Myrtle Creek Watershed Restoration Environmental Assessment

South River Field Office
EA # OR-105-02-05

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Chapter 1
PURPOSE AND NEED

This chapter describes the purpose and need for the action(s) being proposed and analyzed in this environmental assessment (EA).

Background

Watershed restoration is addressed in the Roseburg District *Record of Decision and Resource Management Plan* (ROD/RMP) as one of the four components of the Aquatic Conservation Strategy. The ROD/RMP (USDI, BLM 1995a p. 21) further describes it as an integral part of a program to aid in the recovery of fish habitat, riparian habitat, and water quality.

Management direction specifies that watershed analyses and restoration plans shall be prepared prior to implementation of restoration activities. A second iteration of the Myrtle Creek Watershed Analysis (MCWA) and Water Quality Restoration Plan (USDI, BLM 2002) has been completed.

The addition of Title II funds available through the "Secure Rural Schools and Community Self-Determination Act of 2000" to those presently available through the Northwest Economic Adjustment Initiative (aka Jobs-In-The-Woods), annual appropriations and other funding sources has created a substantial pool of financial resources available to conduct aquatic restoration and rehabilitation projects and activities, both on and off Federal lands.

Purpose

The purpose of this analysis is to evaluate an array of restoration projects that would be implemented over the next 3-5 years. The analysis will also establish a framework in which to consider future restoration opportunities that may be identified in the watershed. Potential projects have been selected and would be designed to: improve water quality; restore complexity to aquatic habitats; and remove man-made barriers that block access to habitat by fish and other aquatic fauna. The following management direction would be used as guidance:

- Removal of roads not needed to achieve management objectives, or upgrading of roads that are needed and will remain a part of the transportation system (ROD/RMP, p. 21).

- As identified through watershed analysis, rehabilitate streams and other waters to enhance natural populations of anadromous and resident fish. Possible measures may include, but are not limited to: fish passage improvements; instream structures using boulders and log placement to create spawning and rearing habitat; placement of fine and coarse materials for over-wintering habitat; and riparian rehabilitation to establish or release existing coniferous trees (ROD/RMP, p. 40).

- Contain and/or reduce noxious weed infestations on BLM-administered land, and avoid introducing or spreading noxious weed infestations in any areas (ROD/RMP, p. 74).

This analysis will identify specific resources that may be affected, and the consequences of the implementation of the proposed projects. These resources include but may not be limited to: riparian conditions; water quality; fish and wildlife habitat; and special status and special attention species of plants and wildlife.

Need

The need for watershed restoration is well established in the *Final Supplemental Environmental Impact Statement* (FSEIS) *on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (USDA, USDI 1994a) and the *Record of Decision for Amendments* (ROD) *to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 1994b), otherwise known as the Northwest Forest Plan.

This need is also described in the ROD/RMP, watershed analyses and other associated documents. Watershed restoration projects are needed to meet the management direction of the ROD/RMP to improve and maintain water quality, improve aquatic habitat conditions, and restore access to habitat essential for the recovery and maintenance of healthy and viable fish populations.

There is also a need for restoration projects to meet the responsibility of the Secretary of the Interior, under Title II of the "Secure Rural Schools and Community Self-Determination Act of 2000" to approve the use of funds reserved by an eligible county under paragraph (1)(B)(i) of the Act ". . . for the purpose of entering into and implementing cooperative agreements with willing Federal agencies, State and local governments, private and nonprofit entities, and landowners for protection, restoration and enhancement of fish and wildlife habitat, and other resource objectives consistent with the purposes of this title on Federal land and on non-Federal land where projects would benefit these resources on Federal land."

Implementation of projects on Federal lands would conform to the Management Action/Direction of the ROD/RMP, as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2001). The ROD/RMP incorporates the analysis contained in the *Roseburg District Proposed Resource Management Plan/Environmental Impact Statement* (USDI, BLM 1994). Both documents incorporate the standards and guidelines of the FSEIS and the ROD.

Any projects implemented on private lands not within rights-of-way or easements controlled by the BLM would be conducted in accordance with all State and local regulations, including but not limited to those of the Oregon State Division of Lands, Oregon Department of Forestry, Oregon Department of Fish and Wildlife, and Oregon Department of Agriculture.

Chapter 2
DISCUSSION OF THE ALTERNATIVES

This chapter describes basic features of alternatives analyzed in this environmental assessment.

I. Alternative 1 - The Proposed Action

Under this alternative, the BLM would implement an array of restoration projects that would include: replacement of culverts that are barriers to fish passage and/or at risk of near-term failure; decommissioning of roads surplus to management needs on BLM-administered lands; improvements to roads identified as chronic sources of sediment that cannot be decommissioned because of reciprocal rights-of-way agreements or a long-term need for management access; stabilization and revegetation of slides associated with roads; and in-stream placement of logs and boulders to provide structure and greater habitat complexity.

Culvert Replacement

Twelve stream crossings have been identified (Table 1, Appendix A) where the culverts currently in place block upstream passage for juvenile fish, and in many instances adult fish. Several of these culverts are also approaching the end of their service life and are at risk of failure in the near term of 5-10 years.

Of the dozen sites, five are located on BLM-administered lands. The remaining seven culverts are located on BLM easements across private lands, or on private roads and lands. Two culverts situated on private roads and lands were included in this analysis because they block access to several miles of upstream habitat on BLM-managed lands, and because the opportunity exists to enter into cooperative agreements with the Umpqua Basin Watershed Council and private landowners to replace these culverts with monies available under Title II of the "Secure Rural Schools and Community Self-Determination Act of 2000."

The existing culverts would be replaced with pipe-arch culverts, open-arch pipes, or open-bottom structural plate arches designed to accommodate a theoretical 100-year flood. These would be installed at or below streambed elevation and sized to accommodate full active channel width, to reduce flow velocities through the structures and allow accumulation of bedload (gravels).

Culverts would be designed consistent with Oregon Department of Fish and Wildlife guidelines for the design and installation of stream crossings, to allow passage by juvenile resident fish, as well as adult anadromous fish. Upstream and downstream approaches would be armored with non-erosive materials to prevent the loss of fill material from spillover during high water events. Disturbed areas would be revegetated to prevent erosion and establishment of noxious weeds.

Other project design features and Best Management Practices to be employed during installation would include:

- Placing an absorbent boom downstream of the project site prior to the start of construction activities, to contain any inadvertent petroleum spills.

- Placing silt dams or fences at project sites to contain and minimize the potential of introducing sediment into streams.

- Limiting in-stream work to the period between July 1 and September 15, when stream flows are at their lowest levels.

