

CROOKED CREEK ANALYSIS AREA
REVISED ENVIRONMENTAL ASSESSMENT

No. OR 090-EA-99-14

Tract No. E-99-205

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The Bureau of Land Management (BLM) proposes the Crooked Creek Timber Sale that would implement commercial thinning activities on approximately 150 acres of BLM lands in T. 15 S., R. 2 W., Secs. 22 and 23. The proposed harvest area is located approximately 4 miles north of Marcola, Oregon. A map of the harvest areas is attached. A watershed analysis has been completed for the Mohawk/McGowan Watershed Analysis Unit. The watershed has approximately 88,000 acres of which the BLM manages approximately 22,780 acres or 25.9 percent. The BLM inventory records indicate the stands being considered for commercial thinning are predominantly 35-40 years old.

Timber harvesting would occur on land allocated as "Matrix" in the Northwest Forest Plan and the 1995 Eugene District Resource Management Plan (RMP). Matrix lands are those Federal lands outside areas identified in the Record of Decision (ROD) for the FSEIS with special restrictions because of other resource values. Portions of the Matrix are available for timber production and other silvicultural activities as long as the Standards and Guidelines included in the ROD are followed (U.S. Bureau of Land Management and U.S. Forest Service 1994, pp 7, 10, C-39).

The Crooked Creek Analysis Area was previously analyzed in December, 1997 in EA No. OR 090-97-40. Since December 1998, Eugene District has developed guidelines for the management of Category 1, 2 and Protection Buffer species and has surveyed for these species within and adjacent to the Crooked Creek Timber sale. The need for updating the original Environmental Assessment (EA) is: (1) to describe the management recommendations for Category 1, 2 and Protection Buffer species, (2) to discuss the environmental impacts of the

management recommendations on Category 1, 2 and Protection Buffer species and (3) to provide additional information and clarity for hydrology/water quality and soils regarding achieving the Aquatic Conservation Strategy (ACS) Objectives. The original need for action still applies and it is as follows:

1.2 Objectives:

- The proposed treatments would meet the following management objectives:
- Fulfill the BLM's mission and policy of providing wood products and jobs in the General Forest Management Area (Matrix) for Fiscal Year 1999.
- Help the Eugene District meet its commercial thinning harvest commitment for FY 1999.
- Comply with the Standards and Guidelines in the Record of Decision (ROD) for the Northwest Forest Plan.

Included as part of the Northwest Forest Plan are guidelines for the management of old-growth related species and the production of a sustainable level of timber. "Survey and manage" provides standards and guidelines to provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens and arthropods that are assumed to be old-growth associated species. The standards and guidelines contains four components (and protection buffer species), each with different priorities and species that they apply to. See the Standards and Guidelines for Management of habitat for late-successional and old-growth related species within the range of the Northern Spotted Owl for the lists of species that each component applies to. Components 1, 2 and Protection Buffer lists apply to the Eugene District. Surveys for Component 3 and 4 species are being done at a regional level by the Regional Ecosystem Office and do not presently apply at the District level. The Eugene District is required to manage known sites of the species on the Component

1 list. Surveying for these species is not required, however when one of these species is located, it becomes a known site. Component 2 species require surveys prior to ground disturbing activities and management of known sites. Protection Buffer species also require surveys prior to ground disturbing activities. These species are assumed to be rare and locally endemic. When located, occupied sites are to be managed for the benefit of the species.

1.3 Conformance

This EA is tiered to the Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, April 1994, and the Eugene District Record of Decision and Resource Management Plan (RMP), June 1995. Actions described in this EA are in conformance with the Aquatic Conservation Strategy (ACS) Objectives listed on page B-11 of the Northwest Forest Plan (NFP) and in Appendix A of this EA. These documents are available for review at the Eugene District Office of the BLM, Eugene, Oregon.

The Analysis File contains additional information used by the Interdisciplinary Team (IDT) to analyze impacts and alternatives and is hereby incorporated by reference.

Plan maintenance documentation postponing surveys for 32 Component 2 and Protection Buffer species was recently completed ("Plan Maintenance Documentation, USDI Bureau of Land Management, To Change the Implementation Schedule for Survey and Manage and Protection Buffer Species," approved March 3, 1999). The Proposed Action and alternatives are in conformance with the direction provided in the Plan Maintenance Documentation. The implementation of the plan maintenance is provided for by BLM planning regulations (43 CFR 1610.5-4).

The effect of the plan maintenance action was

analyzed in an environmental assessment, "To Change the Implementation Schedule for Survey and Manage and Protection Buffer Species," issued October 7, 1998 ("Schedule Change EA"). The analysis contained in the Schedule Change EA is incorporated into this document by reference. Both the Schedule Change EA and the Plan Maintenance Documentation are available for viewing at the Eugene BLM District Office or on the internet at <http://www.or.blm.gov/nwfp.htm>.

1.4 Scoping

The scoping process identified the agency and public concerns relating to the proposed projects and defined the issues and alternatives that would be examined in detail in the EA. The general public was informed of the planned EA by the inclusion of this project in the Eugene District Planning Update.

1.5 IDENTIFIED ISSUES:

The revised EA identified two new issues concerning Survey and Manage and Category 1, 2 and Protection Buffer Species.

1.5.1 Category 1, 2 and Protection Buffer Species - Fungi, Bryophytes and Lichens

Implementation of interim management recommendations.

Key Indicators: Substrate integrity, microclimate

1.5.2 Category 1, 2 and Protection Buffer Species - Mollusks

Implementation of interim management recommendations.

Key Indicators: Presence of big leaf maple, presence of down logs, canopy closure

1.5.3 Issues Identified but Eliminated from Analysis:

1.5.3.1 What are the impacts to 32 Survey and Manage and Protection Buffer Species.

No site specific surveys were completed for any of the 32 Component 2 or Protection Buffer

species listed in the Schedule Change EA. Informal surveys for these species were conducted on some of the harvest areas before it was determined by an interagency team that it was not technically feasible to survey for these species. Individuals of *Ulotia megalospora* were found, incidental to other surveys, and appropriate management actions would be implemented under all alternatives. However, it is possible that additional individuals may reside in the project area.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section describes alternatives identified by the IDT, design features associated with these alternatives and detailed information can be found in the Crooked Creek Analysis Area file.

