth-field watershed level would be expected.

(2) Stream Temperature and Water Chemistry

No increase in stream temperature is expected since the Riparian Reserve would remain intact and shade would be maintained. There would be no changes to water chemistry due to prescribed burning because burning would not occur in the Riparian Reserves. Chemical compounds in the ashes from prescribed fire outside of the Riparian Reserve

would be filtered out by the forest floor and the Riparian Reserves. Consequently, the proposed action would cause no change to stream temperature or water chemistry.

Harvest on private timber lands is covered under the Oregon Forest Practices Act. ORS 527.765 directs the State Board of Forestry to establish best management practices to insure forest operations do not impair the achievement or maintenance of water quality standards for the State. Since the proposed action would have no effect on water temperature or chemistry, it would not result in an incremental change to water quality at the sixth-field sub-watershed or fifth-field watershed level.

5. Soils & Geology

The major concern is impacts to soil productivity. "Long-term soil productivity is the capability of soil to sustain inherent, natural growth potential of plants and plant communities over time" (PRMP/EIS, pg. 4-12).

a) No Action

(1) Soil Productivity

The effects to soil productivity would be inconsequential and consistent with natural processes in the absence of stand-replacing fires or large landslides. The healing of compaction and topsoil development would continue very slowly on old skid trails, and unsurfaced, unused roads and landings within the project and action areas.

(2) Landslide

In-unit landslides on FGR and FPR areas would have a very low probability of occurring (less than one percent chance) and if they did occur they would likely be small in size (less than 0.1 acre).

(3) Erosion and Sedimentation

In-unit surface erosion would remain at very low levels with little of the soil leaving the site. The 25-3-19.7 road (see pg. 14) would continue to have an eroding, non-productive surface due to vehicle use by the public.

b) Proposed Action

(1) Soil Productivity

(a) Road Effects

New spur construction would disturb about 1.2 acres. Of this, about 0.4 acres would sustain a permanent reduction of soil productivity because of substantial topsoil removal. Subsoiling the beds of these new temporary spurs (0.6 acres), would shatter up to 80 percent of the compaction (Andrus, 1983; pg. 8). The subsoiling along with bringing woody debris and some topsoil back onto the surface would restore most of the lost productivity to the roadbeds in the long-term. The organic debris would leave

a nutrient reservoir and a medium for growth of organisms beneficial to the soil. Fill slopes (0.2 acres) would recover naturally. Small, inconsequential levels of erosion would occur during the first season flush following construction and would then decrease thereafter. Soil productivity loss from landslides is very unlikely because construction would be confined to stable locations.

Less than an acre of old, existing roadbed would be reopened as spurs and then subsoiled resulting in a net improvement in the long-term soil productivity of these roadbeds over the no action alternative. Full decommissioning of other existing roads would bring 0.2 acres of roadbed into productivity through subsoiling (25-3-19.7 Rd) and would allow another 0.7 acre to continue to naturally heal very slowly without further disturbance (25-3-7.2 and 25-4-24.1 roads).

(b) In-Unit Effects

Soil productivity might be impacted by incidental ground-based yarding (up to ten acres). The likely methods would be swing shovel or tractor. Shovel swing yarding would result in trails covering about 15 to 25 percent of the ground-based area; however, the allowable area in main skid trails (as defined in plan maintenance [FY2001 Roseburg District Annual Program Summary and Monitoring Report, pg 70]), log decks, and landings would be well below the plan maintenance threshold of ten percent of the ground-based area. With low soil moisture conditions (less than 10 percent) swing yarding compaction would be light overall (Hutchison; Off Little River effectiveness monitoring) with little soil displacement. Incidental tractor yarding would occur on designated skid trails and cover about six percent of the tractor-yarded ground (less than an acre). Tractor yarding compaction (if it occurs) would be substantial enough (moderate to heavy over most of the trail lengths) to retard the growth of adjacent trees (about ten percent growth loss of adjacent trees [Adams, 2003 presentation]). Trail segments with substantial compaction (less than one acre) would be subsoiled and surface organic debris and topsoil would be pulled back onto the subsoiled surface to lessen any impact to loss of growth.

Skyline yarding would create trails covering about three percent of the surface (Adams, Oregon BLM Soil Scientist Annual Meeting, 2003). These trails would have segments with mostly moderate soil displacement and compaction (D. Cressy, personal observations). There might also be some shallow chutes and gouging created where soils are moist or one end-suspension would not be achieved. The yarding compaction would be confined largely to the topsoil and would eventually heal satisfactorily without mitigation (D. Cressy; personal observations, Galagher project).

Broadcast burning would be light in intensity and minimally reduce soil productivity because it would occur under moist, spring-like conditions and would avoid 75 percent of Category 1 soils (soils highly sensitive to broadcast burning). Five acres are categorized as marginally Category 1 soils (Unit 13A and B) and would be broadcast burned using a low intensity ignition pattern during the early spring resulting in low fire intensity and duration.

(2) Landslide

Based on the landslide inventory and the slope stability analysis, the occurrence of landslides in the proposed activity areas is low to very low, having a small potential (less than one percent chance of occurrence) of occurring on slopes steeper than 65-75 percent. Because of the low probabilities of occurrence and because of the likely size and number of landslides that might occur on the FGR and FPR slopes would likely be small (<0.1 ac.) and few (less than ten) in number, the consequences to soil productivity would be minor.

(3) Erosion and Sedimentation

The effects of in-unit surface erosion to soil productivity due to soil disturbance would be negligible because of the high soil infiltration, the cover provided by duff, woody debris and residual vegetation on most of the steeper slopes, and the water-barring of any yarding trail (skyline or tractor) that can channel water on the steeper slopes.

c) Cumulative Effects

Soil productivity would be maintained at the watershed level on federal lands as the proposed action and other federal actions are implemented. This is based on the following rationale:

(1) Soil Productivity

There would be a small net loss of soil productivity at the site level over one rotation (80 years or more). Losses would primarily be due to new spur construction with minor losses from yarding and prescribed burning. Subsoiling two existing roadbeds and all of the new spur beds after the harvest would result in gains in soil productivity. Another gain would occur from permanently blocking an existing road and allowing it to recover naturally. The recently completed Copeland Divide commercial thinning, also in the action area, is expected to maintain soil productivity at the project level. Subsoiling and monitoring is expected to be completed by the end of 2006. At the action area scale on BLM surface, soil productivity is expected to be maintained or slightly improved over one rotation because of the very slow natural healing of other old ground-based impacts and because subsoiling of much of these trails that are still in a compacted state would occur when other mid-seral stands are thinned or later when they are regeneration harvested.

(2) Landslide

Landslides that might be caused by the proposed action would likely be small (less than 0.1 acre) and have little impact on soil productivity at the project level due to application of best management practices such as placing some landslide prone areas in Riparian Reserves, locating new road in stable areas, avoiding broadcast burning on steep slopes, one-end suspension of logs during yarding, water-barring yarding trails, and dry season yarding. These practices would also keep surface erosion at low levels. Management-related landslides identified in the landslide inventory covered about 35 acres or one percent of the forest lands in the project area harvested from 1958 to 2004. The proposed

action's additions to landslide cumulative effect at the action area level would be inconsequential.

The cumulative effect on private lands in the action area is unknown. Little of the mid-seral stands have been harvested to date (based on 2004 photo review). A reasonable assumption would be that most of them would be clearcut harvested over the next 50 years along with associated spur construction. This renewed level of activity over the current low levels would likely result in an increase in soil displacement, compaction and landslides to an unknown degree; however, this level of impact is likely to be well below the peak levels of 1950s and 60s. Because the private timber lands comprise a larger area than the BLM lands, their contributions to cumulative impacts would be greater. On the approximately 1,100 acres of pasture lands, the assumption is that livestock grazing would continue. These cumulative effects due to soil displacement and compaction are largely unknown. The landslide inventory has indicated that landslides on these lands have been at low levels from 1958 to 2004.

6. Fisheries

a) No Action

Fisheries resources would continue to be impacted by the existing degraded road conditions described in the Affected Environment. Improperly functioning road systems and drainage features would not be improved immediately. Road maintenance activities would occur sporadically over time based on district-wide prioritization or by request of permitees.

Streams with degraded habitat would be expected to recover gradually as roads are improved or naturally recover and fisheries habitat enhancement projects are carried out across the fifth-field watershed. Natural pulses of sediment and woody material are expected to enter aquatic systems in the long-term coinciding with large wind and/or rain storm events. Although such events may initially cause stream sediment, they would ultimately enhance fisheries habitat by adding spawning gravel and key pieces of large wood to the aquatic system.

b) Proposed Action

(1) Large Woody Debris and Stream Temperature

The proposed action would maintain existing levels of large woody debris and protect the mechanisms for future recruitment due to establishment of the Riparian Reserve along streams. The Riparian Reserve would also maintain stream shade. Since stream temperatures and shade are positively correlated, stream temperatures would be maintained (refer to Water Temperature, pg. 45).

(2) Channel Geometry

As indicated above (refer to Peak Flows and Water Yield, pgs. 44-45), the first storms of the fall have the most increase in peak flow. However, these storms are usually small, geomorphically inconsequential and that average peak flows would be of little consequence to channel erosion. There would be no impact to fisheries from large peak

flows due to less than 18 percent of the analytical hydrological units (AHUs) impacted by the project would be harvested. In addition, results of the ECA model indicate there would be no detectable increase in water yield at the action area scale from the proposed action.

