

**SOUTH McCULLY TIMBER HARVEST AND
RIPARIAN RESTORATION PLAN**

**FISCAL YEAR 2001
ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT
IMPACT**

**CASCADES RESOURCE AREA
SALEM DISTRICT OF BUREAU OF LAND MANAGEMENT**

EA NUMBER: OR080-01-05

PREPARED BY: Keith Walton

DATE: 16 July 2001

SUMMARY: The proposed South McCully Timber Sale would remove approximately 2431 hundred cubic feet (CCF) (1430 thousand board feet (MBF)) of merchantable timber from 143 acres of land in accordance with the Salem District Resource Management Plan and the Northwest Forest Plan. The timber sale and related actions would involve harvesting trees by partial cut harvest prescriptions, temporary road construction, road decommissioning, and habitat restoration in the Riparian Reserve. The sale would be located in Section 31, T. 9 S., R. 2 E., and Sections 5 & 7, T. 10 S., R. 2 E., W. M., Linn County, Oregon within the Thomas Creek watershed.

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FINDING OF NO SIGNIFICANT IMPACT

INTRODUCTION

The Bureau of Land Management has analyzed the potential effects of timber harvest in the Cascades Resource Area, Thomas Creek watershed. The actions described in the Environmental Assessment (EA) for the South McCully Timber Sale and related actions are proposed for the intent of meeting the need for forest products and forest habitat as described in the *Salem District Resource Management Plan* (RMP, 1995, p. 1 and 2). The EA is attached to this Finding of No Significant Impact (FONSI) determination and is incorporated by reference.

The Finding of No Significant Impact, the proposal and associated design features described in the EA will be made available for public review prior to making a decision on the action. The public notice of availability for review will be published in a legal notice by local newspapers of general circulation and through notification of individuals, organizations, and state and federal agencies with affected interests.

Implementation of the proposed action would conform to management actions and direction contained in the ROD/RMP (*Salem District Record of Decision and Resource Management Plan*), dated May 1995, which is tiered to and incorporates the analysis contained in the RMP/FEIS (*Salem District Proposed Resource Management Plan /Final Environmental Impact Statement*), dated September 1994. The ROD/RMP provides a comprehensive ecosystem management strategy in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-successional and Old-growth Related Species Within the Range of the Northern Spotted Owl* (February 1994), the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* and *Standards and Guidelines For Management of Habitat for Late-successional and Old-growth Related Species Within the Range of the Northern Spotted Owl* (April 1994).

Implementation of the Proposed Action would also conform with the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* (ROD, January, 2001) and the *Final Supplemental Environmental Impact Statement for Survey and Manage, Protection Buffers, and Other Mitigation Measures in the Northwest Forest Plan* (FSEIS, November, 2000).

Other documentation guiding this action include the:

- *Thomas Creek Watershed Analysis* (December 1996) (Thomas Creek WA).
- *Thomas Creek Watershed Analysis Riparian Reserve Assessment* (April 1997) (Thomas Creek RRA).

The following shows how this action relates to required components of the Aquatic Conservation Strategy (RMP, p. 5 - 7):

Component	Relationship of This Action
Riparian Reserves	Strict adherence to Riparian Reserve guidelines as established on page 10 of the RMP and on Ch. 1-6 of the Thomas Creek Watershed Analysis .
Key Watersheds	The Thomas Creek Watershed is not a Key Watershed (RMP p. 6).
Watershed Analysis	Watershed Analysis for the Thomas Creek Watershed has been completed. Thomas Creek WA, December 1996.
Watershed Restoration	Portions of the Riparian Reserves in the Thomas Creek watershed may receive silvicultural treatments in order to accelerate development of large conifers and other habitat features which are lacking in the area (Thomas Creek RRA p. 33). Thinning with harvest of surplus trees within the Riparian Reserve would take place only on five acres adjacent to unit E-1. Treatments without removal of surplus trees would occur in several locations throughout the Riparian Reserves over the next several years.

Based upon review of the EA and supporting documents, I have determined that the Proposed Action (Alternative A) is not a major federal action and will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context: Under this proposal the BLM would commercially thin approximately 130 acres of matrix lands and harvest approximately 13 acres by single tree selection. It is expected that this will yield 2431 hundred cubic feet (CCF) (1430 MBF). An additional 5 acres of Riparian Reserve would be thinned to initiate understory development and to help restore large diameter conifers, snag and cull structure, and coarse woody debris more rapidly than would occur without treatment, and some of the trees would be removed as logs. Additional trees in the Riparian Reserve throughout the sections where timber harvest units are proposed would be felled, topped or girdled in multiple entries over several years to create snag, cull and CWD habitat without removing any of the trees. The timber harvest and related treatments would be located in Section 31, T. 9 S., R. 2 E. and Sections 5 and 7, T. 10 S., R. 2 E., W.M. in the Thomas Creek watershed (see maps in Appendix B-1 and B-2 and Table 1 in Appendix A-1). There would be one new road constructed, then decommissioned after use. 3283 feet of existing rocked road would be decommissioned in Section 31. All ground disturbing equipment would be cleaned prior to entry onto BLM lands to prevent the spread of noxious weeds.

The timber harvest would be located in Matrix lands and Riparian Reserve as described in the *RMP*.

The purpose for the proposed actions described and analyzed in this Environmental Assessment (EA) is to contribute to fulfilling the legal mandates to manage BLM lands as described in the *Salem District Resource Management Plan* (RMP, 1995, p. 1, and 2):

- S** To contribute to meeting the need for a sustainable supply of timber and other forest products that would help maintain the stability of local and regional economies and contribute valuable resources to the national economy, on a predictable and long-term basis.
- S** To contribute to meeting the need for a healthy forest ecosystem.
- S** To manage BLM land in a way which meets the need to protect watersheds.
- S** To manage habitat for plant and animal species so that management activities do not preclude the recovery of a listed species nor contribute to the need to list a species under the Endangered Species Act (ESA).

The EA details the effects of the proposed action. None of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the RMP/FEIS.

Intensity. The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27.

1. **Impacts may be both beneficial and adverse.** The beneficial and adverse effects of the proposed action are described in Section IV. of the EA, Environmental Consequences.
2. **The degree to which the selected alternative will affect public health or safety.** Public health and safety was not identified as an issue.
3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.** There are no known historic resources. There are no park lands, prime farm lands, or wildernesses that would be affected by the proposed action (EA II.A.). The sale area does not qualify for potential wilderness nor has it been nominated for an Area of Critical Environmental Concern.
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** The predicted effects are not highly controversial. A complete disclosure of the predicted effects of the proposed action is contained in the EA.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** The actions are local in nature; potential adverse impacts would be short-term. Impacts were determined based on research, observation, professional training, and experiences by an interdisciplinary team of natural resource specialists. Determining such environmental effects reduces the uncertainties to a level which does not involve highly unknown or unique risks.

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** Portions of the proposed action would be located within the Riparian Reserve land use allocation, and management of that area would not retard or prevent the attainment of the ACS objectives (EA IV.B.& C., Appendix B). No hazardous materials or solid waste would be created in the sale area. No harvest of late-successional forest habitat would occur. There would be no reduction in the total amount of late-successional forest habitat on federal forest lands (RMP p. 22) (EA IV.D.).
7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** The interdisciplinary team conducted a cumulative effects analysis and no significant cumulative effects were predicted (EA Section IV.B.2.c. and IV.D.1.). The design features identified in the EA would assure that no significant site specific nor cumulative impacts would occur to the human environment other than those already addressed in the FEIS, SEIS, and FSEIS.
8. **The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.** The proposed action will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will the proposed action cause loss or destruction of significant scientific, cultural, or historical resources (EA).
9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** Spotted owls have been observed in the vicinity. No other threatened or endangered plants or animals were observed in the area. This proposed action “may affect, likely to adversely affect” the spotted owl. “Take” was authorized and seasonal restrictions are included in the Proposed Action. The proposed timber sale area is not located in critical habitat for the spotted owl. The South McCully timber sale was submitted for Formal Consultation with U.S. Fish and Wildlife Service on 15 December 1999. Consultation was concluded on 14 February 2000 (Service Log 1-7-00-F-155). As a result of consultation, the U.S. Fish and Wildlife Service found that the sale would not likely jeopardize the continued existence of the spotted owl.
10. **Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.** The proposed action does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment. The alternatives are consistent with other Federal agency and State of Oregon land use plans and with the Linn County land use plan and zoning ordinances. Any permit requirements associated with the implementation of this project would be obtained and complied with. Project design features would assure that potential impacts to water quality would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act. Additionally, the proposed action is consistent with applicable land management plans, policies, and programs.

Richard C. Pearce
CASCADES RESOURCE AREA MANAGER

12 JUL 2001
DATE

Comments regarding this Environmental Assessment should be received by the Bureau of Land Management, Cascades Resource Area by August 16, 2001.

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V. PURPOSE AND NEED

The purpose for the proposed actions described and analyzed in this Environmental Assessment (EA) is to contribute to fulfilling the legal mandates to manage BLM lands as described in the *Salem District Resource Management Plan* (RMP, 1995, p. 1, and 2) :

- " To contribute to meeting the need for a sustainable supply of timber and other forest products that would help maintain the stability of local and regional economies and contribute valuable resources to the national economy, on a predictable and long-term basis.
- " To contribute to meeting the need for a healthy forest ecosystem.
- " To manage BLM land in a way which meets the need to protect watersheds.
- " To not preclude the recovery of a listed species nor contribute to the need to list a species.

B. MANAGEMENT OBJECTIVES

The following objectives were designed to fulfill the Purpose and Need for action and to guide the specific actions proposed as the South McCully Timber Sale and related riparian and aquatic restoration project actions:

- 1. Comply with existing state and federal laws and legally binding management guidance.**
 - a. *Salem District Record of Decision and Resource Management Plan, (ROD, RMP, May, 1995) and*
 - b. *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS, Sept., 1994).*
 - c. *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, January 12, 2001.*
- 2. Timber harvest (RMP, p. 46).**
 - a. Provide an immediate supply of timber as reflected in the Allowable Sale Quantity (ASQ) for the Salem District.
 - b. Provide a sustainable supply of timber and other forest products.
 - c. Manage developing stands to promote tree survival and growth and to achieve a balance between wood volume production, quality of wood, and timber value at harvest.
 - d. Provide for safe, technically and economically feasible timber harvest which will maintain the productive capability of the soil within RMP standards.
 - e. Provide for adequate transportation system both immediately and in the long term.

- f. Provide a means (timber sale contract) to accomplish some of the other resource objectives proposed as part of this action.
3. **Riparian, Riparian Reserve, and Aquatic Habitat Management and Water Quality.** (see Thomas Creek RRA, p. 33)
- a. Ensure attainment of Aquatic Conservation Strategy Objectives (RMP, p. 5-7).
 - b. Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy (ACS) objectives (RMP, 1995, p. 11).
 - c. Contribute to restoring a healthy, functioning ecosystem by acting to enhance and speed the development of currently missing components of stand diversity which are lacking in Riparian Reserves due largely to past management practices, and so progress toward desired stand conditions.
 - d. Partially restore proper hydrologic functions which have been degraded by past management practices.
4. **Upland Habitat Management.**
- a. Contribute to restoring a healthy, functioning ecosystem by acting to enhance and speed development of currently missing components of stand diversity in the upland forest stands which are lacking due largely to past management practices, and so progress toward desired stand conditions.
 - b. Manage habitat for plant and animal species so that management activities do not preclude the recovery of a listed species nor contribute to the need to list a species.

C. LOCATION OF THE PROPOSED TIMBER SALE

The proposed timber sale would be located in Section 31, T. 9 S., R. 2 E.; and Sections 5 and 7, T. 10 S., R. 2 E., Willamette Meridian, Linn County, Oregon. The sale would be located in the Thomas Creek watershed (see maps in Appendix B1 and B2). The timber sale would occur on lands classified as matrix (*RMP*, page 20). The matrix land use allocation allows for harvesting of trees while retaining important ecological components of forest stands. Cutting and removal of trees would also occur on lands classified as Riparian Reserve in the *RMP*. Silvicultural practices within riparian reserves are allowed (*RMP*, page 11) when done in order to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.

D. PROPOSED ACTION (SUMMARY OF SECTION II.A)

This proposal would commercially thin approximately 130 acres of matrix lands and harvest approximately 13 acres by single tree selection. It is expected that this will yield 2431 hundred cubic feet (CCF) (1430 MBF). An additional five acres of Riparian Reserve would be thinned to initiate understory development and to help restore large diameter conifers, snag and cull structure, and coarse woody debris. Some of the trees would be removed as logs. Additional trees in the Riparian Reserve throughout the sections where timber harvest units are proposed would be felled, topped or girdled to

create snag, cull and CWD habitat without removing any of the trees. There would be one new road constructed and decommissioned after use. 3283 feet of existing rocked road would be decommissioned in Section 31.

E. EIS/EAS/WAS THAT INFLUENCE THE SCOPE OF THIS EA

This Environmental Assessment (EA) is a site-specific analysis which is tiered to the:

Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (S&M ROD, January 2001) Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (S&M FSEIS, November 2000). The S&M ROD amends a portion of the Northwest Forest Plan by adopting new standards and guidelines for Survey and Manage, Protection Buffers and other mitigating measures.

Salem District Record of Decision and Resource Management Plan (RMP, May, 1995) and the Salem District Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS, Sept., 1994). The FEIS analyzed broad scope issues and impacts to meet the need for forest habitat and forest products (p. 1). The RMP provides a comprehensive ecosystem management strategy for BLM managed lands in the Salem District in strict conformance with the Northwest Forest Plan and the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (April 1994). Thinning and selected timber harvest would occur on matrix lands (RMP, pp. 20 - 22)(EA Section II.A.1.) Individual tree falling (without tree removal), and tree topping or girdling would take place within adjacent Riparian Reserve (RMP, pp. 9-15) (EA Section II.A.2.b.). Five acres of thinning harvest would take place in selected adjacent Riparian Reserves (RMP, pp. 9-15) (EA Section II.A.2.a.).

Western Oregon Program-Management of Competing Vegetation Final Environmental Impact Statement (VMFEIS, February 1989) and the Western Oregon Program-Management of Competing Vegetation Record of Decision (August 1992). The VMFEIS analyzed broad scope issues and impacts for an integrated vegetation management strategy consisting of various treatments. The Record of Decision identifies treatments and provides processes to meet vegetation management objectives (p. 3) and resource management goals (p. 33). This document is also tiered to the EA and Finding of No Significant Impact (FONSI) for the *Noxious Weed Control Program (May, 1992)*. This EA will analyze vegetation management treatments such as site preparation and reforestation for regeneration harvested units.

Other documentation guiding this action include the:

- *Thomas Creek Watershed Analysis* (December 1996) (Thomas Creek WA).
- *Thomas Creek Watershed Analysis Riparian Reserve Assessment* (April 1997) (Thomas Creek RRA).

The above documents are available for review in the Salem District Office. Additional

information about the proposed South McCully Timber Sale and related Riparian and Aquatic Restoration Projects is available in the South McCully timber sale file.

F. DECISION TO BE MADE

Dick Prather, Cascades Resource Area Field Manager, is the official responsible for deciding whether or not to prepare an environmental impact statement, and which alternative best meets the purpose and need of the project.

G. ISSUES CONCERNING THE PROPOSED TIMBER SALE AND RELATED ACTIONS

1. Issues concerning the proposed timber sale were identified through scoping and by an interdisciplinary team of natural resource specialists. Scoping is the process in which environmental issues and concerns related to the proposed action are identified early in the planning schedule; the process is open to the public, local governments, state governments, and affected federal agencies. The interdisciplinary team is composed of natural resource specialists representing various fields of science (see Section VI, List of Preparers of the Proposal).

2. Public involvement efforts during the scoping process included the following:

A description of the proposal was included in the Salem Bureau of Land Management *Project Update* which is mailed to more than 900 individuals and organizations four times each year.

A letter asking for scoping input on the proposal was mailed on April 28, 1999 to approximately 25 adjacent landowners, individuals and organizations who have expressed an interest in management activities in the Resource Area as a whole or in this specific area. Letters were also sent to the Cities of Salem, Lyons, Mehama, Stayton and Scio, the Linn County Board of Commissioners, Oregon Department of Forestry, Oregon Department of Fish and Wildlife, the Willamette National Forest, the U. S. Fish & Wildlife Service, the National Marine Fisheries Service, the Environmental Protection Agency, the Confederated Tribes of Warm Springs and the Confederated Tribes of Grande Ronde.

The scoping letter described the proposed action as follows:

Approximately 158 acres would be assessed for regeneration harvest and 148 acres would be assessed for commercial thinning in accordance with the Salem Resource Management Plan and the Northwest Forest Plan.

Letters were received from Oregon Natural Resources Council, Frank Lumber Co, and American Lands Alliance (S. McCully project file).

a. The public comments identified the following issues¹:

¹ A significant or major issue is defined as a major point of discussion, debate, or dispute about environmental effects of the proposed action. For the purposes of the National Environmental Policy Act, a significant or major issue is an issue within the scope of the proposed action that is used to

Water Quality/ Hydrology: There are concerns that regeneration harvest, road building and current road densities may adversely affect water quality and stream conditions.

Animal/Plant Species and Habitats: There are concerns that regeneration harvest, road building and current road densities may adversely affect wildlife and plant species and habitat (especially special status species and late successional habitat).

- b. These issues have been addressed in the following manner.

In the analysis process, the proposed action has evolved into thinning and selective harvest. Regeneration harvest is no longer a part of the proposed action. See Alternatives Considered but Eliminated (EA II.D.).

The issues helped formulate alternatives, including the current proposed action. All of these alternatives, except the current proposed action, were later dropped from the analysis because they did not adequately meet the Purpose and Need for Action. See Alternatives Considered but Eliminated (EA II.D.).