2.1 Alternative I - Proposed Action

In all areas logging would be accomplished by a combination of cable yarding and an option of using ground based equipment on ground slopes of 35 percent or less. Ground-based equipment would be confined to designated skid trails, which would be subsequently recovered by subsoiling. Ground-based yarding would be seasonally restricted to dry periods. In the cable yarded portion, one-end suspension of logs would be required. Sales of additional timber for tractor skid trails and cable yarding corridors would be consistent with BLM policy. The proposed action by harvest area is as follows:

2.1.1 Upland

Approximately 74 acres of a 37 year-old second growth Douglas-fir stand would be commercially thinned. Approximately 0.6 mile of new temporary road construction would be required for this area. All new road construction would be unsurfaced, blocked, and water barred upon completion of harvest activities. A portion of Road No. 15-2-23.3 would be blocked and subsoiled to eliminate some illegal camping activities. An additional 0.1 mile of an old road/OHV trail near Spur B would be removed and subsoiled because of sedimentation problems. One failing log culvert on Crooked Cr. road at stream No. 4 would be replaced. The harvest prescription would reduce the number of conifer trees per acre from approximately 120 to 100, and reduce the conifer basal area from 158 sq.ft to

approximately 132 sq.ft. The average conifer tree spacing after harvest would be approximately 21 feet. Trees selected for harvest would be the suppressed, intermediate, and some co-dominant Douglas-fir trees. No trees larger than 20 inches DBH would be harvested.

2.1.2 Riparian

Approximately 71 acres of Riparian Reserves would be thinned. The purpose of the thinning is to increase the development of late seral characteristics and development of large woody debris for recruitment in the stream channels. The portions of the Riparian Reserves to be thinned would have the following prescription: Species preference for retention would be red cedar, hemlock, hardwood and Douglas-fir; reserve trees greater than 18 inches DBH; tree spacing maximum at 20 feet (diameter +4) both for conifers and hardwoods; a minimum of a 75-foot no treatment zone buffer on non-fish bearing streams and a 100-foot no treatment zone buffer on fish bearing streams utilizing physical ground characteristics, for example, riparian vegetation and ground slope breaks to establish the variable buffer. The variable buffer would utilize natural topographic slope breaks - on Crooked Creek the buffer would go to the first slope break above the flood plain.

Total harvest volume would be approximately 900 MBF.

2.1.3 Management Guidelines for Survey and Manage species (bryophytes and lichens)

Ulota megalospora: *Ulota megalospora* (Protection buffer moss) is proving to be more common than originally thought at the time the Forest Plan was written (pers.

com. Judy Harpel, regional bryologist) and is not a localized endemic. The species is being found throughout Western Oregon and Washington and is common in the McKenzie area of the Eugene District. Management recommendations for *Ulota megalospora* suggest that “protection buffers are not required at known sites, if continuity of habitat over time is provided within the watershed. Sufficient protection may be provided in some areas by riparian reserves, late-successional reserves and administratively withdrawn areas. In areas where *Ulota megalospora* is poorly represented, especially for disjunct or localized populations, maintain habitat at known sites.” (Management Recommendations for Bryophytes, Installment 1).

As *Ulota* is widespread and common within the McKenzie Area, no special reserves need to be set aside for this species. As *Ulota* commonly occurs on hardwoods, hardwoods would be reserved to provide refugia for the species and inoculum. Green tree retention would be clumped in the areas of higher *Ulota* abundance to assure that *Ulota* is present on the retention trees.

2.1.4 Management Guidelines for Survey and Manage species (mollusks)

Three mollusk species that are defined as Survey and Manage species under the Northwest Forest Plan and the Eugene District Resource Management Plan were surveyed to current protocol within the proposed Crooked Creek Timber Sale in 1998. A fourth Survey and

Manage mollusk, the Crater Lake tightcoil (*Pristiloma arcticum crateris*), was not surveyed as the project area is too low in elevation to provide suitable habitat. Populations of Oregon megomphix (*Megomphix hemphilli*), blue-gray tail-dropper (*Prophysaon coeruleum*) and papillose tail-dropper (*Prophysaon dubium*) were located within proposed timber sale units.

Current BLM management direction for these species is to follow local guidelines until final interagency guidelines are in place. Currently the Eugene District Office follows Eugene District Interim Management Strategy for Three Survey-and-Manage Mollusks (Applegarth 1998). These guidelines are summarized below:

- Treatment Level 1

Where protocol surveys detect four or more Survey and Manage mollusk sites per 40 acres, no sites require protective buffers. RMP standards for down logs should be met or exceeded, broadcast burning should be avoided and prescribed fire should be kept to a minimum to meet resource objectives. To qualify for Treatment Level 1, sites need to be located by GPS or other method so they are accurate to within 10 meters. Although not required, sites with outstanding habitat features such as old big leaf maple and unusual concentrations of old down logs should be buffered if buffers don't seriously conflict with other concerns.

- Treatment Level 2

Where protocol surveys detect these mollusks at a rate between one and four locations per 40 acres, approximately half of the sites should be buffered. Buffers in regeneration harvest areas should have a

radius of approximately 30 meters (100 ft) or an area of approximately 0.75 acre, or an area that represents a negotiated agreement. No activity will occur within these buffered areas.

- Treatment Level 3

Where protocol surveys detect these mollusks at a rate of one or fewer per 40 acres, all sites should be buffered. Size of buffered areas is the same as described in Treatment Level 2.

2.2 Alternative II - No Action

Since there would be no management of the timber resource nor road decommissioning proposed under this alternative, no survey and manage species recommendations would be necessary. Another area would be proposed for forest management activities to meet the objectives of the GFMA as detailed in the Eugene District RMP.

Timber stands will continue to grow at natural rates. No timber harvest, or road management activities will occur. The quantity, quality, and rate of change of wildlife habitat will remain stable. The physical integrity of the aquatic system, water quality, the sediment regime and in-stream flows in the basin may not be maintained at the current level. Under this alternative, the Aquatic Conservation Strategy may not be met on these lands because taking no action would not necessarily maintain the current condition of riparian-dependent resources. In particular, long-term road-related sedimentation to streams would continue to occur and potentially escalate because of lack of maintenance (especially on natural surfaced roads with OHV use). Existing stream crossings in need of repair would not be replaced nor removed which could result in mass movement, and short-term

water quality degradation.

Cumulative Effects

Opportunities to improve drainage on existing roads, restore stream channels, and decommission roads would be postponed to a later date.