(3) Fine Sediment and Substrate

Haul of timber has a small probability of contributing fine sediment to stream channels, especially at stream crossings. Road renovation and seasonal restrictions to portions of the routes would reduce the probability and magnitude of sediment entering the stream channel. Any affect to substrate as a result of sediment would be negligible and discountable.

In-stream sedimentation from the proposed road construction and maintenance/upgrades of existing roads, and timber haul is not expected to be measurable in streams (refer to Key Issues pg. 33-36). The potential of erosion and in-unit landslides impacting streams and fish habitat would be low. The impact of sedimentation to fisheries habitat is analyzed under the Key Issue discussion previously.

c) Cumulative Effects

Sediment regime, stream temperature, water chemistry, peak flows, and water yield together influence fish habitat and aquatic species. Since stream temperature and water chemistry would not be influenced by the proposed action; and changes in sediment would be of small magnitude and would not extend to the fish-bearing streams downstream, fish habitat and aquatic species would not be affected. Changes in peak flows and water yield from the project are so inconsequential that they do not have the capacity to alter channel morphology and effects would be indistinguishable from background levels at the fish-bearing streams downstream. Therefore, fish habitat and aquatic species populations would not be incrementally affected by the proposed action at the project level nor would they add to the cumulative effects at the fifth-field watershed.

7. Wildlife

a) No Action

(1) Federally Threatened & Endangered Species

(a) Northern Spotted Owl

Under the no action alternative, 117 acres of suitable nesting, roosting, and foraging habitat for the Northern spotted owl within the proposed harvest units would remain suitable for the foreseeable future. Spotted owls would continue to disperse through the harvest units themselves and through dispersal habitat and suitable habitat in the vicinity of the project area (i.e. Middle Calapooya Creek sixth-field watershed). Approximately 16 percent (3,980 acres) of the Middle Calapooya Creek sub-watershed is federally administered. Of the federal administered lands, 49 percent (19,540 acres) of the Middle Calapooya Creek sub-watershed is currently available as dispersal habitat (i.e. forest stands $\geq$ 40 years old) for spotted owls.

However these stands would continue to be susceptible to loss by fire, disease, insects and wind storm which could potentially remove part or all of it as suitable habitat. The PRMP/EIS (pg. 4-56) assumed that "future nonfederal lands would have no suitable habitat" because lands would likely be managed on rotations ranging from 50 to 80 years that "would yield little, if any, habitat capable of sustaining significant numbers of reproducing owls". There would be no short-term disturbance effects to spotted owls; however, habitat could decline long-term due to natural events.

(2) <u>*Bureau Sensitive & Assessment Species*</u>

(a) Columbian White-Tailed Deer

The project area would continue to function as habitat suitable for shelter and thermal cover for the Columbian white-tailed deer and would continue to have occasional use for the foreseeable future.

(b) Fringed Myotis and Townsend's Big-Eared Bat

Late-seral habitat containing potential live, green trees that have the characteristics which make them suitable roosts for Townsend's big-eared bat and the fringed myotis would remain intact for the foreseeable future. The existing snag habitat would continue to progress through the various stages of decadence and new snags would be recruited by insects, disease, storm events, or other sources of mortality.

(c) Northern Goshawk

Existing nesting habitat within the project area for the Northern goshawk would remain suitable for the foreseeable future.

(d) Oregon Vesper Sparrow and Purple Martin

Purple martins and Oregon vesper sparrows would not colonize stands within the proposed harvest units, barring a stand-replacing event. The harvest units do not have the open areas typical of purple martin colonies even though there are snags; and the Oregon vesper sparrow would not colonize the harvest units since it does not nest in closed canopy forests. Without a stand-replacing event, large openings that would foster the colonization and dispersal of purple martins or vesper sparrows would not be created within the harvest units.

(3) <u>*Other Species of Interest*</u>

(a) Barred Owl and Great Horned Owl

Habitat that is currently suitable for nesting, roosting, and foraging for barred owls and the great horned owl within the proposed harvest units would remain suitable for the foreseeable future.

(4) Coarse Woody Debris and Snags

Existing Class 1 and 2 downed logs (coarse woody debris) would continue to gradually decay. Natural sources of tree mortality would recruit coarse woody debris from the live canopy and standing snags sporadically over time. Barring a large windstorm or blowdown event, the stands in the project area would slowly accumulate coarse woody debris to add to the current estimate of 49 linear feet per acre.

b) Proposed Action

(1) Federally Threatened & Endangered Species

(a) Northern Spotted Owl

Local, project specific impacts to Northern spotted owls due to regeneration harvest activities would include the removal of 117 acres of habitat that is suitable for spotted owl nesting, roosting, foraging, and dispersal. Specific habitat elements that would be removed include: large-diameter trees with nesting cavities or platforms, multiple canopy layers, and hunting perches. Removal of these elements would subject spotted owls to reduced nesting, roosting, foraging, and dispersal opportunities, and increased predation risk. It is not possible to quantify what effect this project would have on the ability of owls in the area to successfully reproduce.

The Norris Creek and Field Creek home ranges currently are impaired in their ability to support successfully reproducing owl pairs since the two sites have approximately six and 11 percent (166 and 325 acres) suitable habitat within the their home ranges respectively. The proposed action would reduce the amount of suitable habitat within the Norris Creek and Field Creek home ranges to approximately six percent and ten percent (163 and 276 acres [see Appendix F; Table 2 -"Northern Spotted Owl Habitat"]) of the total home ranges respectively. It is unknown whether the removal of three to 49 acres (2-15 percent) of available suitable habitat would reduce the ability of the Field Creek and Norris Creek home ranges to sustain successfully reproducing owls.

Since spotted owls currently use the proposed harvest units for dispersal and foraging, harvest of those units may cause the owls to change their dispersal and/or foraging patterns to avoid the harvest units themselves until the regenerating stands develop sufficient canopy closure in approximately 40 years. Instead, owls may disperse around the periphery of the harvest units and through remaining dispersal habitat in the vicinity of the project area. While spotted owls would still have opportunities to disperse and feed in the project area, those opportunities would be reduced. It cannot be quantified to what degree the proposed harvest may alter the owls' ability to disperse or feed.

The removal of suitable habitat is considered a noise/visual disturbance effect to spotted owls which may be nesting in unsurveyed suitable habitat, known nest sites, or known activity centers within 0.25 miles of the harvest units (USDI, 2005b; pgs. 15). Seasonal restrictions from March 1st – September 30th would be applied to

mitigate the disturbance effects; unless protocol surveys indicate: 1) spotted owls not detected, 2) spotted owls present, but not attempting to nest, or 3) spotted owls present, but nesting attempt has failed. Waiver of the seasonal restriction is valid until March 1st of the following year (USDI, 2005b; pg. 15). Adverse effects from disturbance due to removal of suitable habitat are unlikely to occur beyond 0.25 miles for removal of suitable habitat (USFWS, 2005). Therefore, disturbance effects to spotted owls associated with regeneration harvest of the proposed units is discountable (USDI, 2005b; pgs. 79-80).

The expected roles that matrix lands have in the recovery of the Northern spotted owl are summarized in the *Northwest Forest Plan – the first 10 years (1994-2003): Status and trends of Northern Spotted Owl Populations and Habitat* (Lint, 2005). "The primary contribution of the Northwest Forest Plan . . . to conserving the Northern spotted owl . . . was the federal network of reserved land use allocations designed to support clusters of reproducing owl pairs across the species' range. . . . Federal lands between these reserves were designed to provide habitat to allow movement, or dispersal, of owls from one reserve to another. The "between" lands are a combination of matrix, Riparian Reserves, smaller tracts of administratively withdrawn lands and other smaller reserved areas such as 100-acre owl core areas. Individually, these areas may not support clusters of reproducing owls, but in combination provide population connectivity between clusters (Lint, 2005; pg. 21)".

The project area is within matrix and considered as the "between" lands that provide connectivity for but are not expected to support clusters of reproducing owls. The Riparian Reserves within the action area of this project are expected to provide dispersal habitat and the 100-acre owl core areas are expected to maintain future options for owl management while maintaining patches of high quality habitat (USDA, USDI, 1994; pg. 3&4-241). The Riparian Reserves, and PDFs designed to protect habitat features within the project area are expected to fulfill this expectation. The conservation strategy for the Northern spotted owl within the NWFP relies primarily on a system of large reserve areas to support reproductive owls, and a network of intervening lands (such as those within the project area) to provide dispersal and connectivity between those large reserves. Viable owl populations in matrix lands, outside of those large reserves, are not necessarily essential for the conservation of the species. Furthermore, the 100-acre owl core areas, also referred to as the Known Owl Activity Centers (KOAC), were never expected to provide for or maintain the long-term needs of reproductive owl pairs. (USDA, USDI, 1994; pg. 3&4-241). Even if the proposed action would reduce the likelihood of successful reproduction in this KOAC, this would not be a significant effect beyond those consequences expected from timber harvest as considered in the NWFP, and the Roseburg District RMP.

As discussed in Appendix D, the BLM, U.S. Forest Service, and the U.S. Fish and Wildlife Service have conducted a coordinated review of four recently completed reports containing information on the northern spotted owl. The reports included *Scientific Evaluation of the Status of the Northern Spotted Owl* (Courtney et al. 2004), *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony et

al. 2004), *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004), and *Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005).