Suggested alternatives from the public have been incorporated in part into the proposed action (EA II.A. & B.) and further addressed in Alternatives Considered but Eliminated (EA II.D.)

Project design features and mitigation measures further reduce the effects of the proposed action on the above issues (EA II.B.).

Table 1 ties the Issues with the Environmental Elements affected by the proposed action and shows where each topic is discussed in the EA.

H. ENVIRONMENTAL ELEMENTS AFFECTED BY THE PROPOSED TIMBER SALE AND RELATED ACTIONS

Environmental effects of the Proposed Action are described in the context of the Environmental Elements found in Appendix A of the EA. The environmental elements in this document are:

1. The environmental features which the Bureau of Land Management is required by law or policy to consider in all environmental documentation (BLM Handbook H-1790-1, Appendix 5: Critical Elements of the Human Environment).
2. Additional resources deemed important to discuss as a result of RMP monitoring efforts.

formulate alternatives, develop mitigation measures, or is important in tracking effects.

Table 1 shows where the Environmental Elements affected by the Proposed Action are discussed in this document.

Table 1: Location of Environmental Elements and Additional Resources Discussion				
Environmental Element or Additional Resource	Issue	Section II. Alternatives and Project Design Features	Section III. Affected Environment	Section IV. Environmental Consequences
Air Quality		pg. 17	pg. 31	pg. 51
Special Status/Threatened or Endangered Plant Species	Animal/Plant Species and Habitats	pgs. 18-22	pg. 26	pgs. 50-51
Special Status/Threatened or Endangered Animal Species	Animal/Plant Species and Habitats	pgs. 15-17, 18-22	pg. 26	pgs. 50-51
Invasive/Non-native species	Animal/Plant Species and Habitats	pgs. 15, 16		pg. 46
Water Quality (surface and Ground)	Water Quality/hydrology	pgs. 13, 14-15, 18-23	pg. 28-30	pgs. 38-46, 47-50
Water/Fisheries Resources	Water Quality/hydrology	pgs. 13, 14-15, 18-23	pg. 27-28	pgs. 38, 39-47
Riparian Habitat	Animal/Plant Species and Habitats	pgs. 9, 13-14, 18-23	pgs. 26-27, 32, 33, 35	pgs.37, 39-40, 46, 47-50
	Water Quality/hydrology			
Soils Resources	Water Quality/hydrology	pgs. 13, 14-15, 16-23	pgs. 23-26, 31, 33, 34	pg. 36
Vegetation/ Botanical Resources (including late successional habitat)	Animal/Plant Species and Habitats	pgs. 12-17	pgs. 25-26, 31, 32, 34	pgs. 37, 50-51

Environmental Element or Additional Resource	Issue	Section II. Alternatives and Project Design Features	Section III. Affected Environment	Section IV. Environmental Consequences
<i>Fuels management</i>		pg. 12	pg. 31, 33, 34	pg. 51
<i>Forest Productivity</i>		pgs. 8, 9, 10-13	pgs. 31, 32, 34	pgs. 35-36
<i>Recreation/Visual Resources</i>			Pg. 32, 35	
<i>Special Habitats</i>	Animal/Plant Species and Habitats	pgs. 15-16	pg. 26	pgs. 37, 50
<i>Cultural Resources</i>		pg. 17	pg. 31	

I. AUTHORITY FOR THE PROPOSED TIMBER SALE

The authority for this proposed timber sale is based upon the following legislation:

1. The Oregon and California Sustained Yield Act of 1937 (43 USC 1181a).
2. The National Environmental Policy Act of 1969 (42 USC 4321).
3. The Federal Land Policy and Management Act of 1976 (43 USC 1701).

VI. ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section describes the proposed action and reasonable alternatives identified by the interdisciplinary team that developed the South McCully Timber Sale. Forest management treatments incorporated in the proposed action and alternatives conform with standard practices and general design features intended to reduce the environmental effects of timber harvest and related activities. They comply with the Standards and Guidelines specified in Appendix A of the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD, April 1994)*. These measures are described in Appendix C, Best Management Practices and Timber Production Capability Classification Fragile Code Guidance in the *Salem District Resource Management Plan (May, 1995)*. Copies of these documents are available for inspection in the Salem District Office.

A. OVERVIEW OF THE PROPOSED ACTION

This proposal would commercially thin approximately 130 acres of matrix lands and harvest approximately 13 acres by single tree selection. It is expected that this will yield 2431 hundred cubic feet (CCF) (1430 MBF). An additional five (5) acres of Riparian Reserve would be thinned to help restore large diameter conifers, snag and cull structure, and coarse woody debris (CWD) more rapidly than would occur without treatment and felled trees in excess of those needed for riparian values would be removed as logs. Additional trees in Riparian Reserve throughout the sections where timber harvest units are proposed would be felled, topped or girdled in multiple entries over several years to create snag, cull and CWD habitat without removing any of the trees. The timber harvest and related treatments would be located in Section 31, T. 9 S., R. 2 E. and Sections 5 and 7, T. 10 S., R. 2 E., W.M. in the Thomas Creek watershed (see maps in Appendix B-1 and B-2 and Table One in Appendix A-1). There would be one new road constructed and decommissioned after use. 3283 feet of existing rocked road would be decommissioned in Section 31. All ground disturbing equipment would be cleaned prior to entry onto BLM lands to prevent the spread of noxious weeds. Additional details are described below:

1. Timber harvest units:

Unit A: Approximately 59 acres in the Connectivity Land Use Allocation (LUA) would be commercially thinned with a silvicultural prescription designed to enhance and accelerate development of late- successional forest characteristics to meet Connectivity goals, yielding an estimated 1003 CCF (890 MBF) of timber harvested. A ground based logging system with crawler or rubber tired tractors confined to designated skid trails is anticipated, though other ground based or cable logging systems which meet the resource requirements described in this EA could also be used. Approximately 2608 feet of existing rocked road within and adjacent to this unit would be decommissioned. Trees with old growth characteristics or other identified special habitat/structure characteristics would be retained. Tops would be removed from some of the retained trees to provide structural diversity and wildlife habitat, and to improve wind firmness.

Unit B: Approximately 13 acres in the General Forest Management Area (GFMA) LUA would be harvested using an individual tree selection system with a silvicultural prescription designed to enhance and accelerate development of an uneven aged timber management regime. This harvest would yield an estimated 221 CCF (130 MBF) of timber. A ground based logging system with crawler or rubber tired tractors confined to designated skid trails is anticipated, though other ground based or cable logging systems which meet the resource requirements described in this EA could also be used. Trees with old growth characteristics or other identified special habitat/structure characteristics would be retained. Tops would be treated (girdled, etc) or removed from some of the retained trees to provide structural diversity and wildlife habitat, and to improve wind firmness.

Unit E-1: Approximately 53 acres in the GFMA LUA would be commercially thinned with a silvicultural prescription designed to accelerate growth on residual crop trees, yielding an estimated 901 CCF (530 MBF) of timber harvested. A ground based logging system with crawler or rubber tired tractors confined to designated skid trails is anticipated, though other ground based or cable logging systems which meet the resource requirements described in this EA could also be used. Trees with old growth characteristics or other identified special habitat/structure characteristics would be retained. Tops would be removed from some of the retained trees to provide structural diversity and wildlife habitat, and to improve wind firmness.

Unit E-5: Approximately 18 acres in the GFMA LUA would be commercially thinned with a silvicultural prescription designed to accelerate growth on residual crop trees, yielding an estimated 306 CCF (180 MBF) of timber harvested. A skyline logging system is anticipated. Trees with old growth characteristics or other identified special habitat/structure characteristics would be retained. Tops would be removed from some of the retained trees to provide structural diversity and wildlife habitat, and to improve wind firmness.

2. Riparian Reserve Restoration Treatments:

- a. **Thinning:** Approximately five acres in the Riparian Reserve adjacent to timber harvest unit E-1 would be thinned to promote stand diversity and accelerate development of late successional stand characteristics. This thinning would be done as part of the unit E-1 timber harvest and logs in excess of CWD needs would be harvested. If timber harvest thinning in the adjacent portion of unit E-1 is deferred for any reason, this Riparian Reserve restoration thinning would also be deferred as operationally infeasible.
- b. **Individual Tree Treatments Without Wood Removal:** In various locations throughout the Riparian Reserve in the sections where the proposed timber harvest units are found, individually selected trees would be topped to provide canopy level structure, killed to create snags, or felled to create CWD habitat or stream structure without removing any of that wood from the site. These restoration treatments would be done in multiple entries over the next several years. Locations and individual trees selected for treatment would be evaluated for each entry to provide maximum restoration benefits at that time, so specific locations and estimated acreage cannot be accurately predicted at this time.

3. Roads:

- a. **New Construction:** There would be approximately 250 feet of new temporary single lane road constructed as a part of this proposed action. It is anticipated that this road would have a dirt surface, though it could be rocked for wet season use. The entire road would be decommissioned after use.
- b. **Road Decommissioning:** Approximately 3283 feet of existing roads would be decommissioned by removing culverts, restoring natural drainage patterns, ripping the road bed and blocking access by off road vehicles. 2608 feet of the

roads to be decommissioned are within and adjacent to unit A. The remaining 675 feet are a spur road which crosses a seasonal stream in a previously logged and planted unit near unit A of the proposed South McCully timber sale.

- c. **Road Maintenance:** Existing rocked roads used for timber harvest and log hauling would be maintained by blading and shaping the roadbed, cleaning debris and sediment from ditches and culverts, cutting back brush and tree limbs which have grown into the right-of-way, spot-rocking as needed, and erosion control measures as needed. The timing, extent and specific procedures would be dependent on weather, timing of log haul, other road users and condition of the roads at the time.

B. PROJECT DESIGN FEATURES/MITIGATION MEASURES FOR THE PROPOSED ACTION

Project design features are standard operating procedures which are included in the design and implementation of each proposed timber sale. Mitigation measures are additional, site specific, things added to reduce or correct potential adverse environmental effects. The project design features and mitigation measures conform with the Standards and Guidelines found in the (*ROD*) and with the Best Management Practices and Timber Production Capability Classification Fragile Code Guidance found in Appendix C of the *Salem District Resource Management Plan (RMP, 1995)*. They apply to all the identified alternatives, unless otherwise indicated, and all proposed harvest units or roads unless otherwise stated. The following is a list of the project design features and mitigation measures applicable to this proposed timber sale.

1. **Design Features to Implement the Timber Harvest Objectives (Environmental Elements/Additional Resources (EA p. 6 & 7, Appendix B) - Forest Productivity, Soils Resources, Vegetation Resources)**
 - a. Commercially thin Unit A according to the Silvicultural Prescription which includes marking guidelines designed to make this an economically viable timber sale unit, to accelerate growth on residual crop trees so that higher quality wood products will develop without significantly reducing total net fiber yield compared to an untreated stand, and to prepare for regeneration harvest at age 150.
 - b. Harvest Unit B using a selection system according to the Silvicultural Prescription which includes marking guidelines designed to make this an economically viable timber sale unit, to accelerate growth on residual crop trees so that higher quality wood products would develop without significantly reducing total net fiber yield compared to an untreated stand, to establish a new age class of seedlings that would occupy the stand openings created by logging, and to move toward an uneven-age management timber harvest regime.
 - c. Commercially thin Units E-1 and E-5 according to the Silvicultural Prescription which includes marking guidelines designed to make these economically viable timber sale units, to accelerate growth on residual crop trees so that higher quality

wood products will develop without reducing total net fiber yield compared to an untreated stand, and to prepare for regeneration harvest at or above Culmination of Mean Annual Increment (CMAI) at approximately age 90.

- d. Falling and yarding requirements would be designed to prevent more than minimal damage to retained trees and soil.
 - (1) No falling or yarding operations would be allowed between April 1 and July 1 when the sap is flowing and the bark is loose so that excessive damage would not reduce the quality and/or quantity of timber products produced from retained trees in the future.
 - (2) Ground based yarding operations would be designed to prevent compaction of more than 10% of the ground surface area and to prevent significantly more soil erosion than is occurring naturally in order to keep potential soil productivity loss to less than five percent (5%) for the rest of the timber stand rotation. Spacing, width and location of yarding roads and limiting operations to dry soil conditions in a tractor skidding logging operation would be required by the timber sale contract to achieve this standard. Tractor operations which compact and/or expose soil would not be allowed on slopes greater than 35 percent. Yarding road locations would be examined and approved by the BLM prior to falling timber to ensure that this standard is met and that existing skid trails are re-used whenever feasible. Cut-to-length or other logging methods other than skidding on designated skid trails would be allowed if these compaction, erosion and productivity loss criteria are met. Ground based yarding is anticipated on approximately 126 acres.
 - (3) Cable yarding operations would be designed to prevent compaction of more than 10 % of the ground surface area and to prevent significantly more soil erosion than is occurring naturally in order to keep potential soil productivity loss to less than five percent (5%) for the rest of the timber stand rotation. Requirements include one end suspension to reduce soil compaction and disturbance, spacing of yarding roads to limit the amount of ground area in those yarding roads, and rigging of lift and tail trees as needed to accomplish these two items. Cable road locations, lift trees and tail trees would be examined and approved by the BLM prior to timber falling to ensure that this standard is met. Downhill cable yarding is not anticipated, but would be allowed with seasonal restriction to dry soil operations and other design features to assure that these compaction and productivity loss criteria are met. Cable yarding is anticipated on approximately 18 acres.
- e. Genetically superior seed trees which are included in the Salem District Tree Improvement Program (“Plus Trees”) would be protected from all significant damage to tops, boles and roots during falling and yarding operations.

- f. Reserve trees, including trees in the Riparian Reserve, may be used for lift, tail and guyline trees for cable yarding, except that “Plus Trees” and selected retained trees with unique characteristics for wildlife habitat which would be compromised by attaching cables to them. These trees would be protected from damage.
- g. Approximately 250 feet of temporary single lane road would be constructed to a cable landing in unit E-5. This road may be rocked for wet season haul, but would probably be used only as a dirt road in the dry season.
- h. Unit B would be treated and planted after timber harvest to initiate and maintain a new age class of conifers for uneven aged management of this stand:
 - (1) Understory brush would be cut (slashed) to reduce the amount of brush competing with planted conifer seedlings for light.
 - (2) The cut brush would be lopped to create a mat of debris less than one foot thick to create a uniform fuel bed to facilitate broadcast burning and to concentrate heat on the cut brush stumps to retard resprouting and give planted conifer seedlings an opportunity to compete for light.
 - (3) Brush and logging debris would be broadcast burned under a prescription designed to consume this mat of small diameter debris and create at least 100 planting spots per acre while minimizing effects on the duff layer and to avoid killing more overstory trees than are desired for snag habitat.
 - (4) A mix of Douglas-fir, western hemlock and western red cedar would be planted. Western red cedar seedlings would be tubed to minimize browsing by deer and elk.
 - (5) The site would be evaluated after each major action and planned treatments modified if needed to best achieve the objectives.
 - (6) The status of planted seedlings would be monitored with release, maintenance and pre-commercial thinning needs done as needed. Many of these treatments would coincide with future harvest entries.

2. Design Features to Implement Riparian, Riparian Reserve and Aquatic Habitat and Water Quality Management Objectives (Environmental Elements/Additional Resources (EA, p. 6, Appendix B) - Water Quality, Water/Fisheries Resources, Soil Resources, Riparian Habitat special status animal/plant species):

- a. **Riparian Reserve:** Riparian Reserve boundaries would be established to ecological breaks or the following minimum slope distances on each side of the stream as described in the RMP. The distances are based on the site potential tree height, which was measured on all units. There are no fish bearing streams in or adjacent to proposed harvest units.

Riparian Reserve Widths

Category	Unit A	Unit B	Unit E-1	Unit E-5
Site Potential Tree Heights	200 Feet	200 Feet	180 Feet	180 Feet

- b. **Thinning:** Density management thinning timber harvest would be done in a selected five acre area within the Riparian Reserve adjacent to the southeast boundary of unit E-1 as part of the proposed timber sale.
- (1) Trees occupying the intermediate and co-dominant canopy positions would be thinned to a residual tree density range of approximately 80-130 trees per acre, approximately 40-70% crown closure. Trees to be cut would be individually selected to achieve the desired stand conditions. Existing species composition and elements of all size classes would be maintained.
 - (2) Up to four green conifer trees per acre would be topped or killed to according to a prescription designed to create snag and broken top tree habitat to improve habitat diversity.
 - (3) Existing coarse woody debris (CWD) would be retained on site and 480 lineal feet per acre of Class 1 CWD of average stand diameter or larger would be created by the thinning operation, natural processes, or follow-up treatments within two years following thinning.
 - (4) Felled trees which exceed CWD needs would be sold as timber and removed from the site to maintain a low fire hazard and to prevent a potential buildup of insect populations which could pose a threat to the health of the remaining overstory trees. It is expected that the number of trees felled to achieve the desired future stand condition would far exceed the desired amount of CWD.
 - (5) No trees within a stream protection buffer of at least fifty (50) feet from any stream channel would be removed from the site. This stream protection buffer would be wider than 50 feet when site specific terrain and vegetation characteristics indicate that it would be needed for stream channel and water quality protection and 80 feet is planned on the southeast side of the stream in this area.
- c. **Individual Tree Treatments Without Wood Removal:** Habitat restoration treatments without wood removal would be done within the Riparian Reserve throughout BLM ownership in the sections containing the proposed timber harvest units. Some of these treatments may be done concurrent with the proposed timber harvest while others would be done in later years, independent of the timber sale. Potential treatment areas would be evaluated for desired habitat

conditions prior to each treatment. Trees to be felled, killed or topped would be selected based on those evaluations and the most current scientific recommendations for restoring habitat within the Riparian Reserve. Specific treatment proposals would be described in Salem District public outreach venues such as the Project Update and web site as they are developed.