2.3 Alternative III

The new temporary road construction and logging design would be the same as in the Proposed Action. The 71 acres of riparian thinning would not be implemented in this alternative. This alternative would replace one of 2 culverts that have been identified as barriers to fish passage. The culvert to be replaced is located on stream 6 and has partially failed. The other culvert, located at stream 7, is a log structure and is beginning to fail. This culvert would be removed and a segment of Road No. 15-2-26.1 between Spur A and an unnumbered road would be decommissioned effectively blocking Road No. 15-2-22.1. Neither of the culverts are located on timber haul routes but are within the boundary of the harvest area. A ditch relief culvert has been identified as being needed east of Spur B to eliminate direct road ditch sedimentation to Trib. 10. Impacts to stream channel sedimentation would be minimized by requiring the construction to be done during low flow periods, July 15 - September 1, and by restricting equipment access into the active stream channel.

Total harvest volume would be approximately 600 MBF.

2.4 Design Features for All Action Alternatives

The following project design features would be implemented in conjunction with the proposed action. Design features are procedures normally used to avoid or reduce environmental impacts, or are required standards and guidelines included in a timber sale contract.

- **Riparian Reserves** - Riparian Reserves would be left on all streams, wetlands, springs, and ponds in accordance with the Northwest Forest Plan and RMP Standards and Guidelines. The reserves would provide habitat for Special Status and other species. There would be no landing or road construction in the Riparian Reserves. Timber harvest activities would be conducted in the upland portion of selected sections of the Riparian Reserves. Each Watershed Analysis Unit has an associated site potential tree height based on inventory plots from within the watershed. The site potential tree height for the Mohawk Watershed Unit is 200 feet. A one site tree height or 200 feet is considered Riparian Reserve for all non-fish bearing streams and two site tree heights or 400 feet is considered riparian for all fish bearing streams adjacent to the harvest areas. As stated previously, portions of the Riparian Reserve (the upland portion) would be treated via a density management treatment.
- **Coarse Woody Debris Requirement** - All coarse woody debris present on the sites would be reserved, unless they create a hazard to logging operations.
- **Snag Trees** - Existing snags in the harvest areas were found to be below the minimum RMP/ROD standards to meet

the 40 percent primary cavity nesting birds criteria. Future actions may include creation of hard snags and would be detailed in a future Environmental Analysis.

- **Hardwoods And Minor Species** - Retain all Pacific Yew trees in the harvest areas. Hardwoods are to be retained to provide habitat for *Ulota megalospora*.
- Management activities would be altered according to RMP standards and guidelines if any cultural resources, Special Status Plants including Threatened and Endangered, Survey and Manage species, and Threatened and Endangered wildlife are found in or adjacent to the harvest areas.
- **Felling and Yarding Requirements** - Directional felling and yarding would be utilized for the protection of retention trees, snags, and reserve areas.
- Commercial thinning would be done using a cable logging system. One-end suspension of logs would be required wherever topography permits to reduce the extent of soil compaction. Ground based yarding operations can occur where slopes are less than 35 percent. Avoid ground based harvesting on McAlpin soils in the riparian areas adjacent to Crooked Creek. Unrestricted ground based logging operations on McCully and Hembre soils can result in levels of soil compaction beyond District standards. Use of the following recommendations for ground based yarding systems would keep soil impacts within these standards:
 - Restrict yarding to seasonally dry periods when soil moisture levels are less than 25 percent, as approved by the Authorized Officer.

- Preplan and designate all skid trails to occupy less than 10 percent of the harvest area. Require felling of trees to lead to the skid trails and maximize winching distances up to 100 feet and distances between trails up to 200 feet where feasible. Use existing skid roads wherever possible.
- Till all skid trails with a winged subsoiler during the same summer season as falling and yarding, when soil moisture conditions are 25 percent or less, or as approved by the Authorized Officer in consultation with the Area Soil Scientist.
- For public safety reasons, roads would be signed to alert the public of the logging operations. The existing roads would be left clear of logging debris and equipment at the end of each day. New construction could be blocked during logging operations. Local OHV clubs would be notified of logging activities and local bike shops would be provided with announcements.

2.5 Post Harvest Activities

- **Snags** - Green conifers left in thinning areas for snag creation would be managed to create snags as per the Snag Tree section above.

- **Site Preparation and Hazard Reduction** - Pull back logging slash within 20 feet of all existing roads and OHV trails within or along the perimeter of the harvest area. Cover and burn any road side and landing piles.

Landing debris remaining after logging would be made available for special forest products sales if access is not blocked by road and skid trail mitigation.

- **Road Reclamation and Closure** - For the Proposed Action, a portion of the existing Road No.15-2-23.3, and all newly constructed temporary Spur roads (Spurs A, B and C) would be tilled and blocked after harvest.

For Alternative No. III, a log culvert located on Road No 15-2-26.2 would be removed and 0.1 mile of road decommissioned by blocking and tilling.

2.6 Monitoring

Monitoring guidelines are established in the 1995 FRMP/ROD, pp. 175, and the 1994 Standards and guidelines, pp. E-1 to E-10.

Table 1 Comparison of Alternatives

| Issue | Alternative I | Alternative II | Alternative III |
|---|--|-----------------------|--|
| Type of Harvest | Commercial thinning | None | Commercial thinning |
| Proposed timber volume to be removed (MBF) | 900 | None | 600 |
| Sale Area Size | 145 acres | 0 | 74 acres |
| Roads constructed | 0.6 mi (Spurs A,B,C) temporary unsurfaced 0.6 mi temp. tilled | 0 | 0.6 mi (Spurs A,B,C) temporary unsurfaced 0.6 mi temp. tilled |
| New roads remaining after harvest but blocked | 0 | 0 | 0 |
| Existing roads tilled | 0.7 mi | 0 | 0.8 mi |
| New roads remaining after harvest, open | 0 | 0 | 0 |

3.0 AFFECTED ENVIRONMENTS

3.1 Vegetation:

The upland portion of the harvest area is managed Douglas-fir approximately 37 years old. The stand also contains big leaf maple clumps, alder, cedar, and hemlock. Brush species include vine maple, hazel, and a ground cover of Oregon grape, sword fern, and salal. Most of the stand contains a single story canopy with few snags and down logs.

The riparian area is a second growth stand approximately 37 years old, composed primarily of Douglas-fir and red alder. Crooked Creek has an alder dominated riparian zone within 50-100 feet of the stream along the majority of its length in the project area. Previous management (timber harvest) and lack of management (vegetation control) actions have allowed alder to continue to dominate portions of the riparian habitat.

3.2 Wildlife:

Old Growth Habitat - There are no old growth stands or patches within the harvest area.