- Pumping or diverting stream flow around the project area during in-stream work, and minimizing in-stream equipment operation to the greatest extent practicable.

Road Decommissioning

Approximately 3 miles of natural and aggregate-surface roads (Table 2, Appendix A) would be decommissioned, subject to concurrence from parties holding rights of access under easements or reciprocal rights-of-way agreements. Decommissioning would be restricted to the driest period of the year, between May 15 and October 15. Dependent on the specific road segment and adjoining resources, one or more of the following measures would be employed:

- Blocking of the road(s) to vehicular access and unauthorized use following decommissioning.

- Removing cross-drain culverts, stream-crossing culverts, or other drainage structures, to be replaced with waterbars or armored drain dips.

- Obliterating ditch lines.

- Pulling back fill material from the down-slope, and stabilizing cut-slopes.

- Sub-soiling the roadbed.

- Seeding or otherwise revegetating disturbed and exposed soil to reduce the potential for surface erosion, and to reduce the potential for establishment or spread of noxious weeds and other non-native plant species.

Road Improvements/Upgrading

Twelve road segments totaling approximately 4 miles in length have been identified as candidates for upgrading and improvement (Table 3, Appendix A). Roadwork would, at a minimum, be restricted to the driest period of the year, between May 15 and October 15. Dependent on the specific road segment, improvements could include one or more of the following measures:

- Adding aggregate surfacing to roads that remain open to traffic during wet weather.

- Replacing undersized or damaged cross-drain culverts, and installing additional cross-drain culverts where necessary to divert runoff onto the forest floor, rather than concentrate run-off directly into streams.

- Repairing ditch lines to provide proper drainage and to prevent road surface erosion.

- Reshaping of the road surface to facilitate proper drainage.

- Installing rock splash pads at culvert outlets to prevent erosion at the outfall.

- Seeding or otherwise revegetating exposed areas to reduce the potential for surface erosion, and establishment of noxious weeds and other non-native plant species.

Placement of In-Stream Structures

A portion of Slide Creek has been identified in Sections 26 and 35 of T. 28 S., R. 4 W., as an appropriate area for the installation of in-stream structures. Approximately 0.8-0.9 miles is located on BLM-managed lands in Section 35. An estimated 40 structures composed of single or multiple logs would be placed in this portion of Slide Creek. Logs would be obtained from trees, 18-24 inches in diameter at breast height (DBH), within the adjacent Riparian Reserve. The logs would be a minimum of 40 feet in length, and at least 12 inches in diameter on the small end.

Structure placement would be accomplished either by felling trees directly to the stream and winching logs into place, or by moving logs to the stream along predesignated access and using heavy equipment (excavator) to place the logs in desired locations.

Approximately 0.5 miles of the stream is located in Section 26 on lands owned and managed by Seneca Jones Timber Company. Through a cooperative effort with the Umpqua Basin Watershed Council, the company has agreed to install structures in the stream, independent of BLM actions. These structures may be constructed from logs or boulders.

Slide Stabilization

Seven slides (Table 4, Appendix A) were identified in association with partial failures of road cuts and fills. They are associated with improper road drainage, and are not the result of normal geological processes or slope instability.

Slide stabilization could include the pull back of perched fill material or overburden, and/or stabilization using a variety of bioengineering techniques. Possible bioengineering techniques could include installation of geotextiles, or the placement of brush wattles or fascines in conjunction with the planting of shrubs or willow poles.

Biosolids could also be used in conjunction with these practices to provide desired soil amendment. Biosolids are nutrient-rich organic products derived from specially treated municipal sewage sludge in the process of wastewater treatment. Biosolids are a soil amendment

that can supply nutrients and organic matter while improving physical, chemical and biological soil properties.

The U. S. Environmental Protection Agency (EPA) published a document on biosolids recycling (EPA 832-R-94-009, June 1994) and a Federal Register Notice (Vol. 59, No. 38, February 25, 1994) to establish standards for the use or disposal of sewage sludge. A risk assessment guide in the use of biosolid materials (EPA 832-B-93-005, September 1995) was also published.

Rules and best management practices established by the Oregon Department of Environmental Quality provide the basis for technical and operational standards of biosolids management on BLM administered lands in Oregon. Rules for the treatment and land application of biosolids in the State of Oregon are found in Chapter 340, Div. 50 OAR.

II. Alternative 2 - No Action

The restoration opportunities identified in this analysis would not be pursued at this time. Future implementation would require a reanalysis of environmental consequences prior to authorization.

Culverts identified in this document would not be replaced. Sediment problems would not be corrected, and access for fish to upstream habitat would not be restored.

No road improvements or road decommissioning would be undertaken.

There would be no placement of in-stream structures to provide additional and more diversified habitat for fish and other aquatic species.

There would be no stabilization of road related land slides.

III. Critical Elements of the Human Environment That Would Not Be Affected By Either Alternative

The following resources would not be affected by either of the alternatives, because they are absent from the area: Areas of Critical Environmental Concern (ACEC); prime or unique farmlands; and Wild and Scenic Rivers. No Native American religious concerns, environmental justice issues, solid or hazardous waste, or cultural resources were documented in the project area. No measurable effect on the introduction of noxious weeds or the spread of established infestations would be anticipated, as discussed in Chapter 3 of this document.

Neither of the alternatives would have any adverse energy impact. No commercially viable energy resources are known to exist in the project area, nor are there any production, transmission or conservation facilities that could be affected.

Chapter 3
THE AFFECTED ENVIRONMENT

This chapter summarizes the specific resources present or with the potential to be present in the area, and which could be affected by the proposed action. The resources that could be affected include: fish and aquatic habitat; water quality; wildlife; and special status and special attention plant species.

I. General Setting

The Myrtle Creek watershed analysis unit is located southeast of Roseburg, Oregon. It is 76,265 acres in area (119 square miles), and is drained by North Myrtle Creek, South Myrtle Creek and their associated tributaries.

Approximately 15 percent (11,466 acres) is not forested and consists of mostly agricultural lands. The balance of the area is managed as timberland. The BLM manages 31,008 acres, or approximately 41 percent of the area in the watershed analysis unit (USDI, BLM 2002 p. xii).

The ownership pattern within the watershed analysis unit is primarily one of alternating Federal and private ownership, usually described as a "checkerboard" pattern. In the Upper South Myrtle subwatershed, however, the BLM manages 61 percent of the lands in a mostly contiguous block that encompasses the headwaters and substantial portions of many of the principal tributaries of South Myrtle Creek.