Based on this evaluation, the Roseburg District Manager found that effects on NSO populations identified in the four reports are within those anticipated in the PRMP/EIS, and that the RMP goals and objectives are still achievable in light of the information from the reports. As such, it was also found that the latest information on the NSO does not warrant a change in RMP decisions pertinent to the NSO, and therefore does not warrant amendment or revision of the Roseburg District RMP. It was also found that the underlying analysis in the EIS remains adequate for purposes of tiering NEPA analyses of NSO effects from proposed actions implementing the RMP.

(2) Bureau Sensitive & Assessment Species

(a) Columbian White-Tailed Deer

Regeneration harvest would remove 117 acres of habitat usable as shelter and/or thermal cover for the Columbian white-tailed deer. The regenerating stand would benefit white-tailed deer by providing favorable conditions (e.g. reduced canopy closure, increased sunlight exposure) for increased forb and shrub growth which would be available as forage. Therefore, an increase in the use of the harvest units by white-tailed deer would be expected following harvest and would continue until the regenerating stands achieve canopy closure and begin to exclude forbs and shrubs (approximately 10-20 years).

(b) Fringed Myotis and Townsend's Big-Eared Bat

Regeneration harvest would remove or modify live, green trees that have the characteristics which make them suitable roosts for Townsend's big-eared bat and the fringed myotis. It is unknown how many (if any) of these suitable bat roost trees are actually occupied. Existing snag habitat is expected to be retained in the harvest units due to the protection afforded them by the project design features. Additionally, 12-18 green retention trees per acre would be reserved in Units 7A, B, C, and E (Connectivity/Diversity Block) and 6-8 trees per acre would be reserved in units 19AB, 19C, 19D, and 13A and B (GFMA). Green retention trees would serve as legacy structures for future recruitment as bat habitat in the regenerating stand.

(c) Northern Goshawk

The harvest units proposed in this project would remove 117 acres of habitat suitable for the Northern goshawk. Noise and visual disturbance associated with the harvest operations (e.g. chainsaws and heavy equipment) would disrupt normal nesting behaviors of Northern goshawks if they occur in the project area. Therefore, seasonal restrictions would be applied within 0.25 mile of the nest site from March 1st through

July 30th (or until the young have dispersed) and a 30 acre core area would be established around the active nest site and alternate nest sites (if any).

(d) Oregon Vesper Sparrow and Purple Martin

Regeneration harvest would provide open habitat suitable for establishment (potentially) of new purple martin colonies and new Oregon vesper sparrow sites. Snags would continue to be retained. Purple martin nesting habitat would therefore be created since they use snags in open areas. This newly created habitat would remain available until the conifer regeneration begins to overtop the residual snags in approximately 40-50 years. Regeneration harvest would provide suitable habitat for the colonization by Oregon vesper sparrows as the grass and forb layers develop. This newly created habitat for Oregon vesper sparrows would persist until conifer regeneration and shrub growth creates a low-lying closed canopy unsuitable for vesper sparrows in roughly 5-10 years.

(3) Other Species of Interest

(a) Barred Owl

Approximately 117 acres of habitat suitable for the nesting, roosting, and foraging of the barred owl would be removed under the proposed action. Since barred owls currently use the proposed harvest units for roosting and foraging, harvest of those units may cause the barred owls to change their foraging patterns to avoid the harvest units themselves until the regenerating stands develop sufficient canopy closure in approximately 40 years. Instead, barred owls may forage around the periphery of the harvest units and through remaining mid-seral habitat in the vicinity of the project area. While barred owls would still have opportunities to feed in the project area, those opportunities would be reduced. It cannot be quantified to what degree the proposed harvest may alter the barred owls' ability to forage in the area.

If further surveys determine that barred owls are nesting within the Whatagas project area, then a 5 acre nest core would be established and seasonal restrictions from March 1st – July 15th would be applied within 0.25 miles of the nest site; unless surveys indicate: 1) barred owls not detected, 2) barred owls present, but not attempting to nest, or 3) barred owls present, but nesting attempt has failed.

(b) Great Horned Owl

Approximately 7 acres were dropped from the western half of Unit 13A to establish a nest core for the great horned owl. Seasonal restrictions to prohibit logging during the nesting season of the great horned owl from March 1st – July 15th would be applied to Unit 13A; unless surveys indicate: 1) great horned owls not detected, 2) great horned owls present, but not attempting to nest, or 3) great horned owls present, but nesting attempt has failed.

Approximately 117 acres of habitat suitable for the nesting, roosting, and foraging of the great horned owl would be removed under the proposed action. Since that portion of Unit 13A which the great horned owls are currently using for nesting has been excluded from harvest, the opportunity for great horned owl nesting would be retained. Although, the great horned owls' opportunity to establish a new or alternate nest site would be reduced.

Since great horned owls currently use the harvest units for roosting and foraging, harvest of those units may cause the owls to change their foraging patterns to avoid the harvest units themselves until the regenerating stands develop sufficient canopy closure in approximately 40 years. Instead, great horned owls may forage around the periphery of the harvest units and through remaining mid-seral habitat in the vicinity of the project area. While great horned owls would still have opportunities to feed in the project area, those opportunities would be reduced. It cannot be quantified to what degree the proposed harvest may alter the great horned owls' ability to forage in the area.

(4) Coarse Woody Debris and Snags

There are sufficient green trees retained ≥ 20" DBH (8.5 trees per acre in GFMA units and 13.5 trees per acre in Connectivity/Diversity Block units) in the harvest units to meet the coarse woody debris deficit and green tree retention guidance in the ROD/RMP (pgs. 34, 64-65). Furthermore, there are an additional 122 green trees retained in the 16" DBH size class (an additional 1.1 trees per acre) that would also help to meet the coarse woody debris deficit.

In the proposed harvest units, approximately 162 snags greater than 20" DBH and 20 feet in height were reserved. This equates to 1.4 snags per acre. This meets the RMP standard (pg. 64) that requires sufficient snags be retained to meet 40 percent of the potential population level for cavity nesting birds in timber harvest units (1.2 snags per acre averaged over 40 acres [PRMP/EIS pg. 4-43]). An additional 19 snags greater than 8" but less than 20" DBH were also reserved; although not required by the RMP. Although these snags may have some wildlife benefit they are not in the size class specified in the RMP. Overall, a total of 181 snags greater than 8" were reserved equating to 1.6 snags per acre.

c) Cumulative Effects

(1) Late-Seral/Old-Growth Associated Species

The cumulative effects analysis for suitable Northern spotted owl habitat is representative of the cumulative effects for other wildlife species that are associated with late-seral/old-growth habitat. In this analysis, species associated with late-seral/old-growth habitat in addition to the Northern spotted owl include the barred owl, fringed myotis, great horned owl, Townsend's big-eared bat, and the Northern goshawk.

Range-wide the Northern spotted owl population experienced an average decline of 3.7 percent per year from 1985-2003 (USFWS, 2004b; pg. 14). Within the southwestern

Oregon study areas, (Tyee, Klamath, and South Cascades) the spotted owl populations appear to be stable from 1985-2003 (USFWS, 2004b; pg. 13-14). Habitat loss due to timber harvest was identified as the paramount threat in 1990 (USFWS, 2004b; pg. 54).

The rate of suitable habitat loss due to timber harvest on private, state, and federal forest lands declined between the late 1980s and the early 1990s (USFWS, 2004b; pg. 24). The harvest rates of suitable habitat on BLM lands in Oregon was three percent per year (22,000 acres) in 1990 and dropped to 0.5 percent per year (4,900 acres) by 2003 (USFWS, 2004b; pg. 28). During this period of declining rates of habitat loss, the spotted owl populations in southwestern Oregon appeared to be stable (USFWS, 2004b; pg. 13-14). The rate of habitat loss due to timber harvest on federal lands is expected to be less than four percent per decade (USDA, USDI, 2004b; pg. 111). In addition, it is estimated that within the Northwest Forest Plan area habitat ingrowth is occurring at approximately eight percent per decade (600,000 acres per decade) over the baseline condition established in the Northwest Forest Plan (USFWS, 2004b; pg. 26). The forest stands within the federal reserve network mature and develop into suitable spotted owl habitat at approximately 80 years of age. Approximately 80 percent of federal land within the Northwest Forest Plan area is reserved from regeneration timber harvest (USDA, USDI, 2004b; pg. 111) and is expected to develop into suitable owl habitat.

"State and private lands within the action area [Roseburg BLM District]support marginal habitats for the… Northern spotted owl… and do not notably contribute to the viability of [this] species given the management objectives for those lands. Portions of these lands also do not provide any habitat. These lands however, support some dispersal habitat for spotted owls and may be used as connectivity between blocks of late-seral habitat contained within the federal reserves. Habitat conditions on these lands are not expected to improve significantly within the foreseeable future" (USDI, 2005; pg. 29).

In the Calapooya Fifth-Field Watershed, 13 percent (1,335 acres) of federal forest land is late-seral, suitable owl habitat that is reserved from future harvest. Reserves include lands within the Late-Successional Reserves, Riparian Reserves within Matrix, and 100 ac. KOAC. An additional 2,170 acres of federally reserved, mid- and early-seral forest lands will develop into suitable, late-seral habitat within approximately 70 years. Upon maturation of the reserves, 35 percent (3,504 acres) of federal forest land will be late-seral, suitable owl habitat that is reserved (analysis based on the 1997 Interagency Vegetation Management Project [IVMP] dataset). The proposed project would reduce the amount of federal habitat for owl dispersal by about two percent in the Calapooya Fifth-field Watershed and 5,549 acres of habitat useable for dispersal would still be available. As discussed on page 28, the project area is in matrix which is only intended to provide connectivity for spotted owls and as such is not expected to support clusters of reproducing spotted owls.