Wildlife Use - Except for a few areas within the Riparian Reserves, there are very few snags or down logs within the project areas. Most of the snags and down logs are either in the smaller size classes (diameter) or older decay classes and would not meet the Eugene District ROD/RMP requirements. The average diameter of the trees in the area is 15" DBH, and approximately 24 percent of the trees meet or slightly exceed minimum requirements for down wood material to be left after harvest (≥ 20 " dia.) and for snag management.

The project areas are not suitable habitat for any threatened or endangered species. There

are no spotted owls, bald eagles, or peregrine falcons in or around the proposed action area. There are no unique or special habitats within the Areas. There are several streams (non-fish and fish bearing) within the project area that influence the harvest boundaries. Forest conditions in the Riparian Reserves and near the streams are similar to the uplands, except for some alder patches, ground cover plant species, and down log habitat. Alder is the dominant tree species along the main fish bearing stream (Crooked Creek).

No unique or special habitat areas exist in any of the potential harvest areas.

3.3 Survey and Manage Species

3.3.1 Fungi, Bryophytes and Lichens
Surveys for Component 2 and Protection Buffer bryophytes and lichens have been completed. No Component 2 bryophytes and lichens were found. *Ulota megalospora*, a protection buffer moss was found through out the unit and the riparian reserves.

Surveys for Survey and Manage vascular plants were done in 1996 field season as part of vascular plant surveys. No Survey and Manage vascular plants were found.

3.3.2 Mollusks

Typical key habitat features for the three Survey and Manage mollusk species found in the proposed project area include hardwoods (especially big leaf maples), down woody debris, leaf litter, sword fern and moist microclimates. Mollusk locations within Crooked Creek Timber sale unit have been identified and will be managed using the treatments detailed in the Proposed Action. Six *Megomphix hemphilli* (MEHE), five *Megomphix dubium* (PRDU) and three

locations were detected during surveys of this area. Table 2 identifies how these treatments will be applied to the Crooked Creek Timber sale unit.

Table 2 Mollusk site management recommendations for Crooked Creek Timber sale.

| Species | No. Sites | No. Buffered Sites | Acres Affected |
|--------------|-----------|--------------------|----------------|
| MEHE | 6 | 3 | 0.75 |
| PRDU | 5 | 3 | 0.75 |
| PRCO | 3 | 3 | 0.75 |
| TOTAL | 14 | 9 | 2.25 |

3.4 Soils:

The predominant soils in the areas are in the McCully series (60% of the Area), the Hembre series (25% of the Area), and the McAlpin series (15 % of the Area). Site specific features of the soils found in the harvest areas are as follows:

Soils in the McCully series are deep and well-drained with a surface layer of clay loam and a subsoil of silty clay loam.

Soils in the Hembre series are deep and well-drained, with a very dark brown silt loam surface layer and a dark reddish brown silty clay loam subsoil.

Soils in the McAlpin series are deep and moderately well-drained, with a dark brown silty clay loam surface layer and are found on flood plains and alluvial fans.

For details on the distribution of these soil types in the project area, refer to the Soil and Water Resource Report in the Analysis file.

3.4.1 Timber Productivity Capability Classification (TPCC)

Most of the Harvest Area is classified as RL-R (reforestation restriction - light competition) and approximately 20-25 acres in the proposed harvest area are classified RL-RM-R (reforestation restriction - light competition, moisture-suitable). An area with high potential for mass wasting was identified within the project area that needs to be classified and added to the inventory. This area was reserved from harvest due to slope stability concerns.

3.5 Hydrology:

3.5.1 Streams - All field identified streams in or adjacent to the proposed timber harvest area are shown on Map No. 1. There are 4 fish bearing streams and 13 non-fish bearing streams located within the proposed boundary.

3.5.2 Other Water Resources - No other water resources were identified in the harvest area.

3.5.3 Beneficial Use - The streams associated with the harvest area include,

or are tributaries of Crooked Creek. Crooked Creek is fish bearing and is a tributary of Shotgun Creek, which flows into the Mohawk River about 3 miles north of Marcola, Oregon. Identified beneficial uses of water are: aesthetics, resident fish and aquatic life, salmonid spawning and rearing, water contact recreation, fishing, and water supply. According to records obtained from the Lane County Water master, there are no water right permits on Crooked Creek. Two water right permits were issued for Shotgun Creek at the BLM recreation site. On the Mohawk River, between Shotgun Creek and Marcola, there are 6 permits for irrigation and domestic uses.

District policy is to prevent the acceleration of the natural rate of occurrence of landslides and debris torrents to the degree that these events would significantly degrade fishery resources, domestic or agricultural water supplies, or other designated beneficial uses of water. Based on reconnaissance level field investigations, the proposed harvest area is considered to have low potential for mass wasting. No slope stability concerns relative to the proposed harvest or road related activities were identified.

3.6 Fisheries:

Four fish bearing streams affect this sale. The main stream flowing from West to East through the proposed sale area is Crooked Creek (Trib. 1 on the attached Map No. 1). Current populations of cutthroat trout and sculpin are known to exist in the main stem of Crooked Creek. This area is also accessible to steelhead (anadromous) and rainbow trout, but recent information on their use or distribution in the drainage is incomplete. Aquatic habitat conditions in this large 3rd order stream consist of pool-riffle/rapid type habitats. Accumulations of large woody debris (LWD) were found to be scattered in individual pieces, or found in clumps or jams. The amount of LWD would be considered moderate to low

numbers compared to what would be expected in a system of this size. Riparian vegetation consisted mainly of hardwoods along the immediate stream bank.

Tributary 14 - This is a small drainage that joins the main stem of Crooked Creek outside of the proposed sale boundary. Cutthroat trout were found in the segment of channel between Road Nos. 15-1-19 and 15-2-24. Access to the channel south of the Road No. 15-2-24 is blocked by an impassable culvert under the -24 road. This stream flows in a deeply incised channel with a step-pool habitat configuration. Finer bedload materials (silt/sand and small gravels) are deposited throughout the reach of the stream in this sale unit. Riparian overstory vegetation consists of a mixture of hardwoods and conifers.

Tributaries 6 & 7 - These 2 streams flow together and become a fork of Crooked Creek. Cutthroat trout were found in both stream channels up to the point where roads cross the drainage. Road No. 15-2-22.1 crosses Trib. 6. The undersized CMP at this site is a barrier to fish passage and interrupts the flow of bedload materials from the upper drainage. Up to 8 to 10 feet of the channel has been down-cut by the flow of water coming out of this undersized culvert. On the upstream side of this crossing there has been such an accumulation of bedload material that a second, higher placed culvert was installed. A failing log culvert on Road No.15-2-26.1 crosses Trib. 7. This site is less of a fish passage concern and more of a sediment delivery problem. The approaches of road to the log culvert site are also a contributor of sediment to Trib. 7. Aquatic habitat is similar

in both streams, consisting of steep, step-pool type channels. Accumulations of old, large diameter, logging slash was the dominant LWD found in each channel. Riparian overstory vegetation is primarily hardwood tree species.