Within the entire watershed analysis unit, the BLM manages 12,178 acres presently allocated as Riparian Reserves (USDI, BLM 2002 p. 48), of which 52 percent are identified as composed of mature forest, at least 80-years old. Overall, less than 30 percent of privately held timberlands, including riparian areas, are greater than 80-years old (USDI, BLM 2002 p. 53).

There are approximately 875 miles of streams (USDI, BLM 2002 Table 38, p. 145), with approximately 36 percent located on BLM-managed lands. Approximately 94 miles of streams have been identified by the Oregon Department of Fish and Wildlife and the Oregon Division of State Lands, as rearing and spawning habitat utilized by anadromous species of fish. Approximately 12 miles, or 13 percent, of these streams are located on BLM-managed lands.

Based primarily on visual observations made during Aquatic Habitat Inventory surveys conducted by the Oregon Department of Fish and Wildlife, it is estimated that there are 106 miles of stream habitat utilized by resident fish, approximately 26 percent of which is located on BLM-managed lands (USDI, BLM 2002 Table 38, p. 145). It should be noted that these estimates probably understate the actual amount of habitat that is available and utilized by resident fish.

II. Fish and Essential Fish Habitat

A. Fisheries Resources

The Myrtle Creek watershed has historically supported a variety of resident and anadromous fish species, including salmonid and other species.

Salmonid species documented in the watershed include winter-run Oregon Coast steelhead trout and resident rainbow trout (*Oncorynchus mykiss*), resident and sea-run Oregon Coast cutthroat trout (*Oncorynchus clarki clarki*), fall and spring Oregon Coast chinook salmon (*Oncorynchus tshawytscha*), and the Oregon Coast coho salmon (*Oncorynchus kisutch*). Non-salmonid species include the Pacific lamprey (*Lampetra tridentate*) and assorted species of chub, dace, suckers and shiners.

Non-native species present in the watershed include brown bullhead, bluegill, pumpkinseed, crappie, sunfish and smallmouth bass.

B. Threatened or Endangered, and Special Status Species

The Oregon Coast steelhead trout ESU was proposed as a candidate for threatened species designation (Federal Register 1998a Vol. 63/No. 53). To date, there has been no change in the status of the steelhead trout.

The National Marine Fisheries Service designated the Oregon Coast coho salmon Evolutionary Significant Unit (ESU) as a threatened species (Federal Register 1998b Vol. 63/No. 153). Critical habitat was rescinded pending further analysis and review.

The Oregon Coast cutthroat trout ESU is under review by the U.S. Fish and Wildlife Service for candidate status, and was previously listed as a candidate species by the National Marine Fisheries Service (Federal Register 1999 Vol. 64/No. 64). Jurisdiction and responsibility for any future consultation was subsequently transferred to the U.S. Fish and Wildlife Service (Federal Register 2000 Vol. 65/No. 78).

While not presently listed or proposed for listing, nor a candidate for listing, the Pacific lamprey is considered a Species of Concern by the U.S. Fish and Wildlife Service, and is designated a Bureau Sensitive Species by the BLM.

C. Aquatic Habitat Conditions

A general description of stream habitat condition, within the watershed, is based on Aquatic Habitat Inventory surveys conducted by the Oregon Department of Fish and Wildlife. These surveys were conducted on approximately 74 miles, or 8.5 percent of the streams in the watershed, with an emphasis placed on stream reaches that are fish bearing (USDI, BLM 2002 p. 144). This discussion will focus on three primary habitat features: access, pool frequency, and pool quality.

Access - Habitat access is considered poor throughout the watershed, primarily as a consequence of culverts that block access by adult and/or juvenile fish to upstream habitat. An inventory on BLM-administered lands identified nine major culverts and 32 other culverts that impeded passage by resident and anadromous fish (USDI, BLM 2002 p. 154). The Umpqua Basin Watershed Council is in the process of conducting a comprehensive inventory of all culverts in the watershed. Photograph 1 depicts a culvert on a lower reach of Lee Creek that is representative of many barriers to fish passage.

Photo 1 – Culvert on lower Lee Creek

Pools - Within the watershed, the condition of stream pools in terms of numbers and quality was assessed as poor. Pools provide habitat for prey species, cover from predators for juvenile fish, summer rearing areas, and reservoirs of cool and well-oxygenated water during low summer flows.

Pool numbers are generally a function of the amount of large instream wood which helps to form pools by backing up water and capturing substrates that provide spawning habitat. Past management of riparian areas on Federal lands, including stream cleaning, harvest and salvage, has reduced available wood. Similar activities continue on private lands.

Pool quality is a measure of the quality of rearing habitat for juvenile fish. Quality spawning gravels are abundant in headwater streams, but are either carried through the system or have become embedded with excess fine sediment from roads. Photograph 2 is a representative stream reach in the watershed that illustrates the lack of large wood.

Photograph 2 – Stream Reach in Slide Creek

D. Essential Fish Habitat

Essential Fish Habitat (EFH) is designated for fish species of commercial importance by the Magnuson-Stevens Fishery Conservation and Management Act of 1996. On the Roseburg District this is habitat this is currently or was historically available to Oregon Coast coho or chinook salmon (Federal Register 2002 Vol. 67/ No. 12).

There have been no definitive surveys of the exact extent of Essential Fish Habitat in the watershed. As noted above (p. 7), the Oregon Department of Fish and Wildlife estimates that 94 miles of streams in the watershed are utilized by anadromous species for spawning and rearing. This includes stream reaches utilized by sea-run cutthroat trout and steelhead trout, however, that are unsuitable for use by coho and chinook salmon.

It is assumed that the lower reaches of North Myrtle Creek, South Myrtle Creek and their major tributaries are Essential Fish Habitat, but unlikely that upper stream reaches and minor tributaries provide habitat for coho and chinook salmon. The instream project and culvert replacements proposed in this analysis are primarily located in lower stream reaches and are located in Essential Fish Habitat.

III. Water Quality/Resources

The Myrtle Creek watershed ranges in elevation from approximately 600 feet to 4,500 feet, with a climate that is characterized by cool, wet winters and hot, dry summers. Normally, 85 percent of the annual precipitation occurs from October to April. Precipitation comes primarily as rain, though elevations above 2,000 feet can receive substantial snowfall. Peak stream flows parallel this precipitation pattern. Low flows occur from July to October. Low base stream flows during summer months are often extreme and small 1st and 2nd order streams generally go dry.