- (1) Up to approximately 10 trees per acre within 50 feet of streams may be felled into or across stream channels to provide needed structure and enhance riparian area stand habitat characteristics, accelerate growth on selected residual overstory trees, and enhance development of any advanced conifer regeneration which is present. Trees to be felled would be selected to cause little or no soil disturbance and provide stable locations for stream structure logs.
 - (2) Throughout the Riparian Reserve, up to eight green trees per acre may be felled to provide Class 1 CWD and enhance other stand habitat characteristics. In addition, up to four green trees per acre may be topped or killed to create structural diversity. Up to two additional green trees per acre may be felled to supplement Class 1 CWD needs.
 - (3) Tree selection in each project area would be designed to ensure that there would be no increase in water temperature from loss of stream shade.
- d. **Yarding systems:** Yarding systems design and best management practices to minimize erosion and sediment entering streams would be implemented to keep anticipated sedimentation well within State of Oregon Department of Environmental Quality (DEQ) standards.
 - e. **Tractor operations:** All tractor operations, including road construction, road decommissioning, and tractor yarding would be done only during dry soil conditions to minimize erosion and sediment production.
 - f. **Decommissioning existing roads:** Approximately 3283 feet of road in two locations in Section 31 would be decommissioned to partially restore proper hydrologic function which was degraded by their construction. Decommissioning would include removing culverts and restoring natural drainage patterns and ripping the surface and subgrade so that water would percolate into the soil rather than concentrating in ditches. The culvert to be removed from the seasonal live stream crossing on Road 9-2E-31.3 would be removed when the stream is dry. The stream channel, banks and stream-adjacent slopes would be shaped, armored and seeded as needed to minimize erosion and sedimentation.
 - g. **Decommissioning proposed road:** The temporary road to be constructed into unit E-5, approximately 250 feet, would also be decommissioned after use. If not rocked, log hauling would be restricted to dry soil conditions to minimize erosion. If the road is not constructed, used and ripped in the same dry season, erosion control measures would be implemented to minimize erosion and sediment. All tractor operations, including road construction, road decommissioning, and tractor

yarding would be done only during dry soil conditions to minimize erosion and sediment production.

- h. **Non-native plants:** See 3.h., below, for a description of measures to prevent introducing weeds and other non-native plants.

3. Design Features to Implement Upland Habitat Management Objectives
(Environmental Elements/Additional Resources (EA, p. 6, Appendix B) - special status animal/plant species, special habitats, vegetation resources)

- a. **Marking guidelines:** Timber harvest marking guidelines would be implemented to achieve the habitat management objectives described in the RMP and refined by the IDT.

- (1) Unit A - Thin from below to enhance and accelerate development of Late Successional and Old Growth (LSOG) forest characteristics to meet Connectivity goals (RMP, pp. 20-22, 25, 26) for habitat on a 150 year rotation.

- (2) Unit B - Continue development of a complex stand structure suitable for RTV and other species by selectively harvesting individual trees and small groups of trees to maintain the uneven age stand structure that now exists with emphasis on establishing a new age class of conifers.

- (3) Units E-1 and E-5 - Thin from below to accelerate growth on the largest trees in the stands, accelerating mature forest habitat conditions as well as higher quality timber to meet GFMA goals .

- b. **CWD protection:** Existing CWD would be protected as feasible by requiring that all down logs which are greater than 20 inches diameter be left undisturbed. Where logs must be disturbed for safety or because it is not feasible to log around them, measures such as cutting out and moving only a part of the log, and moving the log only as much as required for safe and feasible operations would be required to minimize disturbance.

- c. **Trees with special characteristics:** Trees with Old Growth characteristics or other identified special habitat/structure characteristics would be retained to the fullest extent feasible without compromising human safety. Trees to be retained for special habitat values include all trees larger than 36 inches diameter breast height (DBH), cull trees, broken top trees and trees with deeply furrowed bark.

- d. **Creating habitat features for bird species:** Up to four green trees per acre in the harvest units would be topped or treated. Topping would remove approximately $\frac{1}{3}$ of the live crown by blasting or sawing off the tops. Other treatments could include girdling part of the top to kill it and create a spike top, or thinning limbs to enhance structural features already present in the tree top. These treatments would provide structural diversity, improve wind firmness, and

add nesting and foraging opportunities for species such as the northern spotted owl, pileated woodpecker and American kestrel.

- e. **Seasonal restrictions to protect nesting owls:** Cutting, yarding, loading, road construction and decommissioning, topping and burning would not be allowed from March 1 through June 30 to avoid disturbing northern spotted owls which may be nesting nearby. If surveys are conducted to USFWS protocol and no owls are found, then the seasonal restriction may be waived for the remainder of that year. If surveys are not done to protocol, then nesting owls will be assumed to be present within the 1/4 mile disturbance range.
- f. **Mollusk and fungi protection:** No-entry buffers would be established around Survey and Manage mollusk and fungi species which require protection. These buffers would be designed to protect the sites from significant microsite temperature and relative humidity changes compared to pre-disturbance conditions. Harvest, falling trees into, yarding through, prescribed burning and other activities which would disturb the microclimate or canopy closure in the interior of these buffers would be prohibited.
- g. **Red tree vole protection:** A red tree vole (RTV) reserve has been established around the nests found adjacent to proposed harvest unit B in section 5. This reserve fulfills or exceeds the 10 acre minimum with a measured minimum of one site tree distance from all known nests. Other potential harvest units were dropped entirely from further consideration after RTV nests were found (see “Alternatives Considered but Eliminated”).
- h. **Non-native plants:** In order to reduce the potential for establishing additional populations of noxious weeds and other non-native plant species:
 - (1) All ground disturbing machinery would be cleaned of all mud, plant parts and debris prior to conducting ground disturbing activities on sale area. The machinery would be cleaned prior to entry onto BLM lands.
 - (2) Upon finding noxious weed infestation, eradication or containment measures would be taken as directed in BLM manual 9015 and Instruction Memorandum OR-080-93-25.
 - (3) Native species seed would be used for all erosion control seeding.
 - (4) The project area would be monitored within 3 years of timber harvest to evaluate the resulting density of the noxious weed populations and to see if any other noxious weeds have invaded the project area. If populations are large enough for biological control to be effective, the BLM would work with the Oregon Department of Agriculture, which has responsibility for noxious weed control, to implement further treatment.
- i. **Late-successional forest at the landscape level:** Landscape areas (*watersheds*) where little late-successional forest persists would be managed to retain late-

successional patches (RMP, p. 22). Federal forest lands within Thomas Creek watershed would be managed to retain a minimum of 15 percent in late-successional forest at any point in time. Late-successional forests include forest seral stages that include the mature and old-growth age classes (80 years and older) (*PRMP, FEIS, p 6-7*). Mature Seral Stage is the period in the life of a stand from culmination of mean annual increment to an old-growth stage or to 200 years. Old-growth SERAL STAGE constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. For forest communities, this stage exists from approximately age 200 until when the stand replacement occurs and secondary succession begins again (*PRMP, FEIS, p. 6-13*).

4. **Cultural Resources:** No cultural or archeological resources are known or expected to be present in the proposed timber harvest units, but if any were to be identified on the site during timber harvesting, the operations would be immediately halted and the Area Manager notified. Operations would be resumed only with the Area Manager's approval after appropriate mitigation measures were designed and implemented to provide any needed protection of those resources.
5. **Air Quality:** Prescribed fire underburning on Unit B would be conducted under DEQ Smoke Management authority and with a burn plan designed to minimize the amount of smoke produced, the area of airshed affected, and the length of time smoke impacts the airshed while still meeting site preparation and fuels management objectives.

C. ALTERNATIVE B: NO ACTION

Timber harvest and associated treatments on all or part of any of the proposed harvest units, and/or thinning in the Riparian Reserve, and/or other treatments in the Riparian Reserve would be deferred. Natural processes as described in the Affected Environment section of this EA and on-going management activities which are either not included in the proposed action, or elements of the Proposed Action which are not deferred, would continue.

D. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

1. Potential Harvest Units Eliminated from the Proposed Action

Initial selection of potential harvest areas using Geographic Information System (GIS) record in compliance with the Salem RMP was completed for lands tributary to South McCully Mountain Road and for adjacent sections. Field reconnaissance was then initiated on the potential harvest areas and 464 acres were selected for further review. (See attached Map). Sections reviewed for potential harvest included: T.9S., R.2E., Secs.29 & 31; and T.10S., R.2E., Secs. 5, 7, & 9.

The IDT considered each of the following potential harvest units and/or management actions and eliminated them from the proposed action when analysis showed them to

be incompatible with the Purpose and Need. As soon as each unit or management action was dropped from the proposed action, further analysis was stopped.

T9S-R2E, Sec. 29

Unit F (66 acres of regeneration harvest/ 3000 MBF)

This unit was dropped due to the identification of newly identified streams and hydrological features, identification of fish presence in the stream adjacent to the northeast boundary, and identification of S&M species including red tree vole (RTV) nest sites. Management recommendations for adequate protection buffers for the identified S&M species along with the required riparian reserve buffers encompassed the entire unit. This unit is located within the Middle North Santiam River 5th field watershed. Watershed analysis has not been completed in this 5th field watershed, thus thinning in the Riparian Reserves was not considered. Since no timber harvest can legally be done at this time, this unit could not fulfill the purpose and need for action.

Unit F-1 (10 acres of regeneration harvest/ 450 MBF).

This was dropped due to the identification of newly identified streams and hydrological features. Required riparian reserve buffers eliminated all but 0.2 acre from harvest which is accessible only with by aerial harvest systems. This unit is located within the Middle North Santiam River 5th field watershed. Watershed analysis has not been completed in this 5th field watershed thus thinning in the Riparian Reserves was not considered. Since not enough timber harvest can legally be done at this time to be economically viable as a timber sale unit, this unit could not fulfill the purpose and need for action.

T10S-R2E, Sec. 5

Unit E-2 and E-3 (59 acres of regeneration harvest/ 2600 MBF).

Analysis of collected forest inventory data showed that stands within these units were not culminated (had not reached culmination of mean annual increment, or CMAI). Even though the stand type records indicated that the stand was approximately 90 years old, inventory data shows culmination is not expected until age 115. The option of thinning these units was discussed by the IDT. In consideration of the stand composition, spacing, species mix, and anticipated further conditions along with impacts from 1800 feet of required road construction, the decision was made not to proceed with any treatment of these stands at this time. These two units were eliminated from further consideration because neither regeneration nor thinning harvest at this stage of the stand development would meet the objectives of timber (product) management as well as deferring harvest would, and the impacts of the required road construction at this time would not meet the need to protect watersheds.

Unit E-4 (3 acres of regeneration harvest/ 135 MBF).

This unit was dropped due to the identification of newly identified streams and hydrological features which eliminated the entire area since measures to protect

watersheds would not allow an economically feasible timber harvest, thus not meeting the timber product aspect of the purpose and need for action.

T10S-R2E, Sec. 7.

Unit C-1, C-2, and C-3 (21 acres of regeneration harvest and 13 acres of commercial thinning/ 1140 MBF).

These units were dropped due to the identification of S&M sites including red tree voles and recommended buffers for the species. A small portion of the units were dropped due to the identification of newly identified streams and hydrological features. Adequate protection for upland habitat for RTV and other S&M species, and protection for watersheds effectively eliminated potential timber harvest so that these stands no longer met the objectives of the purpose and need for action.

Unit B (originally planned for 23 acres of regeneration harvest with 1140 MBF of timber anticipated).

Approximately 11 acres of this forest stand were eliminated from the proposed timber harvest unit (approximately 605 MBF) due to RTV and other S&M protection buffers. The remainder of this contiguous forest stand is in designated Riparian Reserves. These areas could not be included in the proposed action and still meet the upland habitat and watershed protection objectives of the purpose and need for action.

T10S-R2E, Sec. 9

Unit G-1 and G-2 (12 acres of regeneration harvest/ 576 MBF).

Analysis of collected forest inventory data showed that stands within these units were not culminated and would not benefit from silvicultural treatments at this time as predicted future ecological stand conditions would be favorable if the stands are left untreated. Harvest of these areas at this time would not meet the upland habitat objectives of the purpose and need for action.

Unit G-3 (38 acres of commercial thinning/ 270 MBF).

Analysis of collected forest inventory data showed that the stand within this unit would not benefit from silvicultural treatments at this time as predicted future ecological stand conditions would be favorable if the stand is left untreated. Harvest of this area at this time would not meet the upland habitat objectives of the purpose and need for action.

Unit G-4 (41 acres of commercial thinning and selective harvest/ 370 MBF).

This unit is located within an unmapped LSR Spotted Owl core area. The proposed harvest treatment was reviewed by Resource Area Wildlife Biologists in conjunction with the Resource Area Silviculturist. It was decided that the future ecological stand conditions would be favorable if the stand is left untreated at this time. Benefits would not outweigh impacts from 1100 feet of required road construction and associated disturbance. Harvest of this area at this time would

not meet the upland habitat or watershed protection objectives of the purpose and need for action.

The following table shows areas considered for harvest and eliminated through the IDT process:

Summary of Areas Eliminated from Proposed Action

Unit No.	Acres Regeneratio n Harvest	Acres Commercia l Thinning	Anticipated Volume MBF	Areas eliminated from the proposal for the following reasons:
F	66		3000	S&M, Hydro, Fish
F-1	10		450	Hydro
E-2 & E-3	59		2600	Silvicultural and Ecological
C-1 & C-3	21		1050	S&M
C-2		13	90	S&M
B	11		605	S&M
G-1 & G-2	12		576	Silvicultural and Ecological
G-3		38	190	Silvicultural and Ecological
G-4		41	200	Ecological for Spotted Owl
TOTALS	179	92	9011	

2. Regeneration Harvest Alternative for 74 acres of Unit A, T. 9 S., R. 2 E., Sec. 31

Approximately 74 acres in and near the current proposed Unit A was initially planned for regeneration harvest since much of the area is recorded in GIS as 80-110 years old. Previously unmapped streams and hydrological features were found, so much of this age type is actually in Riparian Reserve. Stand exam data for the remaining area showed most of the stand to be 66 years old, with CMAI expected at age 111. This stand is also classified as Connectivity, placing a higher emphasis on upland habitat considerations and less emphasis on timber production than on GFMA lands. The IDT determined that a regeneration harvest at this time would meet neither the timber production or upland habitat objectives of the purpose and need for action.

The original projection of harvest volume with regeneration harvest was 3,500 MBF. The current projection for harvest volume is approximately 370 MBF.

3. Regeneration Harvest Alternative for Unit B, T. 10 S., R. 2 E., Sec. 7

The initial proposal for this unit was a regeneration harvest of the entire 25 acre stand. Preliminary stand exam data indicated that the timber type was highly variable, and that either a regeneration harvest or a partial cut could be appropriate

for timber management objectives, depending on which timber type drove the silvicultural prescription.

S&M species protection buffers, especially the minimum required red tree vole (RTV) protection buffer, and more accurate mapping of Riparian Reserve reduced the harvest unit to approximately 13 acres. The regeneration harvest alternative, emphasizing the timber production objective under the purpose and need for action, was still considered to be a potentially viable option. The professional judgement of the wildlife biologist held that a regeneration harvest adjacent to the RTV buffer would meet the legal requirements for protection, but would severely impact this isolated habitat and its population of red tree voles.

This conflict between the timber production objective and the upland habitat/avoid contributing to the need to list a species under the ESA objectives of the purpose and need for action was an issue which defined and separated two potential action alternatives, regeneration harvest and partial cut harvest. A regeneration harvest would maximize timber production in both the short and long terms while meeting legal requirements to protect other resource values as indicated in the RMP for GFMA lands. However, while it would meet legal requirements for managing upland habitat and species, a regeneration harvest adjacent to the 10 acre RTV buffer would have a definite impact on the habitat of this population of RTV in this location at this time. A partial cut harvest would adequately meet management objectives for upland habitat and the RTV, but would severely reduce this unit's contribution to meeting timber production objectives in the short run, and may moderately reduce timber production in the long run.

Field measurement and location of the RTV buffer and Riparian Reserve showed that most of the timber type islands which would have been most suitable for a regeneration harvest were actually in reserve areas outside of the final proposed harvest unit boundaries. With the exclusion of the timber type which would have driven the regeneration harvest alternative for maximum timber production, regeneration harvest was no longer considered to be a viable alternative. The IDT eliminated it from further consideration and discontinued analysis of the effects of the alternative.

E. ALTERNATIVES SUBMITTED FROM THE PUBLIC AS A RESULT OF SCOPING

1. Restoration Only Alternative (No commercial timber harvest as recommended by American Lands Alliance (ALA)):

This alternative would not include any commercial removal of timber from the project area, or road construction. ALA states that this alternative would provide a meaningful base-line with which to compare the extraction alternatives and provide the agency an opportunity to improve watershed health and resiliency. (ALA letters 9/30/99 and 6/30/00.)

A "Restoration Only" alternative would not meet the timber management objectives stated in the Purpose and Need for Action of this project. However, many aspects of

the proposed action (EA, pp.8-17) “[provide] the agency an opportunity to improve watershed health and resiliency” by meeting the Aquatic and Upland Habitat objectives described in the Purpose and Need section of this EA (EA, pp. 2).

2. No New Rooding Alternative (as recommended by American Lands Alliance):

ALA stated that “...even temporary roads often have long-term impacts on hydrology and soil compaction. Please consider alternatives that do not require any further road construction and explore every opportunity to limit road construction as much as possible.” (ALA letters 9/30/99 and 6/30/00.)

The 250 ft. temporary spur road into unit E-5 of the Proposed Action is the only proposed new road construction. Without constructing this road, unit E-5 cannot be economically logged and would not meet the timber management objectives stated in the Purpose and Need for Action of this project. The IDT did limit new road construction as much as possible while still meeting timber management objectives.