4.0 ENVIRONMENTAL CONSEQUENCES

This Chapter incorporates the analysis of cumulative effects in the *USDA, Forest Service and the USDI, Bureau of Land Management 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, (Chapters 3 & 4) and the *Eugene District Proposed RMP/EIS*, November, 1994 (Chapter 4). These documents analyze most cumulative effects of timber harvest and other related management activities. None of the alternatives in this proposal would have cumulative effects on resources beyond those effects analyzed in the above documents. The following analysis includes cumulative effects that supplement those analyzed in the above documents and provides site-specific information and analysis particular to the alternatives considered here. Aquatic Conservation Strategy Objectives are listed in Appendix A.

4.1 Alternative I - Proposed Action

4.1.1 Vegetation

The immediate effect of implementing the Proposed Action would be to commercially thin approximately 145 acres of 37 year-old trees. Vegetative diversity would be maintained by reserving hardwood trees and a representative mix of coniferous species (retention would be approximately 100 trees per acre). Vegetative diversity would also be provided in the Riparian Reserves. Retaining hardwood trees could reduce the amount of conifer growth especially in the thinned portion of the Riparian Reserves. Opening the canopy would allow sunlight to reach the forest floor and would accelerate the growth of understory vegetation. The stand would be left to grow until such time as future treatments are necessary such as fertilization and final

harvest. The result from the thinning would be to accelerate the growth on the reserved (crop) trees in the upland. Within the riparian areas this increase in growth rates would advance some later seral characteristics that could provide more complex habitat for species that prefer larger size trees.

4.1.2 Hydrology/Water Quality

Direct effects include the short-term addition of sediment to a stream crossing during the removal and replacement of a failed log culvert located on Crooked Creek Road. By conducting the work during low flows and prior to fall rains, the amount of sediment delivered to the stream can be minimized. The stream crossing would be sized to the theoretical 100 year storm event and could better accommodate natural in-channel sediment movement (meets ACS Objective #5). Other direct effects include short-term addition of sediment to Stream 'Z' during stream crossing removal in conjunction with proposed road decommissioning. In the long term, restoration of the stream bank and channel bottom at that location would meet ACS Objectives #3 and #5 because the channel would no longer have an artificial barrier to sediment transport.

Utilizing existing or temporary roads for harvesting activities, followed by decommissioning, would protect streams from long-term road related runoff and sediment delivery. Fully decommissioning roads no longer needed and adding cross drains on existing permanent roads where needed, would play a role in contributing to a reduction in road related runoff and sediment delivery in the basin. These road prescriptions would fully meet the intent of ACS Objective #4. Soil compaction from ground based harvesting would be

mitigated and tilling would prevent overland flow during larger runoff events.

Generally, peak discharge increases in excess of 10% are considered to have notable impacts on channel stability (Washington Forest Practices Board, C-40). The proposed harvest area is completely within the rain dominated zone and commercial thinning is not expected to impact peak flows under normal storm conditions. Under unusual storm conditions where there are warmer winter temperatures, higher wind velocities, and a deeper snow pack; peak flows in Shotgun Creek could increase about 1% as a result of the thinning operations. The change in water available for runoff for this proposed action is considered to be a low risk for increased flood damage or bed scour because it falls well below the 10% threshold described above. The potential slight increase in peak flow is considered a short-term impact until the canopy grows back together. Other components of the proposed action including 1) establishment of interim Riparian Reserves around all streams, 2) upgrading roads that currently have the potential for delivering runoff to streams, and 3) decommissioning roads no longer needed for management purposes, would have an effect in maintaining the timing and magnitude of peak flows and ACS Objective #6 would be met.

No wetlands were identified within the proposed harvest area. Since riparian thinning would exclude lands within the active riparian area, floodplain inundation would be unaffected by harvest activities and the intent of ACS Objective #7 would be met.

Cumulative Effects
The Mohawk/McGowan WA indicated

that erosion from roads has increased sediment production over natural levels. The Shotgun subbasin has been identified as having potential for increased sediment yield due to road related erosion. The application of ROD/Standards and Guidelines and BMPs associated with road construction, repair, and decommissioning should minimize the sediment generated under this harvest proposal and would fully meet ACS Objectives as described above. An existing natural surfaced road system exists within the harvest area that is regularly utilized by OHV recreationists, but would not be used for harvesting activities. These roads continue to directly deliver sediment into adjacent streams. Further deterioration of the roads will occur until restoration, mitigation or maintenance work to protect water quality is conducted.

4.1.3 Soils

Impacts to soils from commercial thinning activities would be in the form of soil compaction, soil and litter displacement, and loss of organic material due to harvesting. This would result in a loss of soil productivity by impacting soil organic matter and nutrient levels, and processes within the soil organism communities. Cable yarding systems would result in approximately 2% or less of the harvest area left in a compacted condition, a level within our District standards for achieving insignificant growth-loss effect. The residual effect of the soil compaction in the skid trails will remain on the site for 10 to 35 years, depending upon the depth of compaction within the trails.

Ground-based harvesting would result in more area impacted by skid trails (up to 10% vs. 2%). As long as the required moisture restrictions are utilized, the

resulting compaction from ground-based harvesting could be mitigated by subsoiling all skid trails or compacted areas, thus achieving insignificant growth-loss from compaction.

Cumulative Effects

Planned road construction and road decommissioning in the harvest area would result in a net decrease in the area permanently converted to road surface in these two sections. Proposed new road construction has identified future entry needs. Roads utilized in this harvest activity, but not necessary for future management purposes would be reclaimed by tilling and blocking. Tilling roads to be decommissioned would improve recovery of these soils and blocking will be essential to prevent vehicle access, considering active OHV activity in the area.

Requiring lead-end suspension during cable yarding and the use of appropriate seasonal, soil moisture and slope restrictions during ground-based yarding operations should result in insignificant growth-loss effects.