Water quality standards are determined for each water body by the Oregon Department of Environmental Quality, and are designed to protect each water body for its most sensitive beneficial use. Streams which fail to meet standards for the identified beneficial use are placed on 303(d) list of Water Quality Limited Water Bodies (ODEQ 1998). The most sensitive beneficial use in the affected streams is for resident fish and aquatic life, and for salmonid fish spawning and rearing (Miner. 1996. p. 1). Streams within the watershed that have been designated as water quality limited and the parameter for which the listing was made are identified in Table 1.

Table 1 - Water Quality Limited 1998 - 303(d) Listings in the Myrtle Creek Watershed.

Name and Description	Evaluation Parameter	Listing Criteria	Miles	Season	Beneficial Uses Affected
North Myrtle Creek Mouth to Headwaters	Habitat Modification		16.6		Resident fish, aquatic life, salmonid spawning and rearing
South Myrtle Creek Mouth to Headwaters	Temperature	> 17.8 °C (64 °F)	20.5	Summer	Resident fish, aquatic life, salmonid spawning and rearing
South Myrtle Creek Mouth to Weaver Creek	Flow Modification		14.6		Resident fish, aquatic life, salmonid spawning and rearing
Riser Creek Mouth to Headwaters	Temperature	> 17.8 °C (64 °F)	4.1	Summer	Resident fish, aquatic life, salmonid spawning and rearing

A listing for habitat modification is generally associated with a lack of large wood in streams resulting from salvage or harvest of streamside forest. This can result in the loss of pool structure and off-channel habitat, bank erosion, and channel down-cutting.

Flow modification is primarily the result of excess water withdrawals for irrigation and livestock watering.

High water temperatures may be the result of a variety of factors. Among the most prevalent is the removal of streamside vegetation and timber that allows direct solar heating. Others include the loss of pool habitat and off-channel habitat that would otherwise store reserves of water which helps to moderate temperatures during periods of low summer flows. Broad and shallow stream channels resulting from undercutting and erosion of stream banks also increase the susceptibility of streams to excess heating.

No streams within the watershed are listed for excess fine sediment, but observations by BLM personnel and aquatic habitat surveys by the Oregon Department of Fish and Wildlife indicate that many streams are impaired by embedded sediments. Sources of sediment, other than from natural erosional processes, are most frequently associated with roads and culverts.

Road surfaces, particularly natural surfaces, are subject to erosion. Ditch lines can route sediment laden water from road surfaces and ditches directly into active streams in the absence of sufficient cross-drain culverts or out-sloping of road surfaces.

Culverts at stream crossings are also a potential source of sediment. Improperly installed or aligned culverts can cause downcutting of stream channels and banks at the outflow. Seepage beneath improperly installed or failing culverts can also erode and undermine fill material resulting in sedimentation (USDI. BLM. Coos Bay District. 1998).

IV. Wildlife

A. Special Status Species

Special status species are those: listed as threatened or endangered under the Endangered Species Act of 1973, as amended; candidates for listing or proposed for listing under the Act; or designated as Bureau Sensitive or Bureau Assessment species. Bureau Sensitive species are eligible for Federal or state listing, or candidate status under BLM 6840 policy. Bureau Assessment species are designated under Oregon/Washington BLM 6840 policy and are not presently eligible for listing or candidate status, but are of State concern and may require protection in the application of BLM management activities.

1. Threatened or Endangered Species

The following species inhabit lands on the Roseburg District: the Federally-endangered Columbian White-tailed deer (*Odocoileus virginianus leucurus*); Federally-threatened marbled murrelet (*Brachyramphus marmoratum*); Federally-threatened northern spotted owl (*Strix occidentalis caurina*); and Federally-threatened bald eagle (*Haliaeetus leucocephalus*).

The project watershed is located south of the historic range of the Douglas County population of Columbian white-tailed deer. As a consequence, it is not expected in the project areas, and no further discussion is necessary in this analysis.

The project watershed is located east of the 35-50 mile marbled murrelet management zone. The murrelet is not expected to be present and will not be discussed further in this analysis.

Annual surveys by the Oregon Cooperative Wildlife Research Unit have not located any nesting bald eagle sites in the South River Resource Area. None of the proposed project locations are near large rivers or bodies of water, nor would implementation result in removal of trees suitable for nesting or roosting. As a consequence, bald eagles are not expected to be present in the project areas and will not be discussed further in this analysis.

Northern Spotted Owl

Within the Myrtle Creek watershed, there are an estimated 15,090 acres of suitable habitat and 15,263 acres of dispersal habitat on BLM-managed lands. There are 17 northern spotted owl activity centers located wholly within the watershed and one other that partially overlaps the watershed. Nesting owl pairs are known to occupy 13 of these activity centers. One activity center is located within ¼-mile of proposed instream work, and another within ¼-mile of one of the slide stabilization sites.

Designated critical habitat unit OR-29 overlaps the eastern end of the watershed. There are 1,962 acres of critical habitat on BLM-administered lands, but none of the proposed projects are located within this area. As a consequence, critical habitat for the northern spotted owl will receive no further discussion in this analysis.

2. Proposed and Candidate Species

On the Roseburg District, there are no terrestrial species currently proposed for listing, or designated as candidates for listing under the Endangered Species Act.

3. Bureau Sensitive Species

Bureau Sensitive species known to inhabit the watershed include the peregrine falcon (*Falco peregrinus*) and the northern goshawk (*Accipiter gentilis*). Active nesting sites for both species have been identified in the watershed.

The peregrine falcon site is located in bluffs on the north side of South Myrtle Creek. The greatest concern for the species would be for disturbance to nesting birds leading to abandonment of young. None of the proposed projects are within 2 miles of the site, which would place them outside the area of concern relative to potential disturbance. As a consequence, the peregrine falcon will receive no further discussion in this analysis.

The goshawk nesting site is located in the headwaters area of Riser Creek. The site was first discovered in 1998, and has been occupied since. The site lies to the north of and within 0.25 miles of Road No. 28-3-17.0 along which slide clearing, slope stabilization and road improvements are proposed.

B. SEIS Special Attention Species

Special Attention species are designated for protection on Federal lands within the area encompassed by the Northwest Forest Plan, as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, and incorporated into the Roseburg District ROD/RMP. Special Attention species are not special status species unless also designated as such. Individuals occupying private lands are not subject to protection, as these lands are not subject to standards and guidelines of the Northwest Forest Plan, or management direction from the ROD/RMP.

Great gray owls may be found in a variety of forest types that include: ponderosa pine; lodgepole pine; tamarack; Douglas-fir; grand fir; aspen; or other deciduous tree species. The criteria for pre-disturbance surveys specify that the project area be located above 3,000 feet in elevation and within 1,000 feet of natural meadows larger than 10-acres in size. These habitat features are absent, so there would be no habitat disturbance. Surveys are not required and the great gray owl will not be discussed further.