Since unit E-5 is a discrete element within the Proposed Action, the Cascades Resource Area Field Manager can drop the entire unit from the final action to be implemented, which effectively provides a “no new rooding” option. Dropping the unit would reduce the project’s fulfillment of the timber management objectives.

VII. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The following descriptions are the environmental features affected by timber harvest and associated activities. A documentation of no effect to resources where review is required by statute, regulation, or executive order is included in Appendix B. See BLM Manual, Sec. 1790, Appendix 5.

A. FOR ALL UNITS

1. Timber and General Vegetation

Stand Examination plots were taken throughout the proposed harvest area to determine current stand conditions. The plot data was analyzed using Atterbury’s Stand Exam Program and ORGANON (a stand growth and yield model). The stand descriptions for each of the proposed harvest units are derived from this data, from historical records, and from observations by resource specialists on the IDT. Additional details may be found in the specialists’ reports.

2. Soil Resources

a. General description of soil characteristics:

Soils on these proposed timber harvest units formed on mountainous uplands from colluvium (material rolling downhill) derived from andesite, basalt, and tuff. Field reconnaissance of the units resulted in the identification of several soil

series. The following tables summarize the locations and characteristics of these soils.

South McCully Soil Properties					
Soil Series	Units Located	Soil Thickness (in.)	Surface Rock Content (%)	Slope (%)	Relative Water Table Depth
Apt silty clay loam	A	60 +	0 - 5	2 - 25	Very deep
Blachly clay loam	E-1, E-5	60+	15	30 - 50	Very deep
Harrington gravelly loam	A, B, E-1, E-5	20- 40	30	50 - 70	Very deep
Honeygrove silty clay loam	A, B, E-1, E-5	60 +	0 - 5	12 - 50	Very deep
Klickitat stony loam	A, B, E-1, E-5	40 - 60	35	50 - 70	Very deep

South McCully Management Considerations				
Soil Series	Units Located	Soil Erodibility Rating¹	Management Considerations	Proposed Best Management Practices to Mitigate Management Considerations²
Apt silty clay loam	A	Low	Compaction, seasonal high water table	Seasonal ground based yarding, and designated skid trails
Blachly clay loam	E-1, E-5	Low	Compaction	Seasonal ground based yarding, and designated skid trails
Harrington gravelly loam	A, B, E-1, E-5	Low to Moderate	Erosion, windthrow, landsliding and slumping when saturated	Seasonal ground based and downhill cable yarding, designated ground-based skid trails, one end suspension while cable yarding, and dry season road construction
Honeygrove silty clay loam	A, B, E-1, E-5	Low	Compaction	Seasonal ground based yarding, and designated skid trails
Klickitat stony loam	A, B, E-1, E-5	Low to Moderate	Erosion, landsliding and slumping when saturated	Seasonal ground based and downhill cable yarding, designated ground-based skid trails, one end suspension while cable yarding, and dry season road construction

¹ Erodibility ratings are based on an erodibility factor (k factor) and the percent slope. Erodibility factors vary depending on how rainfall, runoff, and infiltration affect soil erosion on a specific soil series. The erodibility factor and slopes are found in the Soil Conservation Service Publication: *Soil Survey of Linn County, Oregon* (1987). The erodibility rating was derived from the Washington Forest Practices Board Publication: *Standard Methodology for Conducting Watershed Analysis*. Soil erodibility ratings are used to identify the potential for erosion. Actual erosion rates vary depending on specific design features, best management practices employed, and intensity of winter storms. See the Environmental Consequences section for further discussion on predicted erosion rates.

² Best management practices are discussed in detail in the Mitigating Measures section of this EA.

b. Timber Productivity Capability Class system (TPCC) codes and narrative:

The TPCC is a method used to classify lands based on the physical and biological capabilities of the site to support and produce forest products on a sustained yield basis. The system identifies potential soil limitations with regard to harvesting and reforestation. All units (excluding riparian treatment units) are mapped as having no soils limitations which would withdraw them from the timber base.

South McCully TPCC			
TPCC CODE	DESCRIPTION	LOCATION	BEST MANAGEMENT PRACTICES (BMPs)
NP	Non fragile lands capable of reforestation to target stocking within five years using standard practices.	A, E-1, E-5	Follow BMPs in the <i>Salem District Resource Management Plan</i> (1995), and latest best science.
FSR2	More than 12 percent of the area is compacted and a high percentage of the topsoil is compacted or displaced.	A, E-1, E-5	Till with properly designed winged subsoiler (not necessarily applicable to thinnings). If yarded with ground based equipment, use existing compacted trails as much as possible.

3. Upland Wildlife Habitat

- a. **Coarse woody debris (CWD):** Coarse woody debris (CWD) (also called coarse woody material (CWM) and Large Woody Debris/Material (LWD or LWM)) is generally scarce, except for an isolated area in Unit A where there was significant windthrow along a previous cutting line. Sound snags in the area are generally less than 12 inches diameter, but there are several larger snags in decay class 4 and 5. There are scattered remnant old growth trees, some of which have broken or dead tops.
- b. **Special Habitats:** Surveys for special habitats were conducted in April, 1999 and no special habitats such as rock outcrops, openings, wetlands, grassy natural meadows, etc. were found. Some of the remnant old growth trees have deeply furrowed and exfoliating bark which could provide suitable refugia for certain bats.

4. Species with Special Protection Needs

- a. Surveys were done for northern spotted owls, red tree voles, mollusks, bat habitat, fall fungi, spring fungi, vascular plants, bryophytes and lichens. All surveys were done to protocol and several individuals or populations were found in and near the proposed action. The dates and findings of these surveys are documented in the specialists= reports and records.
- b. There are no unmapped Late Successional Reserves (LSR), Critical Habitat Units (CHU) or Core Areas affected by this proposed action.

5. Aquatic Conservation Strategy

- a. Riparian Reserves

In the area of the proposed sale units, the flood plains and inner gorges of the streams were found to be stable, and all riparian vegetation is contained within the distances listed as Riparian Reserve widths in the Proposed Action. The listed

Riparian Reserve distances were determined to be appropriate for protection of aquatic and riparian values.

The *Thomas Creek Watershed Analysis Riparian Reserve Assessment* indicates that the federal Riparian Reserve and the private land riparian buffers of the Thomas Creek watershed currently exhibit a high percentage of acres in the early to mid-seral age classes. Very few acres are classified as exhibiting the structure associated with older forest stands (p. 8). Chapter 7 of the *Thomas Creek Watershed Analysis* (1996), reported that there is a scarcity of older forest habitat in the watershed, and recommends implementing density management prescriptions in Riparian Reserves to facilitate development of late seral old growth characteristics in younger age class stands.

The *Thomas Creek Watershed Analysis* also indicates that the streams and Riparian Reserve of the Thomas Creek watershed lack structure, complexity, and species diversity (Ch. 6-89). The *Thomas Creek Watershed Analysis Riparian Reserve Assessment* also indicates significant longitudinal connectivity is not feasible in this section of the watershed due to the scattered federal ownership pattern (p. 9).

The ecological values of a diverse forest structure have been described as a driver of ecosystem processes and biological diversity. Riparian Reserve stands adjacent to the proposed sale units were evaluated individually to determine whether density management would benefit the stand and assist in attainment of the Aquatic Conservation Strategy (ACS) Objectives (Salem District Record of Decision, 1994, p. B-11).

b. Fisheries

There are no fish bearing streams in or adjacent to proposed timber harvest units. All of the streams in the vicinity of the proposed sale units are first and second order, high gradient tributaries to Jordan and Thomas Creeks, none of which are fish-bearing. Most of the streams were checked visually for their potential to be fish-bearing, and were found to be too small and/or too steep to support fish populations. One second order stream adjacent to Unit A and one third order stream approximately 0.5 mile downstream of Units E-1 and E-5 were sampled with a backpack electroshocker and found to be non-fish-bearing.

Downstream of the proposed timber sale, Thomas Creek supports anadromous populations of winter steelhead trout (*Oncorhynchus mykiss*), spring chinook salmon (*O. tshawytscha*) and probably Pacific lamprey (*Entosphenus tridentatus*). Anadromous fish are distributed in Thomas Creek up to a barrier falls located in T. 10S, R. 3E, Sec. 19, SE¹/₄, approximately 7 miles upstream of the nearest proposed unit (Unit B).

Resident cutthroat trout (*O. clarki*) and sculpins (*Cottus spp.*) are suspected to occur throughout the Thomas Creek watershed, above and below the barrier falls, in mainstem Thomas Creek as well as in tributaries of appropriate size and

gradient. Other fish species known or suspected to occur in the Thomas Creek watershed are listed in the South McCully project file, Fish/Aquatic Biologist report.

Consultation with the National Marine Fisheries Service on the Proposed Action for Upper Willamette River steelhead trout and chinook salmon, both listed as “Threatened” under the Endangered Species Act of 1973, is in progress at the time of this writing. The Proposed Action was determined “not likely to adversely affect” both species. That determination received concurrence from the Willamette Province Fisheries Level 1 Team in April, 2001.

c. Water Resources

- (1) All units were surveyed for streams and wetlands (see unit map).
- (2) The proposed timber harvest units are located in three different sub-watersheds of the Thomas Creek Watershed.

Upper Jordan Creek Sub-Watershed:

Unit A is located in the Upper Jordan Creek sub-watershed and runoff flows into unnamed tributaries of Jordan Creek. The Upper Jordan Creek sub-watershed covers 2356 acres and is located in the Thomas Creek Watershed (5th field). This analysis sub-watershed contains the drainage area for Jordan Creek from section 27 of T.9S., R.1E. upstream to the headwaters. BLM manages approximately 325 acres or 14 percent of this sub-watershed, while the remainder is managed by private landholders.

2001 Forest Cover Age Class by Ownership- Upper Jordan Creek Sub-Watershed (in Percent)

OWNERSHIP	ACREAGE ¹	10YR OLD OR LESS	11-20YR OLD	21-30YR OLD	GREATER THAN 30YR OLD
BLM	20 %	3 %	0%	7%	10%
OTHER FORESTED	80 %	11%	21%	3%	45%
TOTAL	100%	14%	21%	10 %	55%

¹ Acreage totals are based only on lands managed as forests. Agricultural non-forest lands were not included in this table.

Within this sub-watershed, BLM has harvested approximately 168 acres in the past 30 years, while harvesting by all land owners combined over the same period of time equals 694 acres.

Bear Creek Sub-Watershed:

Units E-1, E-5, and the riparian density management area are in the Bear Creek sub-watershed and runoff flows into unnamed tributaries of Thomas Creek. The Bear Creek sub-watershed covers 2487 acres and is located in the Thomas Creek Watershed (5th field). This analysis sub-watershed contains the drainage area for Bear Creek from the confluence with

Thomas Creek upstream to the headwaters. BLM manages approximately 344 acres or 14 percent of this sub-watershed, while the remainder is managed by private landholders.

**2001 Forest Cover Age Class by Ownership-Bear Creek
Sub-Watershed (in Percent)**

OWNERSHIP	ACREAGE ¹	10YR OLD OR LESS	11-20YR OLD	21-30YR OLD	GREATER THAN 30YR OLD
BLM	14%	0 %	1%	2%	11%
OTHER FORESTED	86 %	0%	14%	1%	71%
TOTAL	100%	0%	15%	3%	82%

¹ Acreage totals are based only on lands managed as forests. Agricultural non-forest lands were not included in this table.

Within this sub-watershed, BLM has harvested approximately 75 acres in the past 30 years, while harvesting by all land owners combined over the same period of time equals 430 acres.

Middle Thomas Creek Sub-Watershed:

Unit B lies in the Middle Thomas Creek sub-watershed and runoff flows into unnamed tributaries of Thomas Creek. The Middle Thomas Creek sub-watershed covers 2353 acres and is located in the Thomas Creek Watershed (5th field). This analysis sub-watershed contains the drainage area for several un-named tributaries to Thomas Creek. BLM manages approximately 452 acres or 19 percent of this sub-watershed, while the remainder is managed by private landholders.

**2001 Forest Cover Age Class by Ownership- Middle Thomas Creek
Sub-Watershed (in Percent)**

OWNERSHIP	ACREAGE ¹	10YR OLD OR LESS	11-20YR OLD	21-30YR OLD	GREATER THAN 30YR OLD
BLM	20 %	0 %	3%	4%	13%
OTHER FORESTED	80%	3%	19%	3%	55%
TOTAL	100%	3%	22%	7 %	68%

¹ Acreage totals are based only on lands managed as forests. Agricultural non-forest lands were not included in this table.

Within this sub-watershed, BLM has harvested approximately 143 acres in the past 30 years, while harvesting by all land owners combined over the same period of time equals 698 acres.

- (3) **Water Quality Limited Streams: Oregon Department of Environmental Quality's Final 1998 303d List of Water Quality Limited Streams** is a compilation of streams which do not meet the state's water quality standards. Thomas Creek is listed in the report as not meeting water quality standards

due to high summer temperatures. The listed section of Thomas Creek extends from the mouth of the creek upstream to the confluence of Neal Creek. Proposed sale units are located approximately 7 miles upstream of the Thomas Creek, Neal Creek confluence. Fish rearing was listed as the impacted beneficial use.

(4) **Nonpoint Sources of Water Pollution:** The Oregon Department of Environmental Quality (ODEQ) has published an assessment dealing with non-point water pollution in Oregon streams titled; *1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution*. The publication is a list of suspected water quality problems in Oregon streams, however listing does not mean there is sufficient data to prove or disprove a problem exists in a given stream reach. The assessment is used in this document to determine potential management concerns. The publication lists the section of Thomas Creek from the mouth upstream to Neal Creek as having moderate turbidity, low dissolved oxygen, and low flow problems. The probable causes of water quality problems are listed as landslides, erosion, road runoff, and water withdrawals. This section of Thomas Creek is approximately 7 miles downstream of the proposed sale units.

(5) **Beneficial Uses:** There are several registered Beneficial Uses downstream, including irrigation, domestic use, livestock and recreation, with irrigation being the most common.

Downstream Beneficial Uses				
Beneficial Use	Data Source	Stream	Upstream Project Unit	Approximate Distance from Project Action
Resident Fish	BLM	Jordan Creek, Thomas Creek	All Units	2 to 2 miles
Anadromous Fish	BLM	Jordan Creek, Thomas Creek	All	2 to 2.2 miles
Irrigation	OWRD ¹	Un-named Jordan Creek Tributary. Un-named Thomas Creek Tributary.	All	1 to 1.2 miles
Domestic	OWRD	Thomas Creek	B	1.2 miles
Recreation	OWRD	Jordan Creek	A	2 miles
Municipal (City of Albany)	OWRD	South Santiam	All	> 10 miles

¹ Oregon Water Resources Department

6. Other Resources

- a. **Cultural resources:** Cultural resource surveys were completed, concentrating on the most likely areas to have been used by native peoples and early immigrants. No significant cultural resources were found.
- b. **Air quality:** The inhabited part of the Thomas Creek valley is below and visible from Unit B. Down-canyon diurnal winds could drive smoke into this area. No other units would be of concern since fire in those units is not a proposed action.

B. UNIT A:

1. Forest Stand

This unit is primarily on a broad ridge top at approximately 1900-2200 feet elevation with a generally northwest/west/southwest aspect and slopes generally less than 10%.

The Plant Association in this area is Western hemlock/vine maple-salal/sword fern. The dominant timber type on most of the proposed thinning harvest area is 65 year old Douglas-fir which was commercially thinned 21 years ago. There are a few grand fir and western hemlock in the stand and a few old growth Douglas-fir trees scattered through the area. The trees are well spaced and growing well with no evidence of disease. The understory vegetation is dominated by vine maple, sword fern and salal. There are several clumps of understory hemlock seedlings and saplings which became established in the disturbed soil and openings created by the 1979 thinning.

The forest stand in this area was apparently established after timber harvest which was done under a timber patent issued in 1929 which expired in 1940. Fire scars on residual old growth trees and snag remnants indicate that the area was probably broadcast burned after logging. Since there is no record of seeding or planting, the current stand of timber is apparently a combination of trees which survived the original logging and burning, and seedlings established over the 10-20 year period following logging from seed produced by the remnant old growth trees. The area was commercially thinned in 1979 and skid trails from this thinning are still evident in places.

There are nine Plus Trees recorded on or adjacent to this proposed harvest unit.

2. Soils and Site Productivity

Soils are predominantly mapped as Apt silty clay loam (4D), Honeygrove silty clay loam (48F), and Harrington-Klickitat complex (40G). These are deep, well drained soils with some areas of surface rock which can give the impression of having only a shallow soil and duff layer over rock. The duff and litter layer is generally less than one inch deep, indicating that litter fall is recycled and used quickly on this site.

Site Index, a measure of site productivity, was measured as 126 at 50 years and 160 at 100 years. This indicates a Site Class of 2 and a Site Potential Tree Height of 220

feet. The methods of calculating these indicators are documented in the Silvicultural Prescription.

Approximately 12 percent of the surface area of the unit has been compacted by past logging. However, much of the existing compaction was minor and much of the compaction has been ameliorated to the point that vegetation is growing on existing compacted skid trails.

3. Associated Riparian Reserve

The Riparian Reserve in this area is highly variable with approximately 2/3 of the stands between 70 and 100 years old and not intensively managed. The remaining stands are four and 24 years old. Species composition is diverse and structural diversification is evolving in the older stands, but complex structure develops slowly so snag and cull habitat is still very limited.

4. Other Resources

Rural/Forest Interface: Unit A is adjacent to some regeneration harvest units from the McCully's Last Stand timber sale, TS91-502 which was protested by some of the neighboring property owners. It is not classified as Rural/Forest Interface in the RMP.

C. UNITS E-1 AND E-5:

1. Forest Stand

Unit E-1 has a southwest aspect and covers the full gentle (generally less than 10% slopes) ridge between the upper reaches of two Riparian Reserves, with the northern tip extending up a slightly steeper (10-34%) ridge above the headwaters.