4.1.4 Fisheries

No negative impacts to aquatic habitat condition are expected to result from this action. Thinning operations within the established Riparian Reserves would not adversely impact the fisheries resource. Maintaining a 100-foot minimum "no-touch" buffer, or a variable buffer that includes the flood plain and first terrace on all fish bearing streams is expected to be adequate to protect the fisheries resources (see Map No. 1 attached). The use of existing and proposed spur roads should restrict the need for creating corridors through the "no touch" buffered stream channels. No corridors are recommended

through the reserve areas adjacent to the main channel of Crooked Creek. Overall, the long-term effect of this activity is expected to be beneficial to the fisheries resource. Increased development of late-successional forest characteristics in the Riparian Reserve would shorten the time frame for recruitment of large woody debris in the active channel.

No new road crossings of fish bearing streams are proposed under this action.

4.1.5 Wildlife

The closed pole-sawtimber forest habitat that exists would be replaced by an open pole/sawtimber forest habitat. This area would continue to provide habitat for some of the same wildlife such as dispersal habitat for spotted owls, and breeding habitat for neotropical migratory land birds. However, this area would no longer provide optimal thermal cover for elk, and cavity nesting habitat (snags) would not naturally develop in time or quantity. Thinning would reduce the canopy closure over the short term, which would reduce the habitat quality for species that prefer high canopy closure. Timber harvests would not affect suitable spotted owl nesting habitat, but it would degrade dispersal habitat. It would take approximately 5-10 years for habitat conditions to recover. Thinning would reduce the canopy closure over the short term, which would reduce the habitat quality for species that prefer high canopy closure. The Bureau of Land Management has formally consulted with the US Fish and Wildlife Service and they find the proposed action would not likely jeopardize the continued existence of the Northern Spotted Owl.

Riparian thinning may enhance vertical

diversity within a forest stand that may in turn increase wildlife diversity (Hagar 1996). There is some evidence that many species of wildlife in the Pacific Northwest respond positively to thinning. Hagar (1996) found the abundance of breeding birds was greater in thinned stands. Bats are sensitive to stand structure and silvicultural practices, such as thinning that promotes development of structural characteristics found in old growth stands, which benefit bat species (Humes, 1996). Additionally, Weikel (1997) found that thinning for old forest characteristics will likely have a positive impact on populations of cavity-nesting birds in the long-term. Weikel (1997) continues to state “there may be little negative short term effects of thinning on cavity-nesting birds”, but suggests a patchy approach to thinning with patches of unthinned and heavily thinned areas intermixed in a landscape dominated by moderately thinned areas. This mix should help to balance the short-term and long-term effects of thinning (Weikel, 1997). The harvest prescription would increase structural diversity, growth rates, and encourage species diversity. Therefore, the overall effects on wildlife, in the short and long-term, would be positive. Ultimately, the proposed action would encourage the rate at which this forest (riparian) would develop old growth characteristics benefitting associated species.

The proposed action would contribute to the restoration of habitat to support well-distributed populations of riparian-dependent species by speeding the development of late-successional forest characteristics, including large trees and a multi-story canopy, in the Riparian Reserve areas that would be thinned. The current stand condition provides relatively poor habitat for riparian-dependent species associated with late-successional forests. The proposed action would cause a short-term reduction in canopy closure, but any such affect would be minor because of the affect of the residual trees and because of the small proportion of Riparian Reserve that would be treated, and the current poor

habitat condition of the stand for species associated with late-successional forests.

Reserving and buffering down logs with reserve trees, maintaining forest habitat in Riparian Reserves and retaining snags would mitigate the short and long-term effects of the proposed action.

Cumulative Effects

The Proposed Action would contribute to a short-term decrease in wildlife habitat. This alternative would result in the reduction of canopy closure, snags, and coarse woody debris habitat that, together with other density management and regeneration harvests on BLM administered lands and harvests on private lands, could cause a temporary loss of habitat quality for species that prefer high canopy closure, snags, and coarse woody debris. However, the effect of any loss of habitat quality from the proposed action would be not only be minor but also short-lived, limiting the potential for cumulative effects with other actions.

4.1.6 Mollusks

Category 1, 2 and Protection Buffer
Species - Mollusks (Issue #2)

Implementation of interim management recommendations.

Key Indicators: Presence of big leaf maple, presence of down logs, canopy closure

The nine mollusk sites that would be buffered would not be directly affected by the proposed project as no activity would be allowed within these buffers. These sites should not be indirectly affected by the thinning outside of the buffered areas because the proposed thinning would leave sufficient tree canopy (>60%) to maintain the microclimate within the buffered areas.

There are two PRDU sites and three MEHE sites that would not be buffered because these species qualify for Treatment Level 2 under the District guidelines. There could also be mollusk locations that were not identified in units during survey efforts. Mollusks and their habitat within these areas could be damaged or destroyed in the short term. Even if these areas suffer short term damage, they should still provide suitable habitat over the long term as long as down logs and live trees remain. Mollusks that persist in buffered areas should be available to recolonize uninhabited areas when they become suitable again.

Cumulative Effects

Evidence from Eugene District surveys suggest that these three Survey and Manage mollusk species are currently well distributed across district lands. The objective of the interim management strategy for these three mollusk species is to maintain future options for management of local populations. It is intended to maintain the viability of local populations of these species. This strategy is currently being followed for all Eugene District projects involving ground disturbing activity, so populations on BLM land should remain viable. There are no such protections for these species on private lands that are interspersed with BLM land, so these populations could be at risk for reduction and extirpation. The long term effects this could have on Survey and Manage mollusk species across the Eugene District is unknown.

4.1.7 Botany

Category 1, 2 and Protection Buffer Species - Fungi, Bryophytes and Lichens (Issue #1)

Implementation of interim management recommendations.

Key Indicators: Substrate integrity, microclimate

Ulotia megalospora (Protection buffer moss): Direct effects would be removal of substrate (trees), indirect effects would be alterations of microclimate, resulting in drier conditions. As *Ulotia* is a pioneer species, it requires high light and drier conditions, thinning may enhance habitat for *Ulotia*. *Ulotia megalospora* is common and widespread on twigs and branches in the canopy at low to middle elevations throughout most of the Pacific Northwest. In the McKenzie Area of the Eugene District, the species is widespread, occurring more frequently in uplands, but occurs in a variety of habitats and on a variety of tree and shrub species.

Short term effects would be to lower the population of *Ulotia megalospora* as some of the trees it occupies would be removed. Long term effects could be an overall increase in population as *Ulotia* prefers stands with an open canopy.

Cumulative Effects on Mollusks, Fungi, Bryophytes and Lichens

An estimated 9,500 acres of the Federal administered lands in the watershed are forested similarly (16-45 years old, additionally 10,600 acres are 46+ years) to those affected by the proposed action. An estimated 11,900 acres of the watershed is less than 45 years old, resulting from previous regeneration harvests.