The Crater Lake tightcoil snail (*Pristoloma articum crateris*) is suspected to inhabit portions of the watershed. The snail inhabits wet areas, such as spring seeps, above 2,000 feet in elevation. Key habitat features include woody debris, mosses and rushes. The Oregon shoulderband snail (*Helminthoglypta hertleini*) has been identified in the watershed, where it inhabits rocky openings with herbaceous covering. Key habitat features include talus, rock outcroppings and large down wood.

V. Botanical Resources

A. Special Status Species

The criteria for designation of a plant species as a special status species are identical to those for species of wildlife. These listings are limited to vascular plants, however, and presently do not extend to any species of fungi, lichens or bryophytes.

A review of the Roseburg District's Special Status plant list was used to identify species that could be expected to occupy special habitats present in the Myrtle Creek watershed. This list of species was further scrutinized to eliminate species occupying habitat types that would not be present in any of the project areas.

One Federally-threatened species, Kincaid's lupine (*Lupinus sulphureus* var. *kincaidii*), is known to exist in the watershed. The U.S. Fish and Wildlife Service has identified a series of soil types within a set of geographic quadrangles, considered to be potential habitat. Bureau Sensitive species that may be present are the wayside aster (*Eucephalus vialis*), tall bugbane (*Cimicifuga elata*) and Thompson's mistmaiden (*Romanzoffia thomsonii*).

B. SEIS Special Attention Species

As with wildlife, Special Attention species are designated under the Survey and Manage standards and guidelines of the Northwest Forest Plan. The following species are known to occur within the Myrtle Creek watershed and might be reasonably expected to be present in some of the project areas: *Cypripedium montanum*, *Marsupella emarginata* var. *aquatica* and *Ramalina thrausta*.

VI. Noxious Weeds

Noxious weeds are a problem throughout the United States. Exact acreage figures on the extent of infestation on the Roseburg District are not available, but the BLM Oregon State Office reported that the acreage of infestation nationwide increased at the average rate of 14 percent a year between 1985 and 1991, nationwide. This would translate to an increase of approximately 1,000 acres annually on the Roseburg District, as described on page 7 of the *Roseburg District Integrated Weed Control Plan and Environmental Assessment* (USDI BLM 1995b).

The Oregon Department of Agriculture (ODA) has developed a rating system for noxious weeds comparable to that contained in BLM Manual 9015 - Integrated Weed Management. The ODA Noxious Weed Rating System designates weeds as types "A" "B," and "T," which are equivalent to types "A," "B," and "C" described in BLM Manual 9015 - Integrated Weed Management. Species may be classed in multiple categories.

Type "A" weeds are of known economic importance which occur in small enough infestations to make eradication or containment possible; or are not known to occur, but their presence in neighboring states make future occurrence in Oregon seem imminent.

Type "B" weeds are of economic importance which are regionally abundant, but of limited distribution in some counties. Where implementation of a fully-integrated statewide management plan is infeasible, biological control shall be the main approach.

Type "T" weeds are designated by the State Weed Board as target weed species on which the ODA will implement a statewide management plan.

Following, is a list of the most common weeds known to occur in the Myrtle Creek watershed, and which could be encountered at project sites.

"A" Noxious Weed	"B" Noxious Weeds	"T" Noxious Weeds
woolly distaff thistle	bull thistle	yellow starthistle
	Canada thistle	woolly distaff thistle
	Scotch broom	
	Himalayan blackberry	
	tansy ragwort	
	St. John's wort	

Implementation of the *Integrated Weed Control Plan* by the District is ongoing in an effort to prevent or reduce rates of spread of weed populations, and eradication of target species in areas in which management activities are planned. These efforts may include mechanical treatments such as mowing, hand-pulling, and applying herbicides.

Management practices aimed at reducing the potential for spread or establishing conditions favorable for weed germination have also been implemented. These include required steam cleaning or pressure washing of heavy equipment used in logging and road construction, seeding and mulching of exposed soil with native seed, and revegetating disturbed areas with indigenous plant species.

Additional measures that could be employed include the eradication of noxious weeds on a site prior to project implementation, and the scheduling of projects so that work is conducted in uninfested areas prior to initiating work in infested areas. As a consequence, negligible changes in noxious weed populations are anticipated regardless of the alternative selected, and no further discussion of noxious weeds is necessary in this analysis.

VII. Cultural/Historical Resources

While the China Ditch is located in the watershed, and is listed on the National Register for Historic Sites, there are no designated sites in the immediate proximity of any proposed project areas. All of the sites for culvert replacement, slide stabilization, or instream work were surveyed for cultural sites, and none were located. The proposed road decommissioning and improvement projects would occur within the right-of-way limits of existing roads, previously cleared for cultural and historical resources. In the absence of any identifiable cultural or historical resources, there would be no effects from the proposed actions, and no further discussion is necessary in this analysis.

Chapter 4
ENVIRONMENTAL CONSEQUENCES

This chapter discusses how the specific resources in the project area would or would not be affected in the short term and long term, by implementation of the alternatives contained in this analysis. The discussion also identifies the potential consequences that would be expected.

I. Alternative 1 - The Proposed Action

Under the "proposed action" the BLM would pursue a variety of restoration projects designed to reduce soil erosion, improve water quality, and improve aquatic habitat conditions for resident and anadromous fish, consistent with the identified need for action described on p. 2 of this analysis. These projects would include the replacement of stream crossing culverts, road improvements, road decommissioning, placement of instream structures for aquatic habitat, and the stabilization and rehabilitation of slides associated with road failures.

A. Fish and Essential Fish Habitat

1. Aquatic Habitat Conditions

Effects from Culvert Replacements

Three direct effects on aquatic habitat conditions would be expected as a result of replacing the stream crossing culverts identified in this document.

In the short term, some sediment delivery would be expected in association with access roads, excavation, and culvert placement. This effect would be largely mitigated by the project design features described on p. 4 of this document. The effects of any sediment would be localized in scope and would not be expected to persist beyond the first winter following culvert replacement.

In the longer term, a reduction in fine sediment from improperly installed or failing culverts would improve the condition of spawning substrates as sediments are gradually flushed through the embedded gravels.

Long term effects of replacement of the 12 culverts identified in this analysis would also restore access to more than 21 miles of upstream habitat. The new structures would reduce stream flow velocities, and reduce or eliminate vertical drops that presently prevent passage to many juvenile and adult fish, both resident and anadromous.