Table 3. Forest Habitat within the Calapooya Fifth-Field Watershed.[1]

Forest Habitat	Private Lands (acres)	Federal Lands: Available for Harvest (acres)	Federal Lands: Reserved from Harvest (acres)	*Total* (acres)
Late-Seral Forest (QMD ≥ 20")	19,922	1,937	1,335	*23,194*
Mid-Seral Forest (10" ≤ QMD < 20")	20,316	1,782	871	*22,969*
Early-Seral Forest (QMD < 10")	38,260	2,741	1,298	*42,299*
Non-Forest Lands	66,725	1,361	648	*68,734*
Total	*145,223*	*7,821*	*4,152*	*157,196*

[1] Based on the 1997 Interagency Vegetation Management Project (IVMP) dataset.

Therefore, the proposed project would not incrementally affect the stability of the spotted owl population in southwestern Oregon, or that of other late-seral/old growth associated species, since the decadal rate of habitat loss is expected to be less than four percent (USDA, USDI, 2004b; pg. 111) which is outpaced by the decadal rate of habitat ingrowth of eight percent (USFWS, 2004b; pg. 26). Although the proposed action may reduce the likelihood of successful spotted owl reproduction this would not be a significant effect beyond those consequences expected from timber harvest as considered in the Roseburg District RMP.

(2) Early-Seral Associated Species

In this analysis, wildlife species associated with early-seral habitat include the Columbian white-tailed deer, purple martin, and Oregon vesper sparrow. All three of these species would be expected to benefit from the proposed action by providing 117 acres of additional early-seral habitat. However, the benefits to these species derived from the creation of additional early-seral habitat are transitory since it will gradually develop into mid- and late-seral habitat (see pg. 25).

Currently, 89 percent of early-seral habitat in the Calapooya Creek watershed is privately owned and nine percent is federally managed (analysis based on the 1997 Interagency Vegetation Management Project [IVMP] dataset). The current practice of a 60 year harvest-rotation age on private forest lands is likely to maintain early-seral habitat on private lands for the foreseeable future. The federal contribution to early-seral habitat is expected to be low since, as discussed previously, the decadal rate of late-seral habitat removal is expected to be less than four percent (USDA, USDI, 2004b; pg. 111). Therefore, the proposed project would not incrementally affect the population stability of the Columbian white-tailed deer, purple martin, or Oregon vesper sparrow in southwestern Oregon since the federal contribution to early-seral habitat is low and private forest lands are reasonably expected to maintain early-seral habitat due to the 50 to 80 year rotation age.

8. Summary of Cumulative Effects

The following summary (Table 4) shows that the proposed action has environmental impacts on certain resources that do not extend beyond the project area or action area, or are so insignificant that they cannot be reasonably measured beyond the project area. In these instances, there is no incremental increase to past, present, or future actions regardless of other actions. Therefore, it is unnecessary to provide a catalog of those other actions.

The No Action alternative is a description of the likely condition of the environment, based on current trends and the implementation of reasonably foreseeable federal and private actions. The Affected Environment inherently includes the combined, incremental effects of previous actions.

Some of the effects of actions on private land within the watershed are not delineated since the effects of federal actions would not result in an incremental increase to past, present, or future actions. Therefore combined effects of private actions and federal actions would not change the existing base-line conditions.

TABLE 4. Summary of Effects.

Resource or Issue	Effects		
	No Action	**Proposed Action**	**Cumulative Effects**
Sedimentation to the stream system	Short-term effects of sediment would be within natural background levels; however, long-term catastrophic inputs could occur if road conditions are not repaired. No sediment would reach streams from in-unit sources except during long-return interval storm events.	In-stream sedimentation from road construction and maintenance of existing roads, and timber haul is not expected to be measurable. In-unit sediment to streams, if it occurs, would be within natural background rates.	Sediment delivery from roads would be within the range of natural variability and any sediment delivery from landslides would not reach fish-bearing streams. Sediment delivery from harvest on private lands is unknown but expected to be greater than that on federal lands due to larger percentage of watershed in private holdings.
Timber	Would not meet the objective of producing a sustainable supply of timber and long-term management for timber production.	Would meet the objective of a managed stand producing a moderately high level of sustained timber production. This project would provide 10% of the District's annual allowable sale quantity.	Harvest would reduce federal late-serial forest by approximately 1% within the watershed. Harvest on private land is expected to continue at current levels (3% of landbase per year).
Wildlife Habitat	Late-seral habitat suitable for the spotted owl, some bat species, and the Northern goshawk would remain suitable for the foreseeable future.	Late-seral habitat suitable for the spotted owl, some bat species, and the Northern goshawk would be removed; but early seral-habitat for the purple martin and Oregon vesper sparrow would be created.	Would not incrementally affect the stability of the spotted owl population in SW Oregon, or that of either late-seral or early-seral associated species. Private land would only marginally contribute habitat for late-seral species.
Soil Productivity	In-unit surface erosion would remain at very low levels. In-unit landslides would be very infrequent and small in size (<0.1 acre) if they did occur. The healing of compaction and topsoil development would continue very slowly.	Small, inconsequential levels of erosion would occur during the first season following construction. The chance of a landslide event occurring would be of small (<1% chance) and likely be small (<0.1 ac.) and few (less than ten) in number.	The area impacted by landslides caused by the proposed action would likely be small and have little impact on soil productivity at the project level. Current level of activity on private land would likely result in an increase in soil displacement, compaction and landslides to an unknown degree. This level of impact is likely to be well below the peak levels of 1950s and 60s.
Water Quality and Hydrology	There would be low risk of impacts to hydrologic processes or water quality. Existing water yield and base flow would return to natural levels for late-successional forested conditions within the next 30 years as previously harvested areas become hydrologically recovered.	There would be no detectable increase in water yield at the action area scale from the proposed action.	There would be no incremental increase on stream temperature, water chemistry, fish habitat and aquatic species beyond the limits of the project area
Fisheries Habitat	Natural pulses of sediment and woody material are expected to enter aquatic systems in the long-term coinciding with large wind and/or rain storm events. Although such events may initially cause stream sediment, they would ultimately enhance fisheries habitat	Effects would be the same as the no-action alternative. No harvest-related sediment increases are anticipated.	Changes in peak flows and water yield from the project are so inconsequential that they do not have the capacity to alter channel morphology and effects would be indistinguishable from background levels at the fish-bearing streams downstream.

V. CONTACTS, CONSULTATIONS, AND PREPARERS

A. 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) *Biological Opinion for Effects to the Bald Eagle, Northern Spotted Owl, Northern Spotted Owl Critical Habitat, Marbled Murrelet, and Marbled Murrelet Critical Habitat by Programmatic Activities of the U. S. Department of the Interior, Bureau of Land Management, Roseburg District Office* (FWS Reference Number 1-15-05-F-0512) (Aug. 29, 2005). The Biological Opinion (pg. 101) concluded that "Adverse effects caused by the proposed action . . . are not considered significant [to spotted owls] because: (1) the Northwest Forest Plan conservation strategy considered such reductions, which the Service has concluded will not jeopardize the continued existence of spotted owl (USDA/USDI 1994; Appendix G); (2) new information on the spotted owl (Courtney *et al.* 2004) affirmed the validity of the habitat-based spotted owl conservation strategy of the Northwest Forest Plan; and (3) the spotted owl population on the District is stable."

b. A Letter of Concurrence was received from the **National Marine Fisheries Service** (NMFS) on August 15, 2005 which concurred with BLM's conclusion that this project would result in a "may effect, not likely to adversely affect" for the Oregon Coast coho salmon. In addition, the proposed activities were analyzed for, and determined to not adversely affect Essential Fisheries Habitat (EFH).

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 December 22, 1998 with a "No Effect" determination.

3. **Essential Fish Habitat**

Description of the action:

The action is described above in Chapters I & II. Approximately 115 acres of timber will be harvest from 9 units in the Calapooya Creek watershed and three acres of timber would be removed (0.7 acres on Connectivity/Diversity Block, 1.6 acres on GFMA, and 1.0 acre on private industrial timber lands) for the development of temporary spur roads for a total of 118 acres of harvest. Harvest will take place during a combination of dry-season and any-season of operation. Haul of timber off of units will utilize the existing road network in addition to short permanent and semi-permanent spur roads on ridge tops.

Analysis of the potential adverse effects of the action on Essential Fish Habitat and the managed species:

The following components were analyzed to assess the effects of the project on EFH and the appropriate sections of this document are cited.

1. *Water quality/Water quantity* – There will be no affect to Water quality and or quantity as a result of regeneration harvest of 115 acres throughout the watershed (refer to Stream Temperature, Water Chemistry, and Beneficial Uses of Water, pgs. 43-44).

2. *Substrate characteristics* – Haul of timber has a small probability of contributing fine sediment to stream channels, especially at stream crossings. Road renovation and seasonal restrictions to portions of the routes will reduce the probability and magnitude of sediment entering the stream channel. Any affect to substrate as a result of sediment would be negligible and discountable (refer to Fine Sediment and Substrate, pgs. 49-50).