Unit E-5 has a southeast aspect and extends from near the ridge top to near the Riparian Reserve. The bulk of this unit is on the middle half of the slope and slopes range from 10 to 60%.

The Plant Association in this area is Western hemlock/vine maple-salal/sword fern. The dominant timber type on most of the proposed thinning harvest area is 60 year old Douglas-fir with minor components of grand fir, western hemlock, western red cedar, big leaf maple and red alder in the stand and a few old growth Douglas-fir trees scattered through the area. Some of the old tractor landing areas are dominated by vine maple and other brush species. Several root rot pockets in the SW portion of the area in which these two units are located are beginning to break up, with brush becoming established. The understory vegetation is dominated by vine maple, sword fern and salal. Some understory hemlock seedlings and saplings are evident.

Timber sales between 1943 and 1948 removed most of the original old growth stand. Tractor skid trails and landings are still evident throughout the sale area, especially in Unit E-5 where many of the skid roads are benched. There is evidence of fire, though it is not clear whether this was broadcast burning or wildfire. The stand today is a result of surviving remnants from the original logging and natural seeding.

There are five Plus Trees recorded on or adjacent to these proposed harvest units.

2. Soils and Site Productivity

Soils are predominantly mapped as Blachly clay loam (12E, 14F), Honeygrove silty clay loam (48F), and Harrington-Klickitat complex(40G). These are deep, well drained soils with some areas of surface rock which can give the impression of having only a shallow soil and duff layer over rock. The duff and litter layer is generally less than one inch deep, indicating that litter fall is recycled and used quickly on this site.

Site Index, a measure of site productivity, was measured as 122 at 50 years and 140 at 100 years. This indicates a Site Class of 3 and a Site Potential Tree Height of 180 feet. The methods of calculating these indicators are documented in the Silvicultural Prescription.

3. Associated Riparian Reserve

The Riparian Reserve in this section includes widely varied timber types and age classes. Approximately $\frac{1}{4}$ of them are unmanaged stands between 80 and 90 years old with diverse species composition and many trees larger than 20 inches DBH. Stand structure diversification is evolving but decadence is still limited since it takes longer to develop. The remaining $\frac{3}{4}$ of the stands in the Riparian Reserves are between 30 and 60 years old with minimal structure development in these mid-seral stands.

Evaluation of stands in Riparian Reserve adjacent to unit E-1 led to determining that a five acre section on the southeast boundary of the unit would benefit from density management to assist in attainment of the Aquatic Conservation Strategy (ACS) Objectives. This five acre portion of Riparian Reserve which is proposed for density management as part of the adjacent proposed commercial thinning timber harvest is approximately 60 years old. It is an unmanaged stand which apparently regenerated after logging in the 1930s, although that timber harvest does not appear in the Salem District timber sale records. It is predominantly even-aged and single-storied with a Douglas-fir and western hemlock overstory. There is little understory due to crown closures typically greater than 80%. What understory does exist consists of suppressed western hemlock seedlings and saplings, vine maple, sword fern and salal with many areas of bare ground. The few snags and pieces of woody debris are typically soft and less than 8 inches diameter.

This part of the landscape has a very simplified stand structure which, at its current rate of development, would take many decades of natural disturbances to initiate and restore a diverse stand structure. Research (Tappeiner, et. al., 1997) indicates that classic “old growth” stands evolved under significantly less dense stand conditions than those existing at this site. Very little self thinning has occurred in these stands so far and without a treatment to reduce overstory density the large, deep-crowned “old growth” trees may not ever develop here.

D. UNIT B:

1. Forest Stand

This unit is on a gentle, poorly defined spur ridge near the top of the slope of the main ridge north of Thomas Creek. It has a predominantly southwest aspect and mostly slopes of less than 10 percent, though some areas have short slopes of 10-35 percent.

The Plant Association in this area is western hemlock/vine maple/sword fern. This stand is an irregular mosaic of uneven-aged stand consisting of residual older growth Douglas-fir, patches of 40 to 90 year old Douglas-fir, patches of mature alder and big leaf maple, and relatively open patches which are dominated by vine maple and other brush. Understory vegetation is dominated by vine maple, sword fern, ocean spray and Oregon grape. Understory conifer seedlings and saplings are absent. No disease or other forest health problems have been observed.

It appears that the current stand consists of survivors from fires and reproduction in burned areas by natural seeding. The large range of ages and sizes of trees in this stand indicate that it has had an uneven-age structure for a very long time. There are no records of timber sales or other management activity in this area, though there is evidence of past fires. While there is no documentation for this particular site, it seems reasonable that periodic fires in the oak savannah prairies of the Willamette Valley crept up Thomas Creek and would make runs up the ridge. The southwest aspect leading up to this stand would naturally be conducive to the spread of fire than other exposures and there is a draw which would form a natural chimney from Thomas Creek to this stand of timber. Native Americans often used fire to maintain forage habitat in the vicinity of the Willamette Valley.

There are no Plus Trees recorded on or adjacent to this proposed harvest unit.

2. Soils and Site Productivity

Soils are predominantly mapped as Honeygrove silty clay loam (47D). This is a deep, well drained soil with some areas of surface rock which can give the impression of having only a shallow soil and duff layer over rock. The duff and litter layer is generally less than one inch deep, indicating that litter fall is recycled and used quickly on this site.

Site Index, a measure of site productivity, was measured as 134 at 50 years and 170 at 100 years. This indicates a Site Class of 2 and a Site Potential Tree Height of 220 feet. The methods of calculating these indicators are documented in the Silvicultural Prescription.

Brush and hardwoods may hinder conifer seedling establishment by overtopping small trees and competing with them for light.

3. Associated Riparian Reserve

The Riparian Reserve in this area is variable and approximately 1/2 of the area is an unmanaged two-storied stand with age classes between 90 and 200 years. Species composition is diverse in this stand with many trees greater than 20 inches DBH. Structural diversification is good. Decadence and understory development, however, are low since the older growth overstory is a relatively minor component.

The remaining stands are between 6 and 50 years old. Stand structure in these early to mid-seral stands is non-existent to minimal, depending on the age class.

4. Other Resources

Rural/Forest Interface and Visual Resources: Part of this stand is classified as Rural/Forest Interface and is also VRM III. Due to previous timber harvest immediately below Unit B, it is visible from several farm houses and the Thomas Creek road system. No homes are within two miles of the proposed Unit B.

VIII. ENVIRONMENTAL CONSEQUENCES

The following descriptions include environmental features which would be affected by timber harvest and associated activities. Resource values are not identified in this section when there are no site specific impacts (reference Appendix B-1, B-2), site specific impacts are considered negligible or the cumulative impacts described in the FEIS were considered adequate.

A. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE A, THE PROPOSED ACTION, FOR TIMBER HARVEST OBJECTIVES

1. Expected Fulfillment of Objectives

- a. **Immediate supply of timber:** The proposed timber sale would supply approximately 2431 CCF (1730 MBF) of timber to the market.
- b. **Sustainable supply of timber:** The long term site productivity of these stands would be maintained within the standards analyzed in the ROD/RMP for subsequent rotations. The effect of the proposed timber harvest on long term total net yield, as predicted by modeling, should be neutral or positive for the foreseeable future.
- c. **Tree survival and growth:** balance wood volume, quality and value:
 - (1) Immediately following harvest the stands should appear healthy with minimal damage to the residual trees.
 - (2) In the thinning units the average diameter of the stand would be immediately increased by removing a higher proportion of the smaller trees, the spacing would be wider and more uniform, and the species mix would be about the same as now exists.

- (3) In the next 20 years, growth on the residual trees should continue at a steady rate which would be higher than it would be without thinning, yielding a higher quality wood product than from an unmanaged stand.
- (4) The crowns should expand and fill the spaces created by partial cut harvests and the site should be fully occupied and ready for another thinning or selection harvest at that time to repeat the cycle.

2. Potential Negative Consequences

- a. **Site productive capability:** Site productive capability would be reduced somewhat by soil compaction in skid trails in Units A and E-1, and to a lesser extent in the cable yarding roads in Unit E-5. When Units A and E-1 are harvested at the end of the timber rotation, these skid trails would be ripped, restoring most of the lost productive capability. Analysis indicates that site productivity loss would be within the effects analyzed in the PRMP/FEIS, pp. 4-12.
- b. **Site productive capability:** Site productive capability would be reduced somewhat by soil compaction in skid trails in Unit B. This would be permanent under the proposed uneven-age management plan since these skid trails would be used for logging every 20 years and not ripped to ameliorate compaction. Analysis indicates that site productivity loss would be within the effects analyzed in the PRMP/FEIS, pp. 4-12.
- c. **Damage to residual trees:** Falling and yarding operations would cause some damage to residual trees, which would potentially introduce disease and otherwise decrease wood product quality in the future. Best Management Practices required and enforced by the timber sale contract would minimize this damage so that the overall effect of treatment is to improve the average quality of future wood products by concentrating, although some of the damage which may decrease wood quality would also be expected to create structure which would benefit some species of wildlife.
- d. **Transportation system:** Decommissioning the roads proposed would have little or no short term effect on the transportation system since they are all relatively short spur roads which would not be needed for management in the near future. If they are needed for future timber harvest, the basic subgrade would still be in place so that the road could be restored to useable condition at fairly minimal cost when it is needed.

B. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE A, THE PROPOSED ACTION, FOR RIPARIAN, RIPARIAN RESERVE, AQUATIC HABITAT, AND WATER QUALITY OBJECTIVES

1. Expected Fulfillment of Objectives

- a. **Diverse stand structure :** The Riparian Reserve density management timber harvest adjacent to Unit E-1 would help to restore a more diverse stand structure

which is characteristic of older forests much faster than it would develop naturally in this stand. It would not only improve habitat diversity in the small area treated, but would help achieve attainment of ACS goals by speeding the development of a more structurally diverse landscape which would promote and maintain properly functioning riparian systems in a landscape mostly devoid of older forest stand structure. Anticipated benefits of initiating this treatment include:

- (1) The proposed treatment would maintain and promote species diversity. All species present on the site would be maintained. In addition, the western red cedar which would be planted in selected locations of the treated area would reintroduce this historically present species into the stand.
 - (2) Growth of the residual overstory trees would be accelerated. This would reduce the time needed to get the average stand diameter larger than 20 inches DBH and would also promote larger and deeper live crowns on the residual trees which are associated with late seral forest habitat. These larger trees would then also be available sooner for the recruitment of large coarse woody debris (CWD) and large diameter snags.
 - (3) Development of a more complex stand structure would be accelerated. By initiating this type of a disturbance to the overstory, it is anticipated that understory conifer regeneration and vascular plant diversity would be stimulated.
 - (4) Adding significant additional decadence (dead wood) to this area would promote additional resources for species that utilize dead wood as part of their life history requirement.
 - (5) Water quality would be maintained by employing Best Management Practices (BMP) for falling and yarding the area where some of the surplus logs would be removed, and by the filtering action of the essentially undisturbed ground cover vegetation and soil profile of the 50 feet or wider stream protection buffers.
- b. **Restoration of cull, snag and CWD:** Topping, top treatment, snag creation, and falling trees in the Riparian Reserve outside of the area where density management timber harvest is planned would help hasten restoration of cull, snag and CWD attributes of diverse stand structure which was once present but has been removed by past management. This would help attain ACS goals by speeding the development of a more structurally diverse landscape.
 - c. **In-channel large woody debris:** Falling streamside trees into or across adjacent stream channels would increase the in-channel large woody debris loading levels and habitat complexity, aid in dissipation the energy of high flows, help to trap gravel and woody debris and increase the retention of nutrients.
 - d. **Restoring hydrologic function:** Decommissioning existing roads, parts of which are within Riparian Reserve, would help attain ACS goals by partially restoring

currently interrupted subsurface flow patterns and infiltration which are essential elements of proper hydrologic function. Decommissioning the road to be constructed in Unit E-5 would keep the time that subsurface flow and infiltration are interrupted in that location to a minimum.

- e. **Water quality, sediment:** Sediment is displaced soil which is delivered to a stream channel. The following analysis is based on field observations and the professional judgements of the Hydrologist/Soil Scientist, Riparian Ecologist and Fisheries Biologist on the IDT, and analysis using the *Water Erosion Prediction Project* (WEPP) soil erosion model which is described in detail in the Hydrology/Soils Report in the South McCully project file. Water quality would be preserved in the following ways so that Oregon DEQ standards are not exceeded, which would comply with the Clean Water Act:
- (1) The Riparian Reserves have been examined by the Hydrologist, Riparian Ecologist and Fisheries Biologist on the IDT and determined to be more than adequate to filter sediment from the small amount of runoff which is expected to come from the harvested areas.
 - (2) Where there is density management timber harvest in the Riparian Reserves, the “no removal” buffer would be designed by the riparian ecologist and fisheries biologist on the IDT, working with the hydrologist, to ensure that they would adequately filter sediment from the negligible amount of runoff which is expected to come from the harvested area in the Riparian Reserve.
 - (3) Seasonal restrictions on tractor operations and removing the existing stream crossing would minimize soil disturbance and compaction and erosion which contribute to sediment entering streams.
 - (4) Seeding, ripping, water bars, slope shaping, sediment traps and other erosion control methods employed where soils have been disturbed would minimize the amount of sediment potentially entering streams.
 - (5) Annual erosion rate in Unit A is expected to decrease 34-43 percent from the existing condition over a two year period following decommissioning of the existing roads as described in the Proposed Action.
- f. **Stream temperature:** The streams in the vicinity of the harvest areas have been examined by the Hydrologist, Riparian Ecologist and Fisheries Biologist on the IDT, and analyzed using the *Shadow Stream Temperature Management Model* (Shadow). These resource specialists. They determined that the design features incorporated in Riparian Reserves would protect streams from more than minimal increases in temperature since the density, location and orientation of the remaining canopy was designed so that very little additional sunlight would reach stream channels.
- g. **Fisheries:** No significant consequences to fisheries are expected since fish bearing streams are not in the immediate vicinity of any harvest unit and the design features and mitigation measures included in the Proposed Action are anticipated to avoid significant specific negative consequences to even the non-fish bearing streams more directly affected.

- (1) Adherence to the Riparian Reserve widths described in this EA would result in negligible impacts to fisheries and aquatic habitat in streams adjacent to the proposed harvest units as well as downstream in Thomas Creek or the South Santiam River. The Riparian Reserve would provide 100 percent of the pre-harvest shade, nutrient input and potential large woody debris recruitment to the aquatic system, as well as filter almost all of the potential sediment resulting from the proposed action.
 - (2) In the 5 acres of Riparian Reserve adjacent to Unit A where thinning is proposed, no adverse effects to aquatic habitat are anticipated due to the limited amount of thinning proposed, the 50 foot minimum no-harvest stream protection buffer and the low gradient (almost flat) of the Riparian Reserve area to be thinned.
 - (3) An expected long-term beneficial effect of thinning within the Riparian Reserves would be an increase in large woody debris recruitment potential to the aquatic system, due to the anticipated accelerated growth rate of the riparian trees that are left. This effect would be minimal due to the limited amount of riparian thinning proposed in the Riparian Reserve.
 - (4) Decommissioning of the existing spur roads in Section 31, T. 9 S., R. 2 E. is expected to partially restore the drainage network and hydrologic function in the first order streams in the vicinity of the spur roads.
- h. **Long-term effects:** The streams in the vicinity of the harvest areas have been examined by the Hydrologist, Riparian Ecologist and Fisheries Biologist on the IDT and they determined that the design features incorporated in Riparian Reserves would protect each of the sub-watersheds affected by the proposed timber harvest to the degree that there would be no long-term negative effects anticipated.

2. Watershed Cumulative Effects

The proposed action plus past, present, and reasonably foreseeable future timber management activities have been analyzed to determine cumulative effects in the Upper Jordan Creek, Bear Creek, and Middle Thomas Creek sub-watersheds. Unit A is located in the Upper Jordan Creek sub-watershed, units E-1, E-5, and the riparian density management unit in the Bear Creek sub-watershed, and unit B in the Middle Thomas Creek sub-watershed.

This section is a summary of the effects not adequately described in the FEIS, of the proposed action when added to past, present, and reasonably foreseeable future activities for watershed resources.

a. Drainage Network Increases Due to Roads

While surface erosion on exposed fillslopes usually decreases within a few years of disturbance as the slope re-vegetates, road surfaces can continue to erode as long as the road is in use. Cutslopes and fillslopes re-vegetate after road construction, however the running surfaces

produce fine-grained sediments over the life of the road. Roads can disrupt sub-surface flow, re-route surface flow and, in effect, act like stream channel extensions during storms, contributing runoff and sediment to streams. The amount of sediment, and runoff reaching streams depends on the location, amount of traffic, and construction of the road. For this analysis, roads within 100 feet of a stream were assumed to affect runoff and sediment additions to streams. The actual effect varies depending on whether a road section crosses a stream or drainage ditch, or just parallels it. Sub-watersheds with road related drainage network increases of 25 percent or greater are considered at high risk for cumulative impacts impacted.

(1) Upper Jordan Creek Sub-Watershed (contains unit A)

Roaded miles are considered moderately dense at 3.6 miles per square mile, and would decrease slightly due to road decommissioning after harvest and site preparation. Densities above 5 miles per section are considered high. The drainage network increase due to roads is considered moderate at 10.5 percent, which is considered low risk for cumulative impacts, and would also decrease slightly due to road decommissioning. Sub-watersheds with road related drainage network increases of 25 percent or greater are considered at high risk for cumulative impacts.

(2) Middle Thomas Creek Sub-Watershed (contains unit B)

Roaded miles are considered moderately dense at 4.4 miles per square mile, and would not change under this proposal. The drainage network increase due to roads is considered low at 8.8 percent.