Effects from Road Decommissioning

Direct effects would be from sediment generated in association with subsoiling of road surfaces, erosion of areas exposed by the removal of road fills, and removal of stream crossing culverts. This would be primarily associated with roads in close proximity to streams where sediment could be transported downslope into a channel, and the removal of stream crossings where sediments may have accumulated above the structures and where stream banks could be disturbed during pipe removal.

Most of the roads proposed for decommissioning are in upland areas away from streams where sediment would not be considered a likely outcome. Stream crossings that would be removed are located on intermittent or ephemeral channels. As a consequence, the amounts of sediment that could be produced would be small, and the effects would be localized and short in duration.

The long term consequences of the decommissioning would not be measurable at the watershed level. If all of the roads proposed for decommissioning in this analysis were treated, they would represent roughly 3 miles, or slightly more than one-half of a percent of the 520 miles of inventoried roads in the watershed. The primary benefit would be reducing sediment input that might lead to subsequent listing of streams as water quality limited.

Effects from Road Improvement/Upgrading

Road improvements in upland areas and outside of Riparian Reserves would not have any effect on aquatic habitat. The improvement of roads that are located within or which cross Riparian Reserves could result in sediment production where vegetation is removed and soil is disturbed by excavation. These effects would be short term for reasons previously described.

In the long term, the surfacing of roads would result in a reduction of sediment from surface erosion. Improvements and corrections to drainage systems would disperse run-off more evenly across the landscape. Sediment would settle out on slopes rather than being concentrated and transported into streams.

Effects from Placement of Instream Structures

As with culvert replacement, some short-term sediment delivery would be expected in association with access roads. Stream bank and channel disturbance associated with tree felling and yarding, or mechanical placement of logs would also likely occur. Project design features described on p. 4 of this document, in association with culvert replacement, would be applicable in reducing potential sediment delivery when installing instream structures. The expected effects of installing instream structures would be localized in scope and of short duration.

Long term effects would include increased habitat complexity. The structures would help to create additional pool habitat that would provide habitat for prey species, rearing habitat, deep pools of water for hiding cover and temperature refuge during low summer flows, off-channel habitat for over-wintering fish, and accumulation of substrates for spawning habitat.

Effects from Slide Stabilization

Slide stabilization would not be expected to have any direct effect on fish or aquatic habitat. The slides are located in upslope areas and are associated with fill and cut failures, rather than with headwalls and streams. Indirectly, slide stabilization would benefit the aquatic environment in the long term by reducing or eliminating the likelihood of material sliding downslope, or triggering slope failures which could migrate into streams and deposit large quantities of sediment which would degrade habitat and impair the feeding, spawning and rearing of fish.

2. Effects Determination for Threatened or Endangered Species

Although fish species would benefit from long term reductions in sediment within the watershed, improved condition of spawning substrates and access to additional stream habitat, they would be adversely affected in the short term by localized elevations in fine sediment and above normal turbidity levels.

Effects could include reduced respiratory efficiency resulting from gill irritation, reduced feeding efficiency resulting from reduced visibility, and short-term displacement from stress-induced migration. These effects would be "likely to adversely affect" Oregon Coast coho salmon and steelhead trout, consistent with those addressed in the National Marine Fisheries Service *Programmatic Biological and Conference Opinion for Programmatic Activities Affecting SONC Coho Salmon, OC Coho Salmon, and OC Steelhead* (USDC. 2002.).

Actions such as those proposed in this analysis will not prevent or appreciably delay the recovery of properly functioning habitat conditions. With the project design features described on pp. 3-5 of this analysis, the effects on fish populations are not anticipated to result in the likelihood of jeopardy, nor in destruction or adverse modification of aquatic habitat. The extent of incidental take, if any, would not be measurable as a long-term effect on population levels.

3. Effects Determination for Essential Fish Habitat

Because the projects would increase sediment, resulting in short term degradation of spawning substrates and water quality, they would be "likely to adversely affect" Essential Fish Habitat. Long term, overall reductions in sediment and the reestablishment of access to habitat would lead to overall improvements in habitat conditions and would not be likely to adversely affect Essential Fish Habitat.

B. Water Quality/Resources

The proposed actions would have no affect on the water quality parameters for which the Oregon Department of Environmental Quality has listed North Myrtle Creek and South Myrtle Creek (Table 1, p. 11).

There would be localized, short-term increases in sediment through the first winter and spring. This would be particularly true for those projects involving instream work (i.e. culvert replacement and instream structures), and the gradual dispersal of sediments that may have accumulated behind the current culverts.

The integrity and condition of the stream channel and banks would be maintained and improved in the long term. Installation of the new culverts or arch pipes at or below stream bed elevation would eliminate downcutting. Sizing to full bank width would remove restrictions to flow that accelerate stream velocities and result in abnormal bank and channel erosion. Design to accommodate a 100-year flood event would also diminish the risk of failure and washout that could introduce large quantities of sediment into streams, and the risk of debris torrents that could result in extreme erosion of banks and channels and damage to downstream properties and resources.

As discussed above, other restoration projects would also serve to reduce the potential for sediment and the degradation of water quality.

C. Wildlife

1. Effects Determination for Threatened or Endangered Species

The effects on the northern spotted owl and owl habitat from the implementation of the restoration projects contained in this alternative would be considered negligible.

With the exception of the instream project on Slide Creek, and slide stabilization and decommissioning on BLM Road No. 28-3-17.1, none of the project sites are within ¼-mile of occupied owl activity centers. Instream work on Slide Creek would be restricted to the period of July 1st to September 15th, a period of time outside of the critical portion of the nesting season when disturbance from operational noise would pose the greatest risk of nest abandonment. If owls are found to be nesting in proximity to planned slide stabilization and road decommissioning in Sec. 17, T. 28 S., R. 3 W., similar seasonal restrictions would be employed. With the application of these restrictions, restoration activities would have "no effect" on owls, for disturbance.

All of the proposed projects have the potential to modify habitat through the removal of individual trees. In the case of road improvements, road

decommissioning and slide stabilization, this would probably be limited to brushing and some removal of small saplings. Culvert replacement could require the removal of individual trees as large as 8-10 inches DBH.

The Slide Creek instream project would entail the felling of approximately 55 trees along 0.8-0.9 miles of stream, potentially affecting 70 acres within the Riparian Reserve. Although the trees selected would be larger trees, up to perhaps 24 inches DBH, the trees would be dispersed throughout the Riparian Reserve and selected to exclude trees with suitable nesting structures and characteristics. As a consequence, the effects to owl habitat would be negligible.