3. *Large woody debris (LWD) within the channel and LWD source areas* – As previously noted there will be no affect to LWD or LWD source areas. There are no fish-bearing streams adjacent to the harvest units. Riparian Reserves of 180 ft on non-fish bearing streams will provide adequate recruitment of large trees along the stream channels as well as sources to intermittent headwater channels (refer to Large Woody Debris and Stream Temperature, pg. 49).

4. *Channel geometry* – Stream channels are stable and have riparian vegetation sufficient to prevent stream bed and bank erosion caused by high stream flow (refer to Fisheries, pg. 25). There will be no measurable increase in stream flow that would affect channel geometry (refer to Channel Geometry, pg. 49).

5. *Fish passage* – There is no affect to fish passage. There are no new crossings along fish bearing streams and culverts currently impassable to fish will remain unaffected (refer to Fisheries, pg. 23-24).

6. *Forage species (aquatic and terrestrial invertebrates)* – Forage for coho and Chinook salmon will remain unaffected. Riparian vegetation will continue to provide sources of terrestrial invertebrates. Aquatic invertebrate populations will be unaffected by discountable and negligible increases in sediment.

As noted above, it would be unlikely for harvest to affect aquatic habitat and consequently EFH adjacent to or downstream from the projects. Full ROD/RMP Riparian Reserve widths established on fish and non fish-bearing streams would prevent the loss of large woody debris recruitment and sediment delivery. Absent any affect to large woody debris and sediment, there would be no affect to pool habitat and substrate.

Effects of road related activities could include sediment delivery, but would be limited to the immediate area and would not adversely affect EFH. Substrate and pool habitat components would be unaffected. Where haul does occur near EFH, the application of project design criteria described above would prevent adverse effects (e.g. sediment delivery) from road related activities. Any increase in sediment and therefore affect to spawning substrate would be insignificant and discountable.

Federal agency conclusions regarding the effects of the action on EFH:

The proposed action alternative *Will Not Adversely Effect* (WNAE) EFH for coho or Chinook salmon in Field Creek, Gassy Creek, or their tributaries

Proposed mitigation (if applicable):
Without any mechanisms for an adverse affect on EFH, there are no mitigation measures proposed

B. Public Notification

1. Notification (1/28/98) 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 (1/28/98) was sent to five **adjacent landowner**s. One comment was received (see Appendix G - Public Contact).

3. The **general public** was notified via the *Roseburg District Planning Update* (Winter 1997) which was sent to approximately 150 addressees. These addressees consist of members of the public that have expressed interest in Roseburg District BLM projects. Comments were received from a representative of Umpqua Watersheds, Inc. and the Oregon Natural Resources Council.

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** was provided beginning June 15, 1999 and ending on July 15, 1999 for the June 1999 edition of the Whatagas EA (dated June 15, 1999). A Notice of Availability was published in *The News-Review* on June 15, 1999 and again on June 22, 1999. The EA and its associated documents were sent to all parties who requested them. During this public review period, timely comments were received from two organizations.

6. A 30-day **public comment period** was provided beginning December 21, 2005 and ending on January 19, 2006 for the December 2005 edition of the Whatagas EA (dated December 19, 2005). A Notice of Availability was published in *The News-Review* on December 20, 2005. The EA and its associated documents were sent to all parties who requested them. During this public review period, timely comments were received from four organizations (filed jointly) and eight individuals. An additional nine comments were received from individuals, but were post-marked 1 to 4 months after the close of the public comment period.

7. A 15-day **public comment period** will be established for review of this revised version (July 12, 2006) of the Whatagas 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* and notification sent to all parties who request them.

Due to the previous extensive public review (as described in the preceding paragraphs) and the limited amount of new information considered since the December 2005 EA (as described in

Chapter One, pg. 1), the public review and comment period will be fifteen days. It will begin with publication of the notice published in *The News-Review* on July 18, 2006 and end close of business August 2, 2006. Comments must be received during this period to be considered for the subsequent decision.

C. List of Preparers

Core Team

Bruce Baumann	Pre-Sale Forester
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Rex McGraw	Environmental Coordinator / EA Preparer / Wildlife
Trixy Moser	Silviculture
Chuck White	Engineering
Ron Wickline	Botany

Expanded Team (Consulted)

Isaac Barner	Cultural Resources
Dan Couch	Watershed Analysis
Elizabeth Gayner	Wildlife
Krisann Kosel	Fuels Management
Fred Larew	Lands
Ron Murphy	Recreation / VRM
Evan Olson	Botany

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

Acronyms

ACS	-	Aquatic Conservation Strategy
BLM	-	Bureau of Land Management
BMP	-	Best Management Practice
CWD	-	Coarse Woody Debris
cy	-	Cubic Yard
cu ft	-	Cubic Foot
DDW	-	Down Dead Woody
EA	-	Environmental Assessment
EIS or FSEIS	-	Environmental Impact Statement / Final Supplemental EIS
FEMAT	-	Forest Ecosystem Management Assessment Team
DBH	-	Diameter at Breast Height
GFMA	-	General Forest Management Area
LWD	-	Large Woody Debris
NEPA	-	National Environmental Policy Act
NFP or NWFP	-	Northwest Forest Plan
PDF	-	Project Design Features
RMP	-	Resources Management Plan
ROD	-	Record of Decision
S&G	-	Standards & Guidelines (NFP)
T&E	-	Threatened or Endangered

Definitions

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

Early-Seral (Successional) Forest: Stage in forest development from disturbance to crown closure, usually 0-15 years. Grass, herbs, and brush are plentiful.

Intermittent Stream: Any nonpermanent flowing feature having a definable channel and evidence of scour and deposition. Normally streams with seasonal flow.

Large Woody Debris (LWD): Large woody debris is fallen trees within the riparian areas that are at least 2 feet (0.6m) in diameter and 33 feet (10m) in length (ODFW, Methods for Stream Habitat Surveys).

Late-Seral (Successional) Forest: Stage in forest development that includes mature and old-growth forest, generally 80 years and greater (FEMAT, pg IX-18).

Regeneration harvest: Harvest of timber to allow the re-establishment of a new forest stand (RMP, pg. 110).

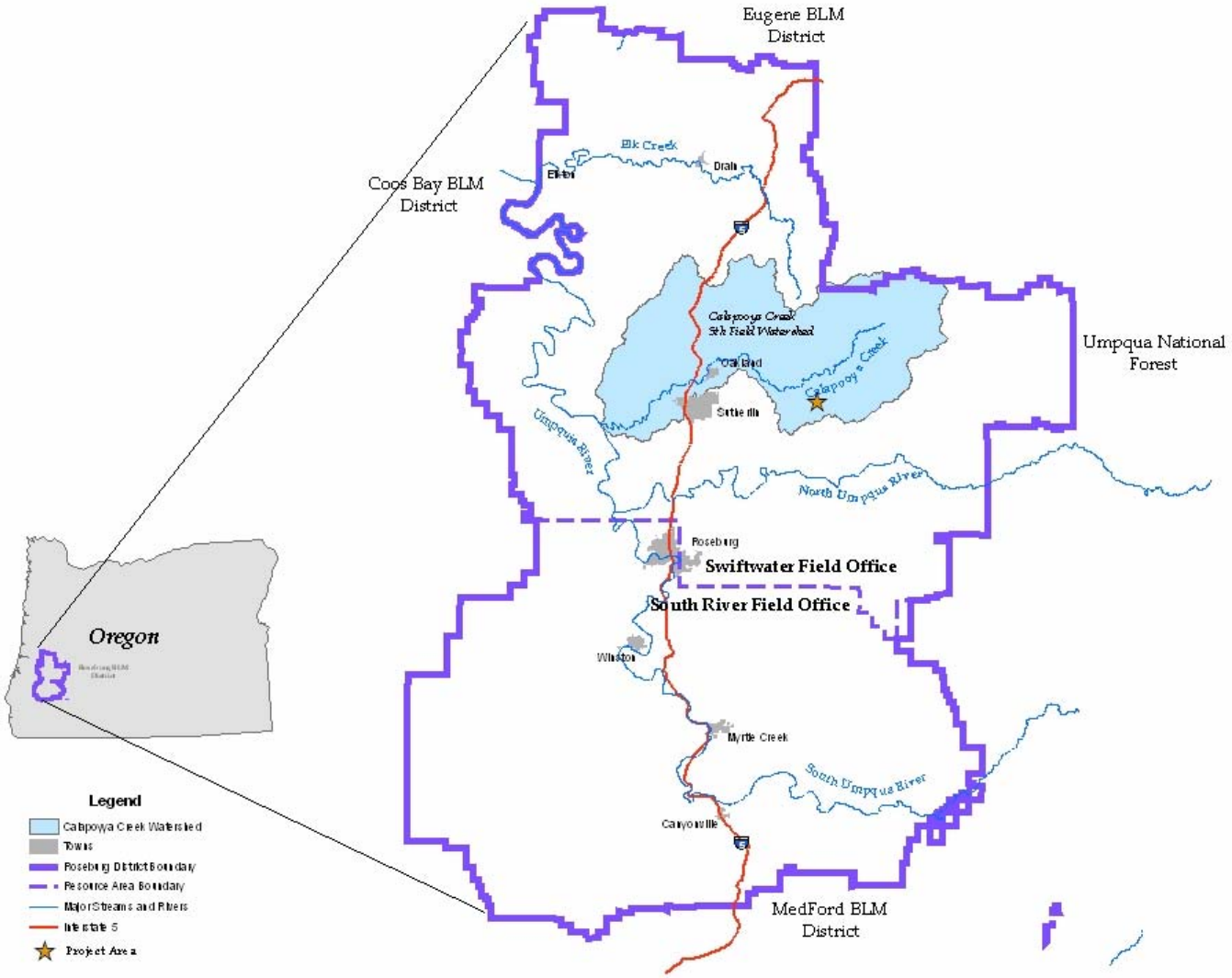
Peak Flow: The highest of stream or river flow occurring in a year or from a single storm event (FEMAT, pg IX-25).