(3) Bear Creek Sub-Watershed (contains units E-1 and E-5)

Roaded miles are considered moderately dense at 4.7 miles per square mile, and would not change under this proposal. The drainage network increase due to roads is considered low at 8.8 percent, which is considered low risk for cumulative impacts.

b. Runoff

Two models were used to estimate potential changes in runoff due to the proposed action and other known or potential timber harvest in the analysis areas. These are Equivalent Clearcut Acres (ECA) and Water Available for Runoff (WAR).

Equivalent Clearcut Acreage (ECA's) considers the total acreage in a clearcut like condition within the sub-basin, by multiplying the number of harvested acres by a factor depending on the age of the clearcut. ECA analysis recognizes that the most recent harvest activity causes the most impact, decreasing over time to a point called hydrologic recovery. Hydrologic recovery occurs when overstory canopy cover is 70 percent or greater, and evapotranspiration and runoff characteristics have recovered to pre-harvest conditions. A recovery period of 30 years was used for all stands in the sub-watersheds. Alternative harvest treatments produce different hydrologic responses and therefore are analyzed differently in the calculation of ECA's. Roads are considered as clearcut acres, and thinnings considered recovered if crown closure is maintained. Agricultural lands were treated as recovered acres in this analysis, because the lands are under long-term management and would not be expected to develop into forests in the future. Sub-basins with ECA values below 15 percent are considered to have low risk of impacts to water

quality and flow due to forest harvest and roading, while 15 to 20 percent is considered moderate risk of impact, and above 20 percent high risk of impact. Although ECA does not address the mechanisms involved with changes in flows, recent research by Jones and Grant (1996), and Grant (personal communication by John Barber, Soils and Hydrology Specialist on the IDT) indicate ECA type analysis can provide some measure of the overall intensity of management activities. A rating of high is an indicator that a cumulative effects problem may exist, and a more in-depth study should be undertaken to determine impacts on the ground.

Water Available for Runoff (WAR) analysis estimates potential increases in peakflows during rain on snow events due to increasing openings in the forest canopy. Transient snow zones (TSZ) are areas where snow normally accumulates and melts several times a winter, often melting rapidly. Openings in the forest canopy in TSZ areas increase the amount of snow accumulating on the ground, and provides more runoff when rain on snow storm events occur.

Stream channel dimensions and characteristics adjust to accommodate the bankfull flows, which correspond to the 2-year event in lower gradient streams and apparently to the 5-year event in steeper mountain streams (Washington Forest Practices Board 1993). Change in the magnitude of frequent flood flows can affect channel scour and may affect fish habitat. The cumulative effect of increases in runoff can be large, causing flooding, stream channel and bank damage.

The potential for rain on snow flow enhancement was estimated using the procedure outlined in *Standard Methodology for Conducting Watershed Analysis* (Washington Forest Practices Board 1992). The sub-watersheds were analyzed using a weighting system based on the dominant precipitation type (rain, transient snow, snow), and the percent of the area with canopy cover in three different categories (open, sparse, small or large dense). The equations given in the Washington publication were modified using data from northern Oregon Cascade climate stations. Using this method the change in water available for runoff (WAR) from rain on snow events were calculated. The WAR values were then used to estimate increases in peak flows during storms using the USGS publication: *Magnitude and Frequency of Floods in Western Oregon* (Harris et al. 1979). Return periods are the peak flows resulting from 24- hour precipitation amounts expected at a given level of frequency; for example once in 5 years for the 5-year return period or once in 50 years for the 50-year return period. The plus (+) sign denotes a given return period precipitation event with the addition of a heavier snow pack on the ground than average, and a warmer storm than average. This situation is often responsible for the severe flood events experienced in the Pacific Northwest.

The units in the “Estimated Increase in Peakflows” tables are in percent change of cubic feet per second streamflow from a fully forested condition to the present condition, and proposed condition after harvest. Due to the inherent error in the peakflow prediction method, changes up to 10 percent are usually below the detection limits of stream gages. Given this limitation, hydrologic change may not become visible until the percent change over fully forested condition approaches 10 percent. An increase in volume of 20 percent has been suggested as a general rule of thumb to move a 5-year flow event to a two-year flow event (Washington Forest Practices Board 1993). The figure below lists predicted percent increase in peak flows under current conditions for standard storm conditions and major rain on snow events (+ storms) compared with the sub-watershed in a fully forested condition. Changes in the more frequent storm events (5 and 5+) were used as an indicator of effects on channel maintenance, dynamics, and fisheries habitat.

Changes in the less frequent events (50 and 50+) may have profound effects on stream floodplains and flood related damage.

(1) Upper Jordan Creek Sub-Watershed

**Existing and Estimated Future Equivalent Clearcut Acres (ECA),
Upper Jordan Creek Sub-watershed, Proposed Action.**

OWNERSHIP	2001 ECA (Acres)	2001 Sub-Watershed ECA (%)	Future Estimated ECA (Acres)	Future Estimated Sub-watershed ECA (%)	Change (%)
BLM	69	2.9	69	2.9	0.0
Other	304	12.9	354	15.0	+6.0
Roads	36	1.6	32	1.5	0.0
Total	421	17.4	455	19.4	+2.0

Current and estimated ECA totals indicate a moderate risk of cumulative impact from forestry management actions in the sub-basin. Equivalent clearcut acreage (ECA) could increase from 17.4 percent to 19.4 percent with all proposed actions in the sub-watershed. BLM actions have contributed 2.9 percent of the 17.4 percent current condition ECA. BLM’s proposed actions would not have a significant effect on raising ECA totals, due to the amount of canopy cover remaining after thinning. Sub-watersheds with ECA values between 15 and 20 percent are considered at moderate risk of negative impact.

Approximately 60 percent of the sub-watershed is in the transient snow zone.

**Estimated Increase in Peakflows, Above Fully Forested Condition in
Upper Jordan Creek Sub-Watershed (Percent).**

	Proposed Action		
	Existing	Proposed ¹	Change
5 Year Storm Event	0.0	0.0	0.0
5+ Year Storm Event	15.7	17.6	+1.9
50 Year Storm Event	0.0	0.0	0.0
50+ Year Storm Event	13.1	14.7	+1.6

¹ 50 acres of regeneration harvest by other landowners were added to both alternatives to estimate private harvest in the near future.

WAR modeling of rain on snow peakflow events estimated existing peakflows to be less than 10 percent greater (0%, no significant change) than fully forested conditions for standard storms, and less than 20 percent greater for major rain-on snow storms (15.7% for major 5 year storms and 13.1% for major 50 year storms). WAR analysis indicates the risk of cumulative impact to

stormflows is low during typical storms, and moderate during major rain-on-snow events. Proposed and estimated harvests would raise existing values somewhat 1.9 percent for major 5 year storms and 1.6 percent for major 50 year storms, but the estimated increases in peakflows compared to a fully forested condition are still not above the 20 percent level considered to be a high potential for cumulative impacts (20 percent).

(2) Middle Thomas Creek Sub-Watershed

Existing and Estimated Future Equivalent Clearcut Acres (ECA), Middle Thomas Creek Sub-watershed, Proposed Action

OWNERSHIP	2001 ECA (Acres)	2001 Sub-Watershed ECA (%)	Future Estimated ECA (Acres)	Future Estimated Sub-watershed ECA (%)	Change (%)
BLM	41	1.8	52	2.3	+0.5
Other	274	12.0	324	14.1	+2.1
Roads	45	2.0	45	2.0	0.0
Total	360	15.8	421	18.4	+2.6

Current and estimated ECA totals indicate a moderate risk of cumulative impact from forestry management actions in the sub-basin. ECA could increase from 15.8 percent to 18.4 percent with all proposed actions in the sub-watershed. BLM actions have contributed 1.8 percent of the 15.8 percent current condition ECA. BLM’s proposed actions would increase the ECA total approximately 0.5 percent. Sub-watersheds with ECA values between 15 and 20 percent are considered at moderate risk of negative cumulative impacts.

Approximately 50 percent of the sub-watershed is in the transient snow zone.

Estimated Increase in Peakflows, Above Fully Forested Condition in Middle Thomas Creek Sub-Watershed (Percent).

	Proposed Action		
	Existing	Proposed ¹	Change
5 Year Storm Event	0.0	0.0	0.0
5+ Year Storm Event	12.6	13.6	+1.0
50 Year Storm Event	0.0	0.0	0.0
50+ Year Storm Event	10.5	11.3	+0.8

¹ 50 acres of regeneration harvest by other landowners were added to both alternatives to estimate private harvest in the near future.

WAR modeling of rain on snow peakflow events estimated existing peakflows to be less than 10 percent greater (0%, no significant change) than fully forested conditions for standard storms, and

less than 20 percent greater for major rain-on snow storms (12.6% for major 5 year storms and 10.5% for major 50 year storms). WAR analysis indicates the risk of cumulative impact to stormflows is low during typical storms, and moderate during major rain-on-snow events. Proposed and estimated harvests would raise existing values 1.0 percent for major 5 year storms and 0.8 percent for major 50 year storms, but the estimated increases in peakflows compared to a fully forested condition are still below the 20 percent level considered to be a high potential for cumulative impacts.

(3) Bear Creek Sub-Watershed

**Existing and Estimated Future Equivalent Clearcut Acres (ECA),
Bear Creek Sub-watershed, Proposed Action**

OWNERSHIP	2001 ECA (Acres)	2001 Sub-Watershed ECA (%)	Future Estimated ECA (Acres)	Future Estimated Sub-watershed ECA (%)	Change (%)
BLM	19	0.8	19	0.8	0.0
Other	195	8.0	245	10.1	+2.1
Roads	46	2.0	46	2.0	0.0
Total	260	10.8	310	12.9	+2.1

Current and estimated ECA totals indicate a low risk of cumulative impact from forestry management actions in the sub-basin (ECA less than 15 percent). ECA could increase from 10.8 percent to 12.9 percent with all proposed actions in the sub-watershed. BLM actions have contributed 0.8 percent of the 10.8 percent current condition ECA. BLM’s proposed actions would not have a significant effect on raising ECA totals, due to the amount of canopy cover remaining after thinning. Sub-watersheds with ECA values less than 15 percent are considered at low risk of negative impact.

Approximately 20 percent of the sub-watershed is in the transient snow zone.

**Estimated Increase in Peakflows, Above Fully Forested Condition in
Bear Creek Sub-Watershed , Proposed Action (percent).**

	Proposed Action		
	Existing	Proposed ¹	Change
5 Year Storm Event	0.0	0.0	0.0
5+ Year Storm Event	8.5	9.9	+1.4
50 Year Storm Event	0.0	0.0	0.0
50+ Year Storm Event	7.1	8.3	+1.2

¹ 50 acres of regeneration harvest by other landowners were added to both alternatives to estimate private harvest in the near future.

WAR modeling of rain on snow peakflow events estimated existing peakflows to be less than 10 percent greater than fully forested conditions for typical and major rain-on snow storm events. Harvest levels proposed would increase the WAR values above current conditions, but peakflows would not be expected to increase above 20 percent of the fully forested condition flows. WAR analysis indicates the risk of cumulative impact to stormflow is low during both typical storms, and major rain-on-snow events.

WAR modeling of rain on snow peakflow events estimated existing peakflows to be less than 10 percent greater (0%, no significant change) than fully forested conditions for both standard storms and for major rain-on snow storms (8.5% for major 5 year storms and 7.1% for major 50 year storms), a low risk of cumulative impacts. Proposed and estimated harvests would raise existing values 1.4 percent for major 5 year storms and 1.2 percent for major 50 year storms, but the estimated increases in peakflows compared to a fully forested condition are still below the 10 percent level considered to be a moderate potential for cumulative impacts.

c. Summary conclusions for cumulative effects to water quality and temperature

- (1) The Upper Jordan Creek sub-watershed is in the moderate risk category for ECA, and WAR. The proposed BLM and estimated private harvesting would not push the watershed into a higher category. The design features incorporated in riparian reserve units would protect streams from increases in temperature and additions of sediment. The design features incorporated into the text of the environmental assessment would protect the sub-watershed from the proposed level of BLM harvest without negative long-term effects.
- (2) The Middle Thomas Creek sub-watershed is in the low to moderate risk category for ECA, and WAR. The proposed BLM and estimated private harvesting would not push the watershed into a higher category. The design features incorporated in riparian reserve units would protect streams from increases in temperature and additions of sediment. The design features incorporated into the text of the environmental assessment would protect the sub-watershed from the proposed level of BLM harvest without negative long-term effects.
- (3) The Bear Creek sub-watershed is in the moderate to low risk category for ECA, and WAR. The proposed BLM and estimated private harvesting would not push the watershed into a higher category. The design features incorporated in riparian reserve units would protect streams from increases in temperature and additions of sediment. The design features incorporated into the text of the environmental assessment would protect the sub-watershed from the proposed level of BLM harvest without negative long-term effects.

3. Potential Negative Consequences

a. Sediment:

- (1) Removing the culvert from the seasonal stream during road decommissioning in Section 31 would disturb currently stable soil and potentially introduce

sediment into this seasonal stream. Sediment introduced is expected to be minor and short-term (less than one wet season) with the design features described.

- (2) Falling trees adjacent to the stream could disturb small patches of soil on or near stream banks which could introduce sediment. This would be less of an effect than natural events which would tend to uproot trees during the wet season and disturb comparatively large areas of soil during weather and soil conditions which would tend to introduce more sediment.
 - (3) Sediment introduced into streams from yarding, road construction and decommissioning, and log hauling operations is expected to be negligible due to the seasonal operating restrictions and other design features as described.
 - (4) Recovery period is expected to be two years. See the Hydrology/Soils report for the full analysis.
- b. **Temperature:** Temperature increase from opening the canopy in riparian reserves is expected to be negligible. The streams where riparian treatments are proposed have little or no summertime flow to be affected, and the orientation of the streams and the selection criteria for trees to be felled would minimize increased sunlight directly on the streams.
- c. **Weed and brush species:** Soil disturbance and increased light to the ground would provide opportunities for undesirable weed and brush species to increase growth in the Riparian Reserve. Brush and any weed populations in these areas would be expected to decline in vigor as the canopy closed again over the next few years.
- d. **Fisheries:** Construction of the 250 foot natural surface spur road in Unit E-5 has the potential to produce sediment runoff if the road is left to overwinter, rather than be removed in the same season it is built. If the road is left to overwinter, erosion control measures should be taken. Erosion control measures should consist of waterbarring, seeding the fill with native grass and covering the road bed with straw or erosion matting.

Removal of the live-stream culvert on the spur road in the NW¼ of Section 31 is likely to result in some increased sediment input to the stream. This is expected to be minor with the design features and mitigation measures described in this EA.

C. ENVIRONMENTAL CONSEQUENCES FOR AQUATIC CONSERVATION STRATEGY OBJECTIVES (ACSOs)

1. *Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.*

The *Thomas Creek Watershed Analysis Riparian Reserve Assessment* indicates that the federal Riparian Reserve and the private land riparian buffers of the Thomas Creek watershed currently exhibit a high percentage of acres in the early to mid-seral age classes. Very few acres are classified as exhibiting the structure associated with older forest stands (p. 8). The silvicultural treatment proposed offers the opportunity to diversify a small portion of a previously managed Riparian Reserve that is even-aged and lacking in stand structure. Over time, the proposed treatment is expected to result in a forest stand that exhibits attributes typically associated with stands of a more advanced age and stage of structural development. The proposed treatment would be a catalyst to create conditions favorable to initiating understory development and accelerating the attainment of other older forest stand attributes such as large diameter conifers, a larger dead wood component that includes additional stream channel structure, and small canopy gaps. The net effect of this would be a more diverse and structurally complex landscape that would help to protect and enhance adjacent aquatic ecosystems. The proposed actions would allow riparian density management to increase diversity in an even aged, homogeneous riparian conifer stand. In addition, the thinning treatments under the preferred alternative would contribute to increasing the diversity, and complexity of upland areas.

Felling, topping or girdling selected trees throughout the Riparian Reserve in the vicinity of the proposed timber harvest units would increase the structural complexity and diversity of these homogeneous stands.

2. *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

The *Thomas Creek Watershed Analysis* indicates that the streams and Riparian Reserve of the Thomas Creek watershed lack structure, complexity, and species diversity (Ch. 6-89). The *Thomas Creek Watershed Analysis Riparian Reserve Assessment* also indicates significant longitudinal connectivity is not feasible in this section of the watershed due to the scattered federal ownership pattern (p. 9). This project would have little effect on direct connectivity between watersheds, but it is anticipated that it would help to strengthen the lateral connection between stream channels and the adjacent uplands. It would do this by restoring the stand structural components (described in ACSO #1) that were lost due to past management practices. These elements of a diverse forest stand structure have been described as a driver of ecosystem processes and biological diversity (Spies, 1998). Both the no action and proposed action would maintain the current quality of connectivity within and between stands and between watersheds through protection of Riparian Reserves since no part of the Riparian Reserve would be thinned to less than 70 percent canopy closure, and so would not be opened below threshold closures.

The decommissioning of existing roads, under the proposed actions, would reduce overall road mileage in riparian reserves, and assist in restoring drainage network connections and physically unobstructed routes for animal species in these areas.

- 3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.*

The proposed actions would support maintenance and improvement of the physical integrity of aquatic reserves by hastening the development of desired vegetation characteristics adjacent to streams. Where trees were felled across and into stream channels under the proposed action they would help restore stream channel, bank and bottom structure. Implementation of best management practices to mitigate impacts to the aquatic system would prevent more than minimal short term damage to the physical integrity of the streams and riparian areas. Decommissioning several existing road segments under the proposed actions would reduce road related stormflow and assist in restoration of the physical integrity of the streams and riparian areas.

- 4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

The proposed action would maintain water quality by maintaining an adequate no tree removal buffer (minimum 50 feet) in the riparian thinning density management area, and protecting full Riparian Reserves from any timber harvest (no tree removal) throughout the remainder of the proposed timber harvest area. Implementing “Best Management Practices” (BMP) to mitigate any other potential impacts to the aquatic system, and decommissioning several existing road segments would reduce road related sedimentation and assist in restoration of water quality.