Although the possibility exists that there would be no tree removal associated with many of the projects, final design and contract specifications have not yet been developed. On a collective basis, the restoration projects "may affect, but are not likely to adversely affect" the spotted owl, though many of the projects may actually have "no effect."

2. Effects on Other Special Status Species

Slide stabilization and decommissioning on BLM Road No. 28-3-17.0 would occur within ¼-mile of the northern goshawk site in Section of T. 28 S., R. 3 W., and have the potential to disturb nesting goshawks.

In order to avoid potential disturbance and the possibility of nest abandonment, restoration activities in this area would be seasonally restricted from April 1st through August 30th, if nesting is confirmed. If surveys determine that nesting attempts were unsuccessful, or that the pair has moved beyond a range of ¼-mile, the restrictions would be lifted.

3. SEIS Special Attention Species

There would be no effect on Oregon shoulderband or Crater Lake tightcoil snails as a consequence of implementing projects comprising the "proposed action." Project sites would be examined for the presence of suitable habitat. Suitable habitat, if any, would be surveyed.

If surveys identify sites occupied by either of these species of snail, the most current management recommendations would be implemented to protect site and habitat conditions necessary for persistence of the snail populations. Mitigation could take the form of modifying individual projects, identifying alternative site access, or not implementing particular projects in the event that no suitable mitigation exists.

D. Botanical Resources

Under the "proposed action", there would be no effect to any special status or special attention species of vascular or non-vascular plants identified in Chapter 3 (pp. 14-15) of this document. Surveys of proposed project sites would be conducted prior to a decision to implement a given project.

If, in the course of surveys, special status or special attention plants are discovered, mitigation would be developed to protect site and habitat conditions necessary for persistence of the plant population(s). The mitigation could take the form of modifying individual projects, identifying alternative site access, or dropping the project in the event that no suitable mitigation could be developed.

II. Alternative 2 - No Action

Under this alternative, the restoration projects described on pp. 3-5 of this document would not be undertaken at this time. Future implementation of any of these projects would require independent analyses of the environmental consequences and subsequent decisions to proceed, subject to available funding.

A. Fish and Essential Fish Habitat

1. Aquatic Habitat Conditions

In the absence of any restoration activities, the "no action" alternative would have no direct or indirect consequences to the current condition of aquatic habitat in individual streams, or in the watershed at large.

Aquatic conditions would continue to be cumulatively affected by the past, present, and reasonably foreseeable management of agricultural lands and private timber lands within the watershed, as well as current and future management actions on BLM-administered lands.

Access to historically available habitat would continue to be impeded by stream crossing culverts that prevent passage by resident and anadromous fishes. These improperly installed or failing culverts would continue to downcut stream banks and channels, and create abnormal amounts of sediment. Accelerated flow velocities at culvert outlets would continue to scour stream beds to bedrock and flush gravels that would provide spawning and rearing habitat.

Erosion of fill materials comprising the crossings would also result in abnormally high sediment input. The risk of a catastrophic culvert failure would remain with the potential to further degrade aquatic conditions, pose risks to public safety, and damage property and other resources located downstream.

Sediments from unsurfaced roads, and surfaced roads with insufficient cross-drainage or improper shaping would continue to create abnormally high sediment levels and embedded substrates in stream channels.

The lack of sufficient large wood in Slide Creek would limit pool frequency and pool quality, subsequently reducing the available rearing and spawning habitat and limiting overall habitat complexity. Harvest of timber along streams located on private lands would further retard recovery by removing those trees that would be most likely to provide future sources of large wood to the aquatic system.

2. Threatened or Endangered Species

Because there would be no restoration actions undertaken which would disturb, alter or otherwise affect aquatic habitat or water quality, this alternative would not directly or indirectly affect the Oregon Coast coho salmon. The effect of the "no action" alternative on the Oregon Coast steelhead trout would be comparable.

These species would be cumulatively affected, however, by the continuing degradation of aquatic habitat conditions, described above.

3. Essential Fish Habitat

Because there would be no restoration actions undertaken which would disturb, alter or otherwise affect aquatic habitat or water quality, this alternative would not directly or indirectly affect any Essential Fish Habitat. It would, however, continue to be cumulatively affected as described above.

B. Water Quality/Resources

Under the "no action" alternative, there would be no improvements to water quality specific to those streams listed as Water Quality Limited, or within the watershed in general. Sediments from failing or improperly installed culverts, roadside slides, erosion of unsurfaced roads, and inadequate drainage on surfaced road systems would continue to degrade water quality. This could eventually lead to the listing of additional streams as water quality limited, for excess fine sediment.

Downcutting from improperly installed, undersized and/or failing culverts would continue to degrade stream structure by undercutting stream banks. This could result in a widening of the channels with a resultant decrease in channel depths and susceptibility to excess heating.

C. Wildlife

There would be no direct or indirect effect on any special status or special attention wildlife species. In the absence of any restoration actions, there would be no modification of existing habitat, and no potential for disturbance associated with the operation of construction equipment.

D. Botanical Resources

This alternative would have no direct effect on any special status or special attention species that may be present at any project site described in this analysis, because there would be no disturbance or modification of the existing habitat conditions.

III. Recent and Reasonably Foreseeable Future Federal Actions Within the Myrtle Creek Watershed

Within the past year, one stream crossing has been replaced, located on Weaver Creek. Potential sediment associated with this project is expected to have dispersed prior to implementation of any projects described in the "Proposed Action." Limited road renovation and decommissioning is planned on BLM Road No. 29-4-23.1, in the summer of 2003. No effects on aquatic habitat and water quality are anticipated from this project.

A commercial thinning timber sale in the Upper South Myrtle subwatershed is being planned and analyzed, with anticipated implementation in 2-3 years. No road construction is planned in proximity to any streams. "No harvest" buffers would be planned and established on all streams within or adjacent to proposed units. It is anticipated that thinning operations would be restricted to the dry season so that timber haul on natural and aggregate surfaced roads would not generate sediment. The primary arterial comprising the probable haul route is paved and would not produce any sediment.

As a consequence, other projects implemented in the recent past or planned in the foreseeable future are not expected to cumulatively affect aquatic conditions within the watershed.

IV. Monitoring

Monitoring would be done in accordance with the ROD/RMP, Appendix I (p. 84, 190, 193, & 195-199), with emphasis on assessing the effects of the restoration activities on the following resources: Riparian Reserves; Water and Soils; Wildlife Habitat; Fish Habitat; and Special Status and SEIS Special Attention Species Habitat.