Perennial Stream: A stream that typically has running water on a year-round basis (FEMAT, pg IX-26).).

Snag: Standing dead or partially dead trees at least 10 inches in diameter at breast height, and at least six feet tall (FEMAT, pg IX-33).

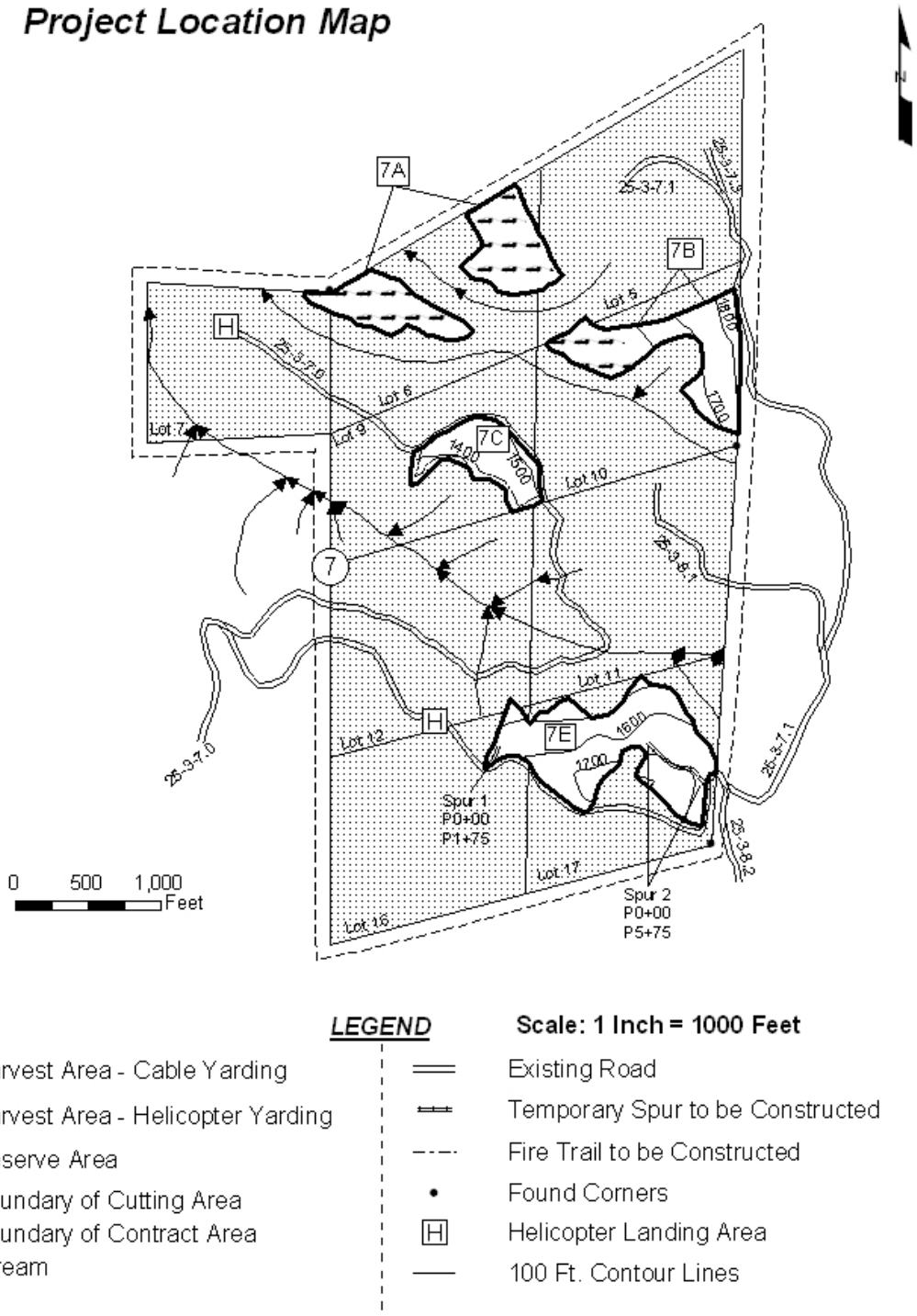
Subsoiling: The practice that shatters soil compaction, thereby reducing the effects to soil productivity and improving water infiltration. This is accomplished by a device known as a winged subsoiler which is a pulled by or attached to a crawler tractor, or mounted to the arm of an excavator.

Appendix A. Project Vicinity Map



Appendix B. Project Location Maps

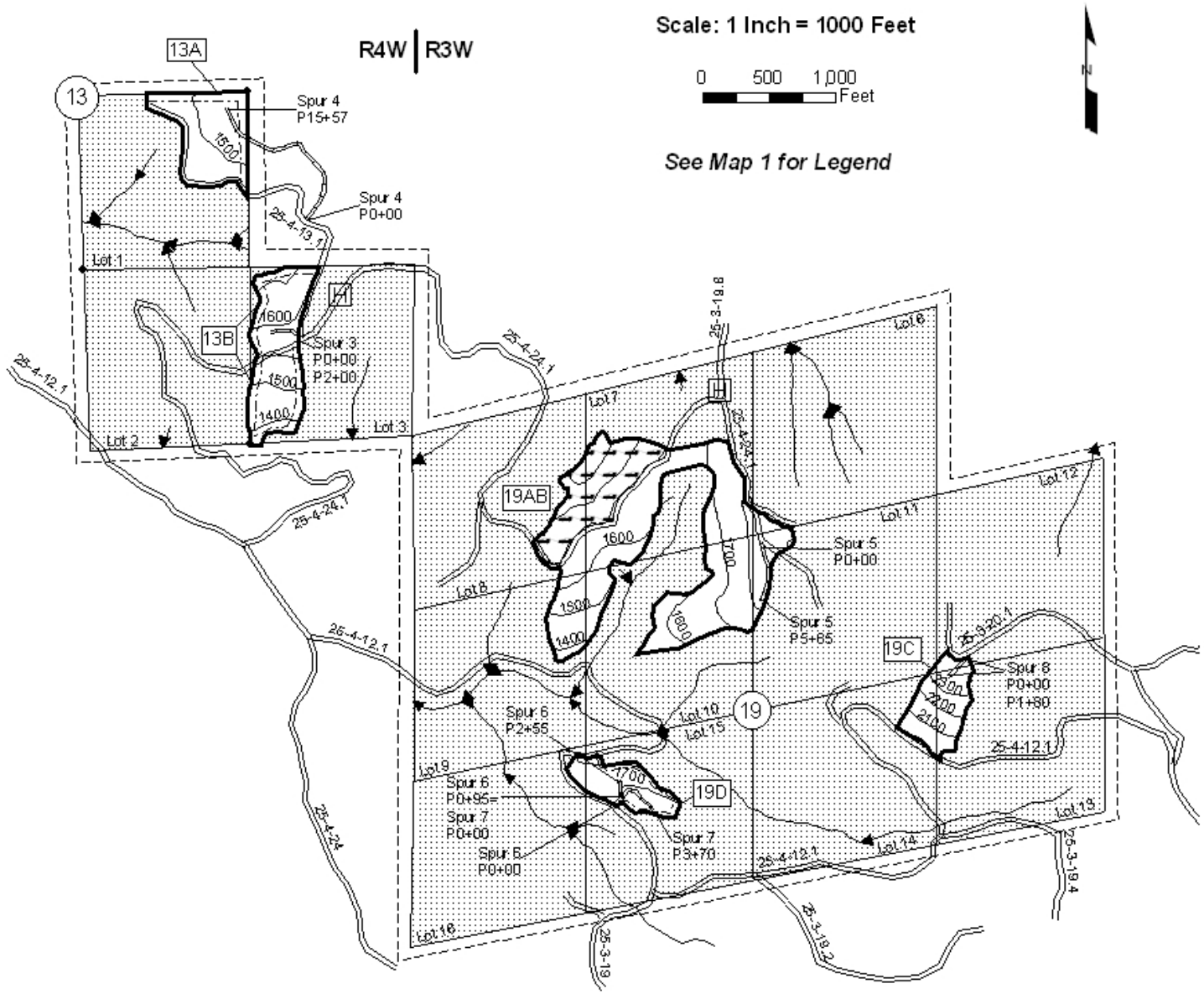
Map 1 Project Location Map



LEGEND **Scale: 1 Inch = 1000 Feet**

- Harvest Area - Cable Yarding
- Harvest Area - Helicopter Yarding
- Reserve Area
- Boundary of Cutting Area
- Boundary of Contract Area
- Stream
- Existing Road
- Temporary Spur to be Constructed
- Fire Trail to be Constructed
- Found Corners
- Helicopter Landing Area
- 100 Ft. Contour Lines

Map 2 Project Location Map



Appendix C. Individual Unit Description

Project Summary Table

EA Unit	Project Area	Acres	Yarding Method (ac.)			Fuel Treat.	Remarks
			Aerial	Cable	Ground		
7A	1	13	13	0	0	HP&B	Connectivity/Diversity Block
7B	2	12	3	OES (9)	0	HP&B	Connectivity/Diversity Block
7C	3	6	0	OES (6)	0	BB	Connectivity/Diversity Block
7D	Unit Dropped - Riparian Reserve						Connectivity/Diversity Block
7E	4	18	0	OES (18)	ROW (<1)	HP&B	Connectivity/Diversity Block and Temp. Spur
7F	Unit Dropped - Due to soils Concerns						
17A	Unit Dropped - Within Northern Spotted Owl Core Area						
17B	Unit Dropped - Riparian Reserve						
19AB	5	38[1]	9	OES (29)	ROW (<1)	HP&B	Temp. Spur
19C	6	6	0	OES (6)	ROW (<1)	HP&B	Temp. Spur
19D	7	5	0	OES (5)	ROW (<1)	BB	Temp. Spur
13A	8	7	0	OES (7)	ROW (<1)	BB	Temp. Spur
13B	9	10	0	OES (10)	ROW (<1)	BB	Temp. Spur
Total		115	25	90	3		

[1] There are an additional two acres of existing road.