The Proposed Action (commercial thinning) would affect 1.5 percent of the 16-45 stands.

An estimated 8,500 acres of the forests over 40+ years old are in Riparian Reserves and are well-distributed across

the watershed. These areas would provide continuity of habitat over time as similar proportion of age classes would be maintained across the watershed.

The management buffers at each site, unthinned Riparian Reserve, unmapped LSRs, District Designated Reserves and other areas deferred from harvest would provide refuge for these species and, if individuals do not tolerate the harvests, the refuge would provide a potential source population to recolonize the harvested areas.

4.2 Alternative II - No Action

4.2.1 Vegetation (upland and riparian)

The untreated stands would continue to grow at reduced rates. The upland stands would show little stand differentiation for the next 20-30 years, the expected time of final harvest, except for gap processes such as wind, snow, disease, and forest pests. Forest pathogens, pests, and weather related processes would result in small scale change to the forest until a large event resets the stand to an early seral condition. The Riparian Reserves would continue on a course of alder domination in portions of the reserves, and slowly the conifers would over top the hardwoods and gradually shade them out. This process may take several to many decades to occur.

4.2.2 Hydrology/Water Quality

The physical integrity of the aquatic system, water quality, the sediment regime and in-stream flows in the basin may not be maintained at the current level. Under this alternative, the Aquatic Conservation

Strategy may not be met on these lands because taking no action would not necessarily maintain the current condition of riparian-dependent resources. In particular, long-term road-related sedimentation to streams would continue to occur and potentially escalate because of lack of maintenance (especially on natural surfaced roads with OHV use). Existing stream crossings in need of repair would not be replaced or removed which could result in mass movement, and short-term water quality degradation.

Cumulative Effects

Opportunities to improve drainage on existing roads, restore stream channels, and decommission roads would be postponed to a later date.

4.2.3 Soils

In comparison with the Proposed Action, no harvesting would not interrupt existing conifer-soil organism nutrient relationships. No soil compaction or soil displacement would be incurred since no harvesting or road construction would be conducted. Soils in the existing road segments targeted for decommissioning under the Proposed Action would not be in a recovering state.

Cumulative Effects

Existing natural surfaced roads would continue to erode and deliver sediment to nearby streams.

4.2.4 Wildlife

This alternative would have little effect on wildlife. However, this alternative would result in the slowest development of late-successional characteristics and, therefore, result in the slowest increase in quality of riparian habitat for species associated with late-successional forests.

4.2.5 Mollusks (Issue #2)

Implementation of interim management recommendations.

Key Indicators: Presence of big leaf maple, presence of down logs, canopy closure

The No Action alternative would result in no direct, indirect or cumulative effects to these Survey and Manage mollusks.

4.2.6 Botany Fungi, Bryophytes and Lichens (Issue #1)

Implementation of interim management recommendations.

Key Indicators: Substrate integrity,

microclimate

Succession would continue undisturbed. Early seral (pioneer) species (such as *Ulotia megalospora*) could have the quality of their habitat reduced. Habitat would improve for later seral species possibly allowing them to come into the stand.

4.3 Alternative III

4.3.1 Vegetation

Impacts would be similar to the proposed action with the exception of decreasing the expected volume by 300 MBF, and decreasing the commercial thinning acres in by 50-75 acres.

4.3.2 Hydrology/Water Quality

Direct effects include short-term sedimentation during removal of two stream crossings and replacement of another. Construction activities at these crossings would result in an increase in sediment and turbidity levels in Streams #6, #7, and #Z during the excavation and also as a result of movement of sediment during the first fall rains. Application of ROD Standards and Guidelines and BMPs associated with road construction should minimize the total amount of sediment generated. The replacement of the failing culvert at Stream #6 and removal of the log culverts at Streams #7 and #Z would improve water quality in the long term by reducing the erosion rate and providing unobstructed routes for water, materials and aquatic fauna. These actions would fully meet ACS Objectives #3, #4, and #5.

Peak flows and floodplain inundation would be maintained to the same standard described under the Proposed Action, and ACS Objectives #6 and #7 would be met.

Cumulative Effects

In comparison with the Proposed Action, one additional stream crossing would be removed and the channel banks and bottom restored to a natural configuration.

4.3.3 Soils

Tilling roads to be decommissioned would improve recovery of these soils.

Cumulative Effects

In comparison with the Proposed Action, additional road decommissioning in the harvest area would result in a greater decrease in the area permanently converted to road surface in these two sections.

4.3.4 Wildlife

This alternative would have the same effect on wildlife as described for the proposed action except for in the riparian areas. This alternative would be similar to the no action alternative within the riparian areas and would represent a lost opportunity to accelerate development of late seral characteristics.

4.3.5 Mollusks

Implementation of interim management recommendations.

Key Indicators: Presence of big leaf maple, presence of down logs, canopy closure

The same Survey and Manage mollusk sites that would be buffered under Alternative I would also be buffered under Alternative III. The direct, indirect and cumulative effects of Alternative III would be the same as they would be for Alternative I.

4.3.6 Botany Fungi, Bryophytes

and Lichens

Implementation of interim management recommendations.

Key Indicators: Substrate integrity, microclimate

Direct effects: Riparian reserves would provide undisturbed habitat for *Ulotia megalospora* and other non-vascular species.

Indirect effects: Less changes in microclimate to stand as affected areas would be smaller and mitigated by the unthinned riparian areas.

Short term: Same as proposed action.

Long term: Riparian reserves would function as refugia for *Ulotia megalospora*, providing continuity of habitat over time.

5.0 OTHER ENVIRONMENTAL EFFECTS COMMON TO ALL ACTION ALTERNATIVES

5.1 Effects on Fisheries and Riparian Resources

No detrimental cumulative effects to downstream fisheries resources are expected from any of the Action Alternatives. The establishment of interim Riparian Reserves described in the ROD/Standards and Guidelines (pg. 23-24) on all streams found adjacent to the proposed harvest area would be adequate to protect RR resources.

5.2 Prime Farmland and Rangeland

There is no prime farmland or rangeland within the Federal ownership of the proposed harvest units.

5.3 Wetlands and Flood Plains

The proposed timber sale would not have any adverse impacts on flood plains downstream from the Proposed harvest Area. None of the Action Alternatives would have adverse effects on nearby wetlands.