Chapter 5
Agencies and Individuals Contacted; Preparers; Literature and References Cited

This project was included in the Roseburg BLM Project Planning Update (Spring 2002). A notice of decision will be published in the Roseburg *News-Review* if the decision is made to implement any of the projects described in this analysis.

I. Agencies & Persons Contacted:

Adjacent Landowners
Cow Creek Band of Umpqua Indians
NOAA Fisheries
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Registered Down-Stream Water Users
U.S. Fish and Wildlife Service

II. Preparers and Contributors:

Paul Ausbeck	NEPA Coordinator/EA Writer
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Dennis Hutchison	Soils
Julie Knurowski	Botany/Noxious Weeds
Paul Meinke	Fisheries/Watershed Analysis
Ed Richardson	Engineering
Joe Ross	Management Representative
Don Scheleen	Cultural/Historical Resources
Cory Sipher	Fisheries
Larry Standley	Hydrology

III. Agencies, Organizations, and Individuals to be notified of the Availability of the EA/FONSI:

Cow Creek Band of Umpqua Indians
Doug Heiken, Oregon Natural Resources Council
Francis Eatherington , Umpqua Watersheds, Inc.
Bob Kinyon, Umpqua Watershed Council
NOAA Fisheries
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Robert Ragon, Executive Director Douglas Timber Operators
Ronald Yockim, Attorney for Douglas County Commissioners
U.S. Fish and Wildlife Service

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USDA Forest Service and USDI Bureau of Land Management. 1994b. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.

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APPENDIX
A

PROPOSED PROJECTS

Table 1 – Culverts Proposed for Replacement

Road Number	Legal Description of Location	Stream	Fill Height (in feet)	Outlet Height (in feet)	Upstream Habitat (Miles)	Culvert Condition	Maximum Flood Event Design (Years)
28-4-15.1	T. 28 S., R. 4 W. NE ¼ SE ¼ Sec. 15	Lee Creek	8	6	2	Good	25
28-4-28.0	T. 28 S., R. 4 W. SE ¼ SE ¼ Sec. 21	Lee Creek	4	6	2	Good	25
Private Road off 28-4-28.0	T. 28 S., R. 4 W. NE ¼ NW ¼ Sec. 22	Lee Creek	2	5	2	Fair	25
28-4-28.0	T. 28 S., R. 4 W. NE ¼ SE ¼ Sec. 28	Lee Creek	2	4	2.5+	Good	100
29-3-16.0	T. 29 S., R. 3 W. SW ¼ NE ¼ Sec. 16	Weaver Creek	3	0.5	3	Good	100
28-4-13.0	T. 28 S., R. 4 W. NW ¼ NW ¼ Sec. 13	Tributary to N. Myrtle Creek	2	5	2	Fair	25
28-4-28.0	T. 28 S., R. 4 W. NW ¼ SE ¼ Sec. 15	Tributary to Lee Creek	3	2+	1.5	Good	25
28-4-28.0	T. 28 S., R. 4 W. NW ¼ NW ¼ Sec. 22	Tributary to Lee Creek	3	2+	0.5+	Good	25
Private Road off 28-4-34.0	T. 28 S., R. 4 W. NE ¼ SE ¼ Sec. 26	Slide Creek	8	2+	1	Poor	25
28-4-34.0	T. 28 S., R. 4 W. NE ¼ SE ¼ Sec. 26	Riser Creek	5	2+	2	Good	100
29-4-11.1	T. 29 S., R. 4 W. NE ¼ SE ¼ Sec. 11	Tributary to Louis Creek	8	3	1	Fair	25
29-4-15.1	T. 29 S., R.4 W. SW ¼ NE ¼ Sec. 15	Ben Branch Creek	8	6	1.5	Poor	25

Table 2 – Roads Proposed for Decommissioning

Road Number	Length (miles)	Surfacing	Recommendations
28-2-32.3 Segment A	0.58	Natural	Fully Decommission
28-2-32.4 Segment A	0.20	Natural	Fully Decommission
28-3-8.2	0.36	Rock	Fully Decommission
28-3-33.2	0.38	Natural	Treat Scotch broom, remove culverts, fix drainage problems w/ check dams and water bars
28-4-1.1 Segment A	0.07	Rock	Decommission short spur and pull culvert, but retain access to pump chance
28-4-15.0	0.40	Rock	Decommission road beyond slide and pull last culvert
29-3-15.2	0.24	Rock	Fully Decommission
29-4-3.0 Segment A	0.73	Natural	Fully Decommission

Table 3 – Roads Proposed for Improvements

Road Number	Length (Miles)	Current Surfacing
28-4-17.0 Segment A	0.35	Natural
28-3-7.1 Segment A	0.35	Natural
28-3-8.1 Segment B	0.01	Natural
28-3-8.1 Segment D	0.25	Natural
29-3-11.2 Segment A	0.51	Rock
29-3-11.2 Segment B	0.47	Natural
29-3-20.0 Segment B	0.04	Natural
29-3-20.0 Segment D	0.07	Natural
30-5-3.0 Segment A	0.36	Natural
30-5-3.0 Segment B	0.29	Natural
30-5-14.0 Segment C	0.82	Natural
30-5-14.0 Segment D	0.50	Natural

Table 4 – Slides Proposed for Stabilization and Rehabilitation

Road Number	Recommendations
28-3-17.0	Stabilize two (2) slides and reopen road. Perched fill should be removed and endhauled. Blowdown timber should be left on slope above road if it is contributing to stabilization of the slope.
28-3-17.1	Slides are stabilized. Block road and install waterbars up to the location of the first slide.
28-3-32.0	Stabilize one small slide and close the road to vehicular access.
28-4-15.0	Stabilize one small slide and close the road to vehicular access.
29-4-2.1 Segments B&C	Stabilize three (3) small slides along final 0.30 miles of the road, then decommission.

APPENDIX B

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order. These resources or values are either **not present** or **would not be affected by the proposed actions or alternative**, unless otherwise described in this EA.

ELEMENT	NOT PRESENT	NOT AFFECTED	IN TEXT
Air Quality		X	X
Areas of Critical Environmental Concern	X		
Cultural Resources		X	X
Environmental Justice		X	
Farm Lands (prime or unique)	X		
Floodplains	X		
Invasive, Non-native Species		X	X
Native American Religious Concerns	X		
Threatened or Endangered Wildlife Species			X
Threatened or Endangered Plant Species		X	X
Wastes, Hazardous or Solid	X		
Water Quality Drinking/Ground		X	X
Wetlands/Riparian Zones		X	
Wild & Scenic Rivers	X		
Wilderness	X		
Visual Resource Management		X	X