- 5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*

The proposed actions would not prevent or retard restoration of the sediment regime. Post project sedimentation is estimated to be the same or lower than pre-project implementation. Risk of significant sediment inputs are reduced by the employment of Best Management Practices for ground disturbing activities and decommissioning of new and existing roads. Sediment generated as a result of the proposal would be limited in scope, duration, and intensity and would decrease to undetectable levels within two years as natural vegetation recovery takes place. Trees felled into stream channels are expected to aid in retention of sediment and bedload materials.

- 6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

The proposed action would protect habitats with Riparian Reserves, and impacts by sediment are estimated to be minor and short term. Proposed road decommissioning would serve to further improve natural routing of water and reduce the amount of runoff entering streams from road drainage. Peak flows would increase by less than one percent as a result of the proposed action and would not affect the magnitude, duration, or spatial distribution of flows. Trees felled into stream channels are expected to aid in retention of sediment and nutrients, as well as increase the supply of instream wood for future routing down the stream channels.

7. *Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.*

Riparian Reserve protection measures would maintain current floodplain inundation characteristics and contribute to the long range restoration of them by developing desirable stand characteristics and stream structure. All meadows and wetlands would also be protected under the proposed actions.

Falling of trees into the stream channels would provide additional instream structure that is expected to aid in water retention which may help to restore the timing, variability and duration of floodplain inundation and increase the water table elevation. No activities associated with the proposed action are expected to have any detrimental effects on the timing, variability and duration of floodplain inundation or water table elevation. The proposed action would not prevent attainment of ACS objectives.

8. *Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.*

The proposed actions would maintain species composition and increase diversity in an even aged, homogeneous Riparian Reserve conifer stand. In addition, the thinning treatments under the preferred alternative would contribute to increasing the diversity, and complexity of upland areas. Felling, topping or girdling selected trees throughout the Riparian Reserve in the vicinity of the proposed timber harvest units would increase the structural complexity and diversity of these homogeneous stands, while maintaining thermal regulation, nutrient filtering, erosion rates and channel migration characteristics. Falling of trees in the stream channels and riparian areas will increase the amount and distribution of coarse woody debris which will help sustain the physical complexity and stability that a naturally functioning system needs.

9. *Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

The proposed actions would increase diversity in an even aged, homogeneous riparian conifer stand which will begin the process of habitat restoration for riparian dependent species. Trees felled into stream channels are expected to aid in retention of sediment and nutrients, as well as

increase the supply of instream wood, all of which will aid in restoration of habitat for native aquatic species.

D. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE A, THE PROPOSED ACTION, FOR UPLAND HABITAT OBJECTIVES

1. Expected Fulfillment of Objectives

- a. **Structural diversity:** The proposed commercial thinning harvest in Units A, E-1 and E-5 would accelerate the development of structural diversity and larger average tree size which are characteristic of late successional forest habitat, which is under represented in this area.
- b. **Uneven aged forest:** The proposed selection harvest in Unit B would accelerate the development of structural diversity and the presence of all age/size classes of multiple conifer species which are characteristic of uneven aged forest habitats. This type of complex habitat is scarce in this area.
- c. **Late-successional/Old growth characteristics:** Retaining the largest trees in the stands and protecting them from logging damage would ensure the most rapid development possible of trees with old growth characteristics.
- d. **Snag, cull tree and CWD habitat:** The proposed action would accelerate the development of snag, cull tree and CWD habitat in these stands to replace these habitat elements which were essentially eliminated by past management practices.
- e. **Listed species:** Design features and mitigation measures described in this EA (including excluding known populations of listed species from the proposed timber harvest area) are expected to ensure that the Proposed Action does not preclude the recovery of any listed species and that it does not contribute to the need to list any species. Some timber harvest units were eliminated from the proposed action, or reduced in size, to avoid potential impacts to populations of listed species.
- f. **Late successional forest in the landscape:** In the short run the proposed action would not reduce the amount of late-successional forest in the watershed since none would be harvested. In the long run the proposed action would hasten the development of LSOG characteristics in stands so that they develop sooner and at younger stand ages than if no action were to be taken.

2. Potential Negative Consequences

- a. **Direct impact to plants and animals:** Individual plants and animals (or small population pockets) which are not surveyed for, which were not discovered during surveys, or which are known to exist but do not require any protection measures

could be directly impacted (for example, run over) by logging or other management activities described as the Proposed Action.

- b. **Habitat changes:** The canopy and understory would be quickly modified by management activities so that there would be a rapid change in habitat for some species. While there is an abundance of similar habitat in the vicinity, individual plants and animals (or small population pockets) for which surveys are not required which are not surveyed for, which were not discovered during surveys, or which are known to exist but do not require any protection measures could be negatively affected by this change in habitat, especially species with no or limited mobility. Design features and mitigation measures described in this EA (including excluding known populations of listed species from the proposed timber harvest area) are expected to ensure that the Proposed Action does not preclude the recovery of any listed species and that it does not contribute to the need to list any species.
- c. **Plant species composition:** Some brush, weed and other understory plant species would grow more rapidly after opening the canopy by timber harvest (less so in Unit B due to burning), which would also make the habitat less suitable for some plant or animal species which currently inhabit these stands.
- d. **Air quality:** Smoke from prescribed fire in Unit B would contribute to air pollution. This would be minimized by adherence to the burning prescription and DEQ/Smoke Management standards and requirements.

E. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE B, “NO ACTION”

1. Expected Fulfillment of Objectives

- a. **Legal requirements:** For the potential harvest units which were considered but eliminated from further analysis, the “No Action” alternative was selected to fulfill legal requirements for management and/or other management objectives which conflicted with timber harvest objectives. These were described earlier in this EA.
- b. **Timber harvest:**
 - (1) Long term timber productivity would be maintained.
 - (2) Total biomass, or fiber, grown would be similar to, or somewhat higher than, the productivity of the Proposed Action. However, higher value saw log or veneer log quantity would be reduced compared to the Proposed Action since the total biomass growth would be spread over more, and generally smaller, trees.
- c. **Riparian, etc.:**

- (1) All elements of the Aquatic Conservation Strategy Objectives (ACSOs) would be met, generally at the “Maintain” level. See discussion of ACSOs under the Proposed Action for the text of the ACSOs using the same numbering system as the following.

ACSO Number	For each numbered ACSO, the no action alternative would:
1	- assist in maintaining the current state of landscape scale features, but not provide for restoration
2	- maintain the current quality of connectivity within and between stands and between watersheds and maintain the current rate of developing habitat complexity by having no disturbance within the Riparian Reserves.
3	- support maintenance and eventual improvement of the physical integrity of aquatic systems on federal lands as Riparian Reserves mature.
4	- maintain the existing water quality on federal lands, including any detrimental effects resulting from leaving intact the roads proposed for decommissioning
5	- maintain the existing sediment regime on federal lands, including any detrimental effects resulting from leaving intact the roads proposed for decommissioning.
6	- allow slow improvement of the current streamflow, sediment, nutrient, and wood routing regimes as the forest stands mature. However, existing roads would continue to impact streamflow and sediment routing to streams.
7	- allow some restoration of flood plain inundation through full protection of Riparian Reserves.
8	- maintain the current species composition and rate of developing structural diversity of plant communities. Structural diversity would not develop as quickly as under the Proposed Action and some desirable large tree characteristics may not develop at all.
9	- maintain the current habitat which has been simplified by past management.

- (2) **Habitat:** Habitat for plant and animal species (including special status species) which are now present in Riparian Reserve, riparian habitat and streams would be undisturbed, changing slowly through natural processes.
- (3) **Need for legal protection:** BLM management practices would not increase the need for legal protection of species now present in these habitats.

d. **Upland habitat:**

- (1) **Habitat:** Habitat for plant and animal species (including special status species) which are now present in the upland habitats would be undisturbed, changing slowly through natural processes.

- (2) **Need for legal protection:** BLM management practices would not increase the need for legal protection of species now present in these habitats.

2. Potential Negative Consequences

a. Timber harvest:

- (1) **Supply of timber:** There would be no, or reduced immediate supply of timber, depending on whether all or some of the potential units were selected for “no action”.
- (2) **Wood products quality:** Some or all of the opportunity to concentrate growth on crop trees for higher quality wood products would be lost.
- (3) **Mortality:** Trees which would die due to competition would not be harvested for wood products.

b. Riparian, etc.:

- (1) **Restoring ACSO elements:** If the “No action” alternative is applied to the proposed timber harvest, the opportunity to “restore” elements of the Aquatic Conservation Strategy Objectives through silvicultural practices in the Riparian Reserves would be reduced or lost because the proposed timber sale would have provided the means to accomplish some of the restoration treatments.
- (2) **Restore hydrologic function:** If the “no action” alternative is applied to the proposed timber harvest, the opportunity to partially restore hydrologic functions interrupted by the existing roads proposed for decommissioning would be lost or reduced because the proposed timber sale would have provided the means to accomplish this decommissioning.
- (3) **Restoring ACSO elements:** If the “no action” alternative is applied to all treatments in the Riparian Reserve, the restoration of those elements of the associated ACSOs would not be accomplished and the desired characteristics would develop more slowly through natural processes.

c. Upland habitat:

- (1) **Snag, cull and CWD:** Larger average tree diameter, size and quality of snags and cull trees, and size and quality of CWD in the affected stands would develop more slowly through natural processes in these previously managed stands than they would with the proposed actions implemented.

IX. CONSULTATION

In addition to the interdisciplinary team that developed and reviewed this proposed action, the following agencies or individuals were or would be consulted:

U.S. Fish and Wildlife Service
U. S. Forest Service
Environmental Protection Agency
National Marine Fisheries Service
Oregon Department of Forestry
Oregon Department of Fish and Wildlife
Linn County Board of Commissioners
Northwest Forestry Association
Northwest Environmental Defense Center
Oregon Natural Resources Council
Oregon Wildlife Federation
Pacific Rivers Council
American Lands Alliance
Freres Lumber Co., Inc.
Frances Philipek, BLM, Archeologist
Confederated Tribes of Warm Springs
Confederated Tribes of Grande Ronde
National Council for Air and Stream Improvement (NCASI)

ADJACENT LANDOWNERS

Longview Fibre

ADDITIONAL REFERENCES

- Bailey, J.D. and Tappeiner, J.C. ; 1998. Effects of thinning on structural development in 40 to 100 year old Douglas-fir stands in Western Oregon. *Forest Ecology and Management*. 108:99-113
- Hostetler, B.B., and Ross, D.W.; 1996. Generation of Coarse Woody Debris and Guidelines for Reducing the Risk of Adverse Impacts by Douglas-fir Beetle. *Personal Paper*.
- Spies, T.A.; 1998 Forest Structure: A Key to the Ecosystem. *Northwest Science*, Vol. 72, Special Issue No. 2, pp. 34-39
- Tappeiner, J.C., David Huffman, David Marshall, Thomas A Spies, and John Bailey; 1997. Density, Ages, and Growth Rates in Old-Growth and Young-Growth Forests in Coastal Oregon.

VI. LIST OF PREPARERS/INTERDISCIPLINARY TEAM MEMBERS

NAME	TITLE	RESOURCE ASSIGNED	INITIALS	DATE
Sam Caliva	Fuels Specialist	Fuels/Air	SCC	6/11/2001
John Barber (replacing John DePuy)	Soils Scientist	Soils/Water	JB	6/12/01
Terry Fennell	Botanist	Botany, Noxious Weeds	TF	6/11/01
Laura Graves	Recreation Planner	Visual/Recreation/Wild and Scenic Rivers	LG	6/14/01
John Caruso	Forester	Cultural Resources	JRC	6/11/2001
Vince Cargile	Forester	Plans, NFP Coordination	VC	6-12-01
Jim Irving	Terrestrial Biologist	Wildlife/Fisheries	JIR	6/12/01
Bob Jordan	Forest Technician	Engineering	RWJ	6/20/01
Dan Schlottmann	Forester	Silviculture	DS	6/12/01
Dave Roberts	Aquatic Biologist	Fisheries/Aquatic Resources	DR	6/11/01
Dave Rosling	Riparian Ecologist	Riparian Ecology	DER	6/11/01
Keith Walton	Forester	IDT Lead Sale Layout/Contract Logging Systems	KW	6-9-01

Reviewed by Environmental Coordinator: Carolyn Woods Date: 7/10/01

Appendix A - Project Design Features

South McCully Timber Sale - ALTERNATIVE A

Management Activity	Unit A	Unit B	Unit E-1	Unit E-5	Totals
Harvest Method	Commercial Thinning	Commercial Thinning Regeneration	Commercial Thinning	Commercial Thinning	
Unit Size	59	13	53	18	143
Estimated Volume	1003 CCF	221 CCF	901 CCF	306 CCF	2431 CCF
Cable (no suspension)	0	0	0	0	0
Cable (partial suspension)	0	0	0	18	18
Ground-based	60	13	53	0	126
New Construction	0	0	0	0	0
Decommissioning as part of the timber sale contract	2608	0	0	250	2858
Decommissioning not part of the Timber Sale contract	675	0	0	0	675
Broadcast burning	0	13	0	0	0
Slashing residual Vegetation	0	13	0	0	0
Fire Trail Construction (ft)	0	0?	0	0	0

Appendix B: Environmental Elements Review Summary

The following table summarizes:

1. Environmental features which the Bureau of Land Management is required by law or policy to consider in all Environmental Documentation (BLM Handbook H-1790-1, Appendix 5: Critical Elements of the Human Environment).
2. Additional resources to be considered based on RMP monitoring efforts. These resources are shown in italics.

Table 1 in Chapter 1 shows where the Environmental Elements or Additional Resources affected by this project are discussed in this EA.

ENVIRONMENTAL ELEMENT or ADDITIONAL RESOURCE	EFFECT		REMARKS
	YES	NO	
Air Quality	x		
Areas of Critical Environmental Concern		x	Not present within the project area
Cultural, Historic, Paleontological Resources		x	Surveyed, No resources of concern found
Native American Religious Concerns		x	None were identified during the scoping process
Special Status/Threatened or Endangered Plant Species	x		
Special Status/Threatened or Endangered Animal Species	x		
Invasive, Non-native Species	x		
Prime or Unique Farm Lands		x	
Flood Plains		x	Not present within the project area
Hazardous or Solid Wastes		x	Not present within the project area
Water Quality (Surface and Ground Water)	x		
Water/Fisheries Resources	x		
Riparian Habitat	x		
Wetlands	x		
Wild/Scenic Rivers		x	Not present within the project area
Wilderness		x	Not present within the project area
Environmental Justice		x	Not present within the project area
<i>Adjacent Land Uses</i>		x	No issues identified in scoping process
<i>Mineral Resources</i>		x	Not present within the project area
<i>Recreation/ Visual Resources</i>	x		

ENVIRONMENTAL ELEMENT or ADDITIONAL RESOURCE	EFFECT		REMARKS
	YES	NO	
<i>Soil Resources</i>	x		
<i>Vegetation/ Botanical Resources (including late successional habitat)</i>	X		
<i>Fisheries</i>	x		
<i>Fuels Management</i>	x		
<i>Forest Productivity</i>	x		
<i>Special Habitats</i>		x	Not present within the project area
<i>Un mapped LSRs</i>		x	Not present within the project area
<i>Owl Critical Habitat Units (CHUs)</i>		x	Not present within the project area

**EXHIBIT C - SPECIAL STATUS/SPECIAL ATTENTION WILDLIFE SPECIES
KNOWN & SUSPECTED**

OCCURRENCE: SPECIES & STATUS HABITAT DESCRIPTION

INVERTEBRATES

D **PROPHYSAON COERULEUM** **SM**

blue gray tail-dropper Coniferous forest floor in association with ferns, hardwood and coniferous leaf litter.

D **PROPHYSAON DUBIUM** **SM**

papillose tail-dropper Coniferous forest floor in association with ferns, hardwood and coniferous leaf litter.

HERPETOFAUNA

S **RHYACOTRITON CASCADAE** **BT**

Cascade torrent salamander Prefers small cold streams and springs with water seeping through moss-covered gravel. Most common in mature and old-growth conifer forests below 3500 feet.

S **ANEIDES FERREUS** **BT**

clouded salamander Prefers the spaces between loose bark on down logs in forests, forest edges, and clearings created by fire.

D **BATRACHOSEPS WRIGHTI** **BS**

Oregon slender salamander West slope of Cascades. Prefers down logs and woody material in more advanced stages of decay. Most common in mature and old-growth conifer forests.

S **ASCAPHUS TRUEI** **SOC/BS**

tailed frog Cold, fast-flowing permanent springs and streams in forested areas. Has a very narrow temperature tolerance.

D **RANA AURORA** **SOC/BS**

red-legged frog Common in marshes, ponds, and streams with little or no flow, from the valley floor to about 2500 feet in mountain forests. Can occur in seasonal waters if wet until late May or June.

BIRDS

S **ACCIPITER GENTILIS** **SOC/BS**

Northern goshawk Rare Summer resident in Cascades. Prefers mature or old-growth forests with dense canopy cover at higher elevations. Winters at lower elevations.

S **GLAUCIDIUM GNOMA** **BT**

Northern pygmy owl Uncommon permanent resident. Coniferous/mixed forests and edges.

D **STRIX OCCIDENTALIS CAURINA** **LT**

Northern spotted owl Permanent resident. Prefers mature and old-growth conifer forests with large down logs, standing snags in various stages of decay, high canopy closure and a high degree of vertical stand structure.

D **DRYOCOPUS PILEATUS** **BT**

pileated woodpecker Common permanent resident. Prefers to nest in old-growth and mature forests. Also forages in younger forests containing mature or old-growth remnants. Requires larger snags and down wood.

S **CONTOPUS COOPERI** **SOC/BS**

olive-sided flycatcher Uncommon summer resident in more open coniferous forest and edge with prominent tall snags or trees that serve as foraging and singing perches.