Yarding Method
OES = Cable Yard, One End Suspension Required
ROW = Ground Based, Yarding of Road Right of Way Timber

Fuel Treatment
BB = Broadcast Burn
HP&B = Hand Pile and Burn

Directions to the Project Area

Follow Interstate 5 north from Roseburg to Exit 136 (Sutherlin). Proceed east on County Road 19 (Central St.) approximately 11.2 miles to BLM Road # 25-4-2.0 (Gassy Creek). From this point follow the Appendix B map to the project area.

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

Appendix D. Evaluation of Northern Spotted Owl Reports

File Code 1730/6840A

Evaluation of the Roseburg District Resource Management Plan Relative to Four Northern Spotted Owl Reports

September 12, 2005

I. Introduction

The Roseburg District Record of Decision (ROD) and Resource Management Plan (RMP), June 1995, incorporates and adopts the Northwest Forest Plan ROD (April 1994) based on the Interagency (BLM and Forest Service) Final Supplemental Environmental Impact Statement (February 1994) and the Roseburg District Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/EIS)(October 1994).

The overall objectives of the Northwest Forest Plan (NFP) and the Roseburg District RMP/ROD are to manage for healthy forest ecosystems with habitat that will support populations of native species, particularly those associated with late-successional habitat, and respond to the need for a sustainable supply of timber and other forest products. In addition, these plans are based on the principles of adaptive management. Adaptive management is a continuing process of monitoring, research, evaluation and adjusting, as determined necessary, with the objectives of improving the implementation and achieving the goals of the RMP/ROD. Under the concepts of adaptive management new information is evaluated and a decision is made to determine if adjustments or changes are deemed necessary (Roseburg RMP/ROD, June 1995).

The Bureau of Land Management (BLM), Forest Service (FS), and US Fish and Wildlife Service (USFWS) have conducted a coordinated review of four recently completed reports containing information on the NSO. The reviewed reports (hereinafter collectively referred to as "the reports") include the following:

- *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney et al. 2004);
- *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony et al. 2004);
- *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and
- *Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005).

The interagency review and summary of the findings from those reports is described below.

The BLM planning regulations require that , "The District Manager shall be responsible for monitoring and evaluating the plan at "established intervals . . . and at other times as appropriate to determine whether there is sufficient cause to warrant amendment or revision of the plan" (see 43 CFR 1610.4-9).

As a key element of the Northwest Forest Plan monitoring strategy, completion of the NSO status and trend portion of *The First Ten Years* monitoring report, as well as the other timely studies pertinent to the NSO, is considered appropriate to warrant this focused evaluation. The monitoring report and this evaluation carry out the process of monitoring (ROD/RMP pp. 84-86 and adaptive management (ROD/RMP pp. 79-80) envisioned by the Northwest Forest Plan (NWFP), as adopted and implemented through the Roseburg District RMP.

Following is the interagency review and summary of key findings from the four reports regarding the NSO. This summary has been reviewed by report authors Dr. Steven P. Courtney and Dr. Robert G. Anthony to ensure that it accurately reflects their findings. In addition, agency representatives Terry Rabot and Joseph Lint reviewed the document to verify that the USFWS five-year review and the ten-year NSO status and trend report, respectively, were appropriately incorporated.

II. Review and Summary of Key Findings Regarding the Northern Spotted Owl

The most important conservation concerns addressed in the reports are: 1) the precipitous NSO population declines in Washington, and declining trends in the three northern Oregon demographic areas, as described by Anthony et al. (2004); and 2) the three major current threats identified by Courtney et al. (2004), i.e., lag effects from prior harvest of suitable habitat, habitat loss due to wildfire in portions of the range, and competition from barred owls.

Anthony et al. (2004) indicated that NSO populations were doing poorest in Washington, with precipitous declines on all four study areas. The number of populations that declined, and the rate at which they declined, were noteworthy (Anthony et al. 2004). In northern Oregon, NSO population declines were noted in all three study areas. The declines in northern Oregon were less than those in Washington, except in the Warm Springs study area, where the decline was comparable to those in Washington (Anthony et al. 2004). The NSO has continued to decline in the northern portion of its range, despite the presence of a high proportion of protected habitat on federal lands in that area. Although Courtney et al. (2004) indicated that population declines of the NSO over the past 14 years were expected, they concluded that the accelerating downward trends on some study areas in Washington where little timber harvest was taking place suggest that something other than timber harvest is responsible for the decline. Anthony et al. (2004) stated that determining the cause of this decline was beyond the scope of their study, and that they could only speculate among the numerous possibilities, including competition from barred owls, loss of habitat from wildfire, timber harvest including lag effects from prior harvest, poor weather conditions, and defoliation from insect infestations. Considering the fact that the NSO is a predator species, Anthony et al. (2004) also noted the complexities of relationships of prey abundance on predator populations, and identified declines in prey abundance as another possible reason for declines in apparent survival of NSO.

In southern Oregon and northern California, NSO populations were more stationary than in Washington (Anthony et al. 2004). The fact that NSO populations in some portions of the range were stationary was not expected within the first ten years, given the general prediction of continued declines in the population over the first several decades of NWFP implementation (Lint 2005). The cause of the better demographic performance on the southern Oregon and northern California study areas, and the cause of greater than expected declines on the Washington study areas are both unknown (Anthony et al. 2004).

Courtney et al. (2004) noted that a rangewide population decline was not unexpected during the first decade, nor was it a reason to doubt the effectiveness of the core NWFP conservation strategy.

Lint (2005) indicated that loss of NSO habitat did not exceed the rate expected under the NWFP, and that habitat conditions are no worse, and perhaps better than expected. In particular, the percent of existing NSO habitat removed by harvest during the first decade was less than expected. Courtney et al. (2004) indicated that models of habitat growth suggest that there is significant ingrowth and development of habitat throughout the federal landscape. Courtney et al. (2004) also noted that management of matrix habitat has had a lower impact on NSO populations than predicted. Owls are breeding in substantial numbers in some matrix areas. The riparian reserve strategy and other habitat management guidelines for the matrix area appear to preserve more, better, and better-distributed dispersal habitat than earlier strategies, and there is no evidence to suggest that dispersal habitat is currently limiting to the species in general (Courtney et al. 2004). Anthony et al. (2004) noted declining NSO populations on some study areas with little harvest, and stationary populations on other areas with consistent harvest of mature forest. No simple correlation was found between population declines and timber harvest patterns (Courtney et al. 2004). Because it was not clear if additional protection of NSO habitat would reverse the population trends, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Reductions of NSO habitat on federal lands are lower than those originally anticipated by the Service and the NWFP (Courtney et al. 2004). The threat posed by current and ongoing timber harvest on federal lands has been greatly reduced since 1990, primarily because of the NWFP (Courtney et al. 2004). The effects of past habitat loss due to timber harvest may persist due to time-lag effects. Although noting that it is probably having a reduced effect now as compared to 1990, Courtney et al. (2004) identified past habitat loss due to timber harvest as a current threat. The primary current source of habitat loss is catastrophic wildfire (Courtney et al. 2004). Although the total amount of habitat affected by wildfires has been small, there is concern for potential losses associated with uncharacteristic wildfire in a portion of the species range. Lint (2005) indicated that the NWFP recognized wildfire as an inherent part of managing NSO habitat in certain portions of the range. Courtney et al. (2004) stated that the risk to NSO habitat due to uncharacteristic stand replacement fires is sub-regional, confined to the dry eastern and to a lesser extent the southern fringes of the NSO range. Wildfires accounted for 75 percent of the natural disturbance loss of habitat estimated for the first decade of NWFP implementation (Courtney et al. 2004). Lint (2005) cautioned against relying solely on the repetitive design of the conservation strategy to mitigate effects of catastrophic wildfire events, and highlighted the potential to influence fire and fire effects through active management.

Anthony et al. (2004) indicated that there is some evidence that barred owls may have had a negative effect on NSO survival in the northern portion of the NSO range. They found little evidence for such effects in Oregon or California. The threat from barred owl competition has not yet been studied to determine whether it is a cause or a symptom of NSO population declines, and the reports indicate a need to examine threats from barred owl competition.