5.4 Recreation

The proposed sale would have short term adverse effects on the dispersed recreational opportunities existing in the project area. Proposed road closures and decommissioning would not preclude motorcycle access opportunities in to these sections of land.

The Harvest Area is used by OHVs, particularly motorcycles. Multiple trails exist within this area. Many of the trail

sections fall within Riparian Reserves. The slash pullback would be designed to redirect use away from trails in the Riparian Reserves and on to more environmentally desirable locations.

5.5 Sensitive Plant Survey

Surveys for vascular plants were conducted in the spring of 1996. No Survey and Manage vascular plants were found.

5.6 Threatened and Endangered Species

Spring chinook salmon in the Upper Willamette River basin (including the McKenzie) are listed Threatened under the ESA. Informal conferencing (on the "Not Likely to Adversely Affect" proposed action) was completed on April 21, 1999 and a letter of concurrence from the National Marine Fisheries Service (NMFS) is in process.

Protocol surveys have been conducted for the Northern Spotted Owl (NSO) in the analysis area. No NSO site occurs in or adjacent to the proposed harvest areas. The planned conservation strategy for the Northern Spotted Owl within the Northwest Forest Plan relies on a system of large reserve areas, and viable owl populations outside these reserves are not necessarily essential for the conservation of the species. Impacts to the conservation of the species were considered during formal consultation with the USFWS, and it was determined that the action alternatives would not jeopardize the continued existence of the NSO.

5.7 Hazardous Materials Survey

There are no Hazardous Materials at this time in the analysis area.

5.8 Cultural Resources

No cultural sites have been identified. The analysis file contains the cultural report.

5.9 American Indian Rights

No impacts on American Indian social, economic or subsistence rights are anticipated. No impacts are anticipated on the American Indian Religious Freedom Act. Management action information is sent to the Confederated Tribes of the Grand Ronde and Confederated Tribes of the Siletz.

6.0 LIST OF AGENCIES AND PERSONS CONSULTED

This Environmental Analysis is being mailed out to 22 members of the general public and organizations. A summary was sent to those receiving the “Eugene BLM Planning and Project Focus” Summer 1996 and Winter/Spring 1997

(approximately 250 mailings. A complete listing is available at the Eugene District Office).

Maps of the proposed harvest areas were sent to the Confederated Tribes of Grand Ronde and Confederated Tribes of Siletz, no comments were received.

7.0 LIST OF PREPARERS

THE INTERDISCIPLINARY TEAM

Each member has reviewed this EA and concurs with its contents.

| NAME | TITLE | RESOURCE/DISCIPLINE |
|-------------------|-----------------------|----------------------|
| Cheshire Mayrsohn | Botanist | Botany |
| Paula Larson | Wildlife Biologist | Wildlife Habitat |
| Kris Ward | Hydrologist | Soil/Water Resources |
| Phil Dills | Fuels Mgt. Specialist | Fuels |
| Dave Reed | Fuels Mgt. Specialist | Fuels |
| Mike Southard | Archaeologist | Archaeology |
| Fred Kallien | Sivilculturist | Silviculture |
| Liz Aleman | Recreation Planner | Recreation |
| Mike McKay | Biological Technician | Fisheries |
| Mike Sabin | Forester | Engineering |
| Glen Gard | Haz/Mat Coordinator | Hazardous Materials |
| Dave DeMoss | Forester | Forestry |
| Joe Williams | Recreation Planner | Recreation |
| Jack Zwiesler | Forester | EA Writer/Team Lead |
| Trish Wilson | Landscape Planner | NEPA Coordination |

The Finding of No Significant Impact (FONSI) is not a decision document. Its purpose is to state that the actions proposed do not have a significant effect on the environment and that an EIS is not needed according to information contained in the EA and other available information. The unsigned FONSI is sent out with the EA to let you know that we feel that our actions do not warrant an EIS.

**Preliminary Finding of No Significant Impact
CROOKED CREEK TIMBER SALE TRACT NO. E-99-205
EA OR 090-99-14 (previously analyzed in EA OR 090-97-40)**

The Interdisciplinary Team for the McKenzie Resource Area, Eugene District, Bureau of Land Management has completed an Environmental Assessment (EA) and analyzed a proposal to harvest Federal forest in the Crooked Creek Timber Sale unit. Crooked Creek is located approximately 4 miles north of Marcola, Oregon in T. 15 S., R. 2 W., Sections 22 and 23 W.M. The proposal is a commercial thinning involving the removal of timber from the General Forest Management Area (Matrix) and density management within portions of the Riparian Reserves. Thinning of Riparian Reserves would be in compliance with the Standards and Guidelines of the Record of Decision (ROD) for the Forest Plan.

The proposed harvest would provide jobs and supply wood products. In order to ensure biodiversity is maintained within the project area, snags and down logs would be retained at existing levels. Cable logging systems and tractor logging systems would be used from existing roads and roads to be constructed. Approximately 0.6 mile of temporary road would be constructed and obliterated upon completion of harvest activities. All new roads would be blocked to 4-wheeled OHV traffic.

The design features of the Proposed Action are described in the attached Crooked Creek Environmental Assessment (OR 090-EA-99-14). The Proposed Action to harvest timber from Matrix and Riparian Reserves and an alternative to harvest timber from Matrix lands in the Eugene District are in conformance with 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), and the *Eugene District Record of Decision and Resource Management Plan* (June 1995).

The anticipated environmental effects contained in this EA are based on research, professional judgement, and experience of the Interdisciplinary (ID) team and Eugene District Resources staff. No significant adverse impacts are expected to (1) Threatened or Endangered species, (2) Flood plains or Wetlands/Riparian areas, (3) Wilderness Values, (4) Areas of Critical Environmental Concern, (5) Cultural Resources, (6) Prime or unique Farmland, (7) Wild and Scenic Rivers, (8) Air Quality, (9) Native American Religious Concerns, (10) Hazardous or Solid Waste, or (11) Water Quality.

DETERMINATION

On the basis of information contained in the EA, and all other information available to me, it is my determination that the alternatives analyzed do not constitute a major Federal action affecting the quality of the human environment. Therefore, a new EIS or supplement to the existing EIS is unnecessary and would not be prepared for this proposed timber sale.

Approved by: _____
Field Manager, McKenzie Resource Area

Date: _____

Appendix A

AQUATIC CONSERVATION OBJECTIVES

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.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upslope areas, headwater tributaries, and intact refugia. These lineages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in 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.
5. Maintain and restore the sediment regime under which an aquatic ecosystem evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
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 (i.e., movement of woody debris through the aquatic system). The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian zones 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.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