D **SIALIA MEXICANA** **BT**

western bluebird Uncommon permanent resident in Willamette Valley and adjacent foothills. Open areas with standing snags, or small farms with diversified agriculture. Nests in woodpecker cavities or artificial nest boxes. Western Oregon populations.

MAMMALS

S LASIONYCTERIS NOCTIVAGANS B

silver-haired bat Associated with snags, loose bark and cliff/cave habitat. Forages in a variety of forest habitats and riparian areas.

S MYOTIS EVOTIS SOC/BS/B

long-eared myotis Associated with snags, loose bark, buildings and cave habitat. Prefers older forests. Forages over water and riparian areas.

S MYOTIS VOLANS SOC/BS/B

long-legged myotis Associated with snags, loose bark and cliff/cave habitat. Prefers older forests. Forages over water and riparian areas.

S MYOTIS YUMANENSIS SOC/BS

yuma myotis Associated with snags, buildings and cliff/cave habitat. More closely associated with riparian areas than the other myotis. Prefers older forests. Forages over water and riparian areas.

S MARTES AMERICANA BS

pine marten Mature and old-growth forests containing large quantities of standing snags and downed logs, in the more isolated portions of the Resource Area. Prefers wetter forests, often near streams.

S PHENACOMYS LONGICAUDUS SM

red tree vole This arboreal vole prefers mature/older forests with closed canopies, generally below 3000 feet.

KEY

Occurrence:

S = Suspected (highly likely to occur)

D = Documented to occur

Status:

LE = Federal endangered

LT = Federal Threatened

SOC = Species of Concern & Bureau Sensitive

BS = Bureau Sensitive

BA = Bureau Assessment

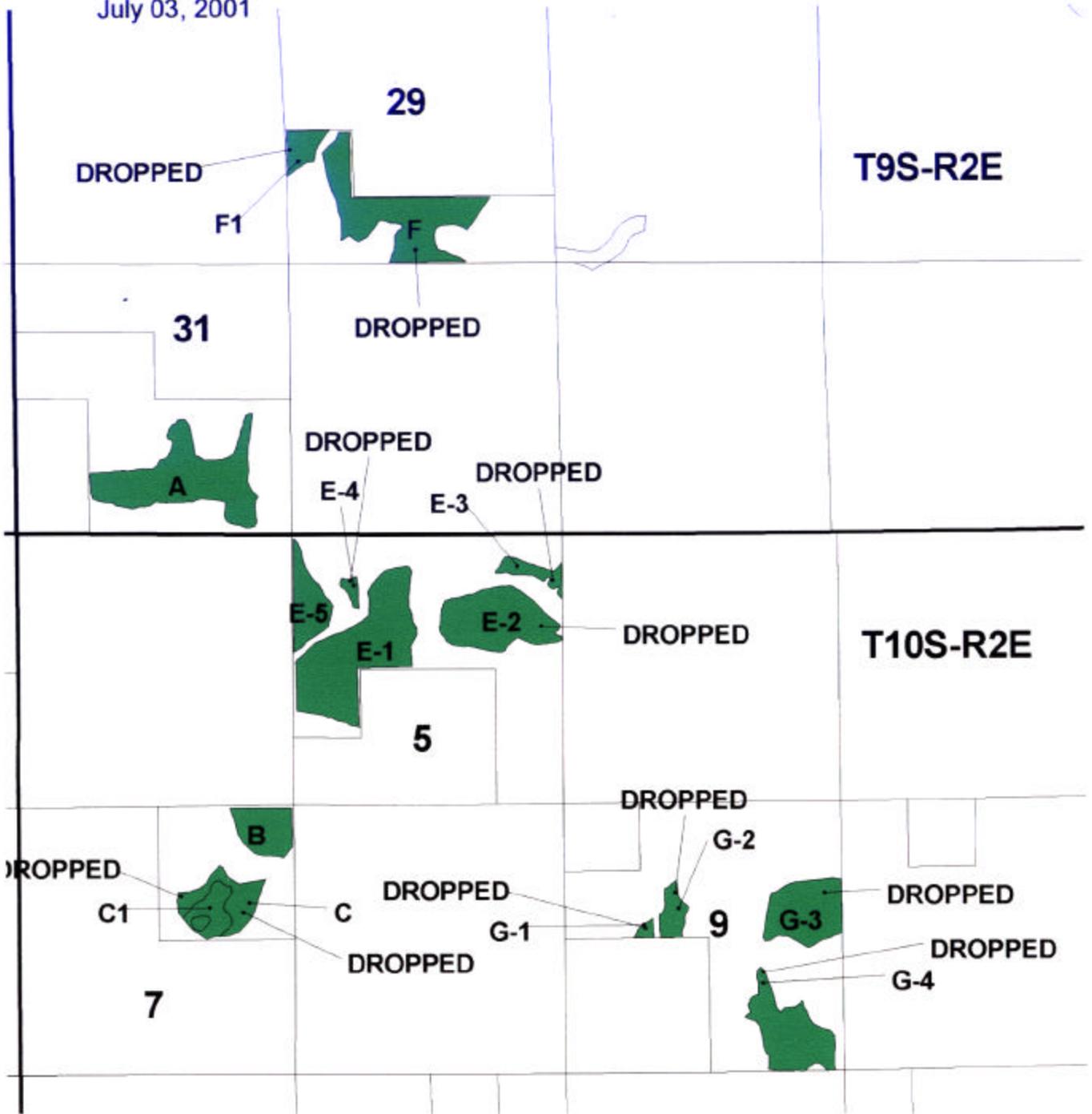
BT = Bureau Tracking

SM=ROD Survey and Manage

B=ROD Buffer or extra protection species

MAPS

July 03, 2001



South McCully Timber Sale

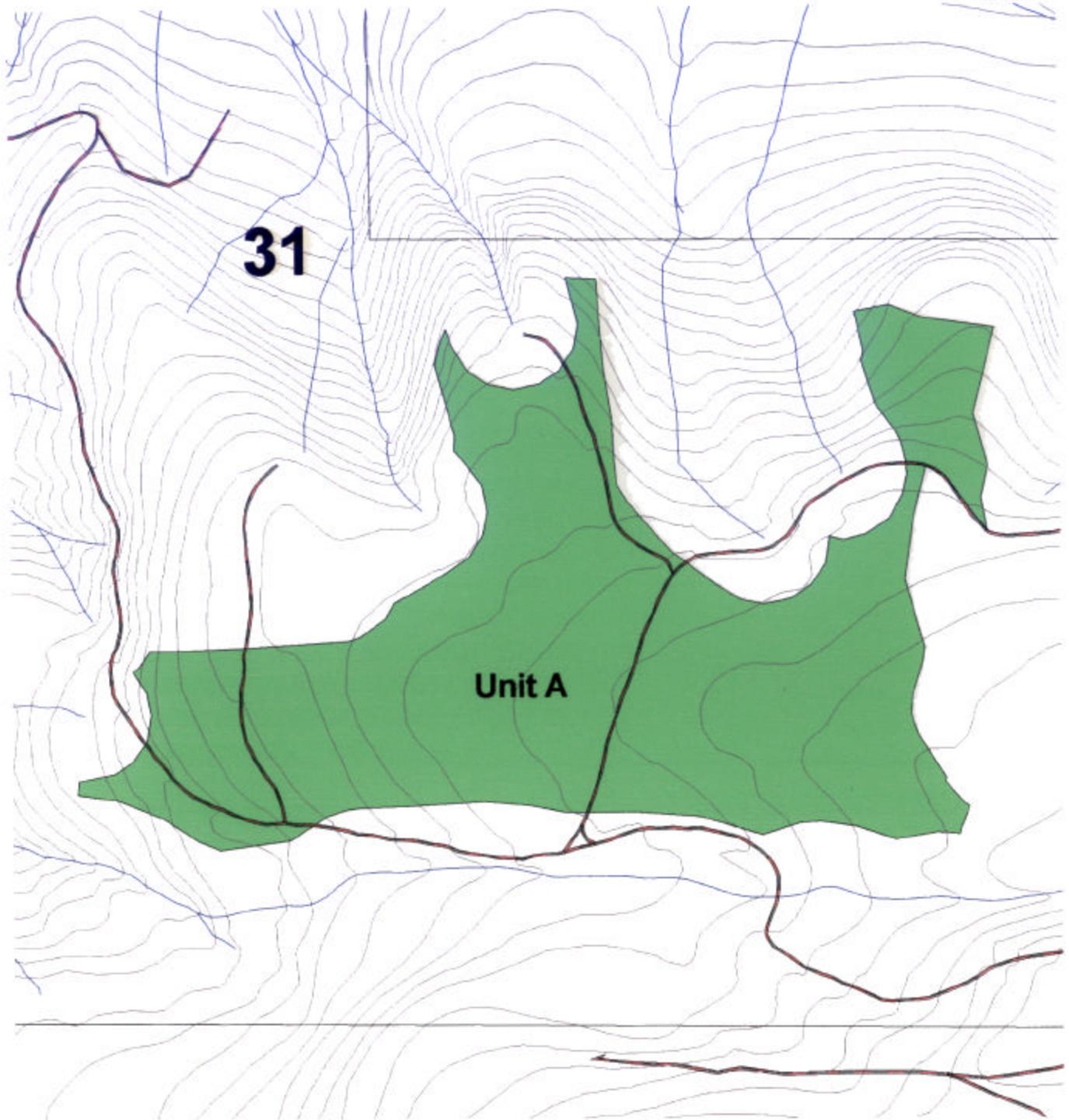


1:36000

- Planned Units
- Townships
- Sections
- Cas_lli

No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the Bureau of Land Management.





**South McCully
T9S-R2E
Section 31
Unit A**



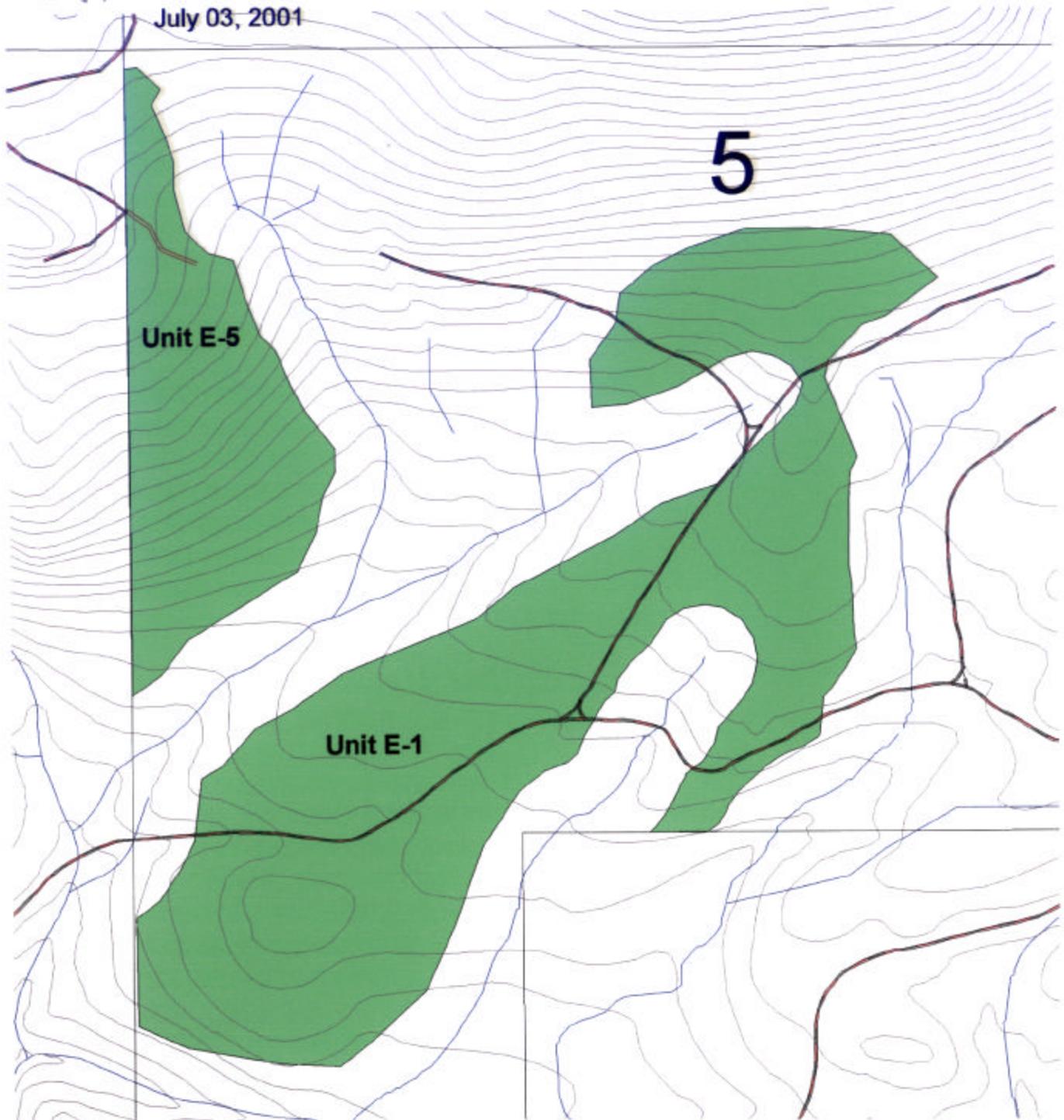
1:6000

No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the Bureau of Land Management.

-  Sections
-  20 Ft. Contours
-  Cas_III
-  Existing Roads
-  Newroad.shp
-  Unit A
-  Streams



July 03, 2001



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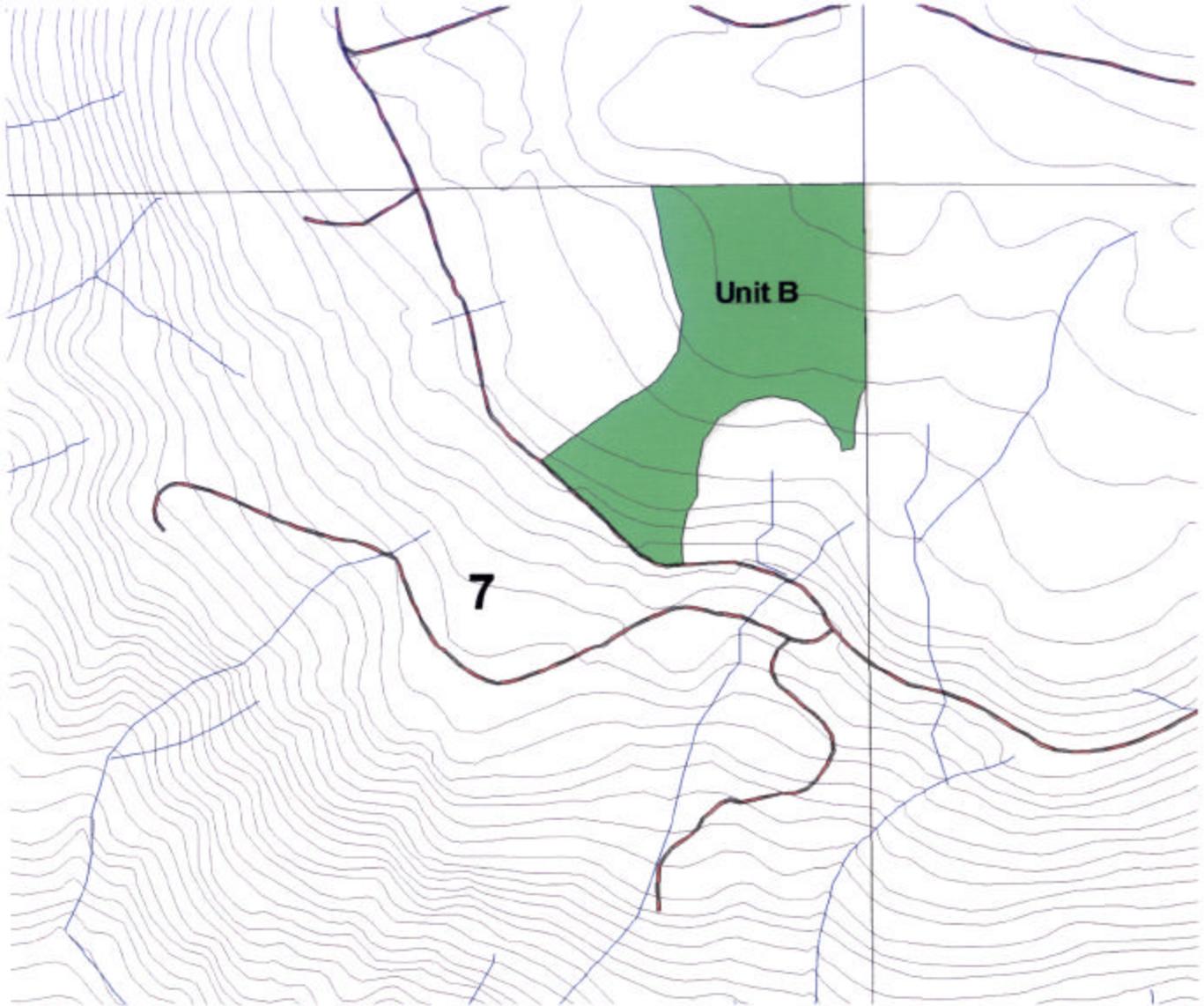
**South McCully
T10S-R2E
Section 5
Units E-1 & E-5**

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-  Sections
-  20 Ft. Contours
-  Cas_lli
-  Existing Roads
-  Newroad.shp
-  E Units
-  Streams



July 03, 2001



1:6000



**South McCully
T10S-R2E
Section 7
Unit B**

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-  Sections
-  20 Ft. Contours
-  Cas_III
-  Existing Roads
-  Newroad.shp
-  Unit B
-  Streams