The synergistic effects of past threats and new threats are unknown. Though the science behind the NWFP appears valid, new threats from barred owls, and potential threats[a] from West Nile virus and Sudden Oak Death may result in NSO populations in reserves falling to lower levels (and at a faster rate) than originally anticipated. If they occur, such declines could affect NSO recovery (Courtney et al. 2004). According to Courtney et al. (2004), there exists a potential for habitat loss due to Sudden Oak Death in the southern portion of the range, however the threat is of uncertain proportions. In addition, Courtney et al. (2004) indicated there is no way to predict the impact of West Nile virus, which is also identified as a potential threat. The reports do not provide supporting analysis or recommendations regarding how to deal with these potential threats. Courtney et al. (2004) concluded that the risks currently faced by the NSO are significant, and their qualitative evaluation is that the risks are comparable in magnitude to those faced by the species in 1990.

According to the USFWS (November 2004), the current scientific information, including information showing declines in Washington, northern Oregon, and Canada, indicates that the NSO continues to meet the definition of a threatened species. Populations are still relatively numerous over most of the species' historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented (USFWS, November 2004). The USFWS (November 2004) did not consider the increased risk to NSO populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the species to endangered at this time.

In summary, although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, the reports identified greater than expected NSO population declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports did not find a direct correlation between habitat conditions and changes in NSO populations, and they were inconclusive as to the cause of the declines. Lag effects from prior harvest of suitable habitat, competition with barred owls, and habitat loss due to wildfire were identified as current threats; West Nile virus and Sudden Oak Death were identified as potential new threats. Complex interactions are likely among the various factors. The status of the NSO population, and increased risk to NSO populations due to uncertainties surrounding barred owls and other factors, were reported as not sufficient to reclassify the species to endangered at this time. The reports did not include recommendations regarding potential changes to the basic conservation strategy underlying the NWFP, however they did identify opportunities for further study.

The full reports are accessible on the internet at the following addresses:

- Courtney et al. 2004: http://www.sei.org/owl/finalreport/finalreport.htm
- Anthony et al. 2004: http://www.reo.gov/monitoring/trends/Compiled%20Report%20091404.pdf
- USFWS, November 2004: http://www.fws.gov/pacific/ecoservices/endangered/recovery/5yearcomplete.html
- Lint, Technical Coordinator, 2005:

[a] Courtney et al. (2004) distinguish between operational threats (perceived as currently negatively influencing the status of the NSO) and potential threats (factors that could become operational threats in 15-20 years, or factors that may be threatening the NSO currently and for which the extent of the threat is uncertain).

http://www.reo.gov/monitoring/10yr-report/northern-spotted-owl/documents/owl_text%20and%20tables.pdf

III. Comparative Evaluation of the Roseburg District Resource Management Plan with the Four, Previously Referenced, Reports on the Northern Spotted Owl.

Following are excerpts from the Roseburg District RMP, the supporting Roseburg District Proposed Resource Management Plan/Environmental Impact Statement (PRMP/EIS) and 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). These excerpts form the basis for short discussions of consistency of the report findings with effects described for the NSO in the PRMP/EIS and FSEIS, and the ability to meet RMP goals and objectives.

The Roseburg District PRMP/EIS summarizes discussions from the FSEIS regarding NSO populations. "The overall results [declining populations across much of their range] of the demographic analysis were not surprising since the data was gathered during a time of habitat decline that was of sufficient concern to serve as the primary reason for listing of the owl as a threatened species" and "the result that should be of most concern is the declining rate of adult survival". "While there is strong reason to believe that the owl populations have declined across much of their range there is ample reason to believe that the pattern of population change is not the same everywhere" and "It is unlikely that a single factor, with the exception of habitat loss, is primarily responsible for the declines in owl populations across its range" (PRMP/EIS pp. 4-63 – 4-64). Also as stated in the FSEIS under the strategies proposed, both the Interagency Scientific Committee (Thomas et al 1990) and the Northern Spotted Owl Recovery Team (USDI 1992) projected that owl habitat and owls would continue to decline for up to 50 years before reaching a new equilibrium.

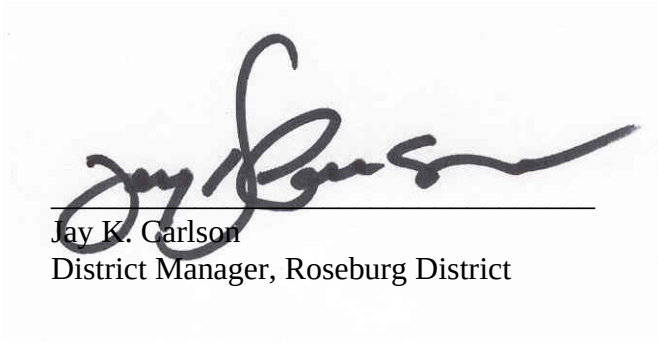
The continuing decline in NSO populations was anticipated and is consistent with the analysis in the Roseburg PRMP/EIS and Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS) (USDA; USDI, 1994a). The Roseburg PRMP/EIS incorporated by reference (PRMP/EIS 4-54, 4-63) the discussion and conclusions of the FSEIS relating to the analysis of the spotted owl population trends (FSEIS Chapter 3&4, pages 3&4-212 to 245 and Appendix J3). The discussion and conclusions in the FSEIS and the Roseburg PRMP/EIS anticipate that NSO populations had declined throughout much of their range and would continue to decline for the first few decades of the NFP implementation. It also concluded that the effects or rate of decline from implementation would not be the same everywhere across the range and for all habitat types. These conclusions are consistent with the information in Section II of this evaluation in that the reports did not find a direct correlation between habitat conditions and changes in NSO populations and were also inconclusive as to the cause of the population declines.

Lint (2005) indicated that the NWFP recognized wildfire as an inherent part of managing NSO habitat in certain portions of the range. Courtney et al. (2001) also added "The Forest Plan acknowledges the potential for the loss of owls and habitat from catastrophic events such as wildfire, particularly in the East Cascade Provinces and the Klamath Province." (pp 6_25) Even though stand replacing wildfire is identified as a continuing threat to NSO suitable habitat in the reports, it is not considered a widespread threat throughout the range of the NSO. Stand replacing wildfire did have some local negative effects, but these were most notable in the Klamath Provinces in northern California and southern Oregon.

The threat from barred owls competition was not considered specifically in the Roseburg PRMP/EIS or the FSEIS although it did consider other factors outside of habitat loss. It was a concern that other factors may be responsible for population decline outside of those that could be managed under land management practices. "… it is unlikely that a single factor, with the exception of habitat loss, is primarily responsible for the declines in [Northern spotted] owl populations across the range" (PRMP/EIS 4-64). Anthony et al indicated that there is some evidence that barred owls may have had a negative effect on NSO survival in the northern portion of the range. They have found little evidence for such effects in Oregon and California. The threat from barred owl competition has not yet been studied to determine whether it is a cause or a symptom of NSO declines, and the reports indicate a need to examine these threats from barred owl competition.

IV. Conclusions/Findings

Based on the above evaluation of pertinent elements of the Roseburg District ROD/RMP and its associated PRMP/EIS, I find that effects on NSO populations identified in the four reports are within those anticipated in the PRMP/EIS, and that the RMP goals and objectives are still achievable in light of the information from the reports As such, I find that the latest information on the NSO does not warrant a change in RMP decisions pertinent to the NSO, and therefore does not warrant amendment or revision of the Roseburg District RMP. I also find that the underlying analysis in the EIS remains adequate for purposes of tiering NEPA analyses of NSO effects from proposed actions implementing the RMP.



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Jay K. Carlson Date

District Manager, Roseburg District

References

USDA; USDI, 1994a. U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Bureau of Land Management, February 1994. 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.

USDA; USDI, 1994b. U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Bureau of Land Management, April 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl.

Appendix E. Critical Elements of the Human Environment

Element	Relevant Authority	Environmental Effect
Air Quality	The Clean Air Act (as amended)	Impacts to areas designated for attainment of federal Clean Air standards is not considered likely since the units would be burned under parameters of the Oregon Smoke Management Plan which prescribes smoke emission reduction measures (e.g., rapid ignition and aggressive mop-up) and directs burning under conditions when smoke would rise high in the atmosphere and be transported away from designated areas.
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 12/22/98
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)

Element	Relevant Authority	Environmental Effect
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.
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.***	Infestations of noxious weeds are being treated under the District noxious weed program. Project design features 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 Specialist Report 12/16/05 (wildlife) and 12/14/05 (fisheries). 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.

Element	Relevant Authority	Environmental 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 covered under Memorandum of Understanding. No domestic water users have been identified within a mile downstream.
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 2/03/98. Roads are encumbered under Right-of-Way Agreement # R-676 (Lone Rock Timber).
Minerals	**None** - Project has no mining claims (Specialist's Report 2/03/98).
Recreation	**Minimal short-term impacts** - "This sale would have some limited short-term impact on ... use ... this disruption is only temporary." (Specialist's Report 5/21/98).
Visual	**None** - "The VRM classification for this area is IV. This classification allows major modification of the landscape. The proposed timber sale is compatible with this classification." (Specialist Report 5/21/98)

Other (Adjacent Landowners)	**None -** Small adjacent landowners are in the vicinity of this sale. No registered domestic water use.