II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternative I - No Action

Under this alternative, no timber harvest or associated management activities would occur within the Big Creek Analysis Area at this time. Meeting the District's decadal ASQ volume commitment would have to be accomplished from other analysis areas.

Alternative II - Proposed Action

This alternative consists of 11 regeneration harvest units in the GFMA (239 acres), 4 regeneration harvest units in Connectivity (110 acres), 6 commercial thinning units in GFMA (245 acres), 1 density management thinning unit in Connectivity (11 acres), 2 hardwood conversion units in the GFMA (8 acres), 1 hardwood conversion unit in Connectivity (14 acres), and 1 brush conversion in the GFMA (6 acres); totaling 633 acres. This total includes 90 acres of density management thinning in Riparian Reserves and 3 acres of brush/hardwood conversion in Riparian Reserves.

All perennial, non fish-bearing streams retain the interim Riparian Reserve widths of 220 feet (one site potential tree height - Section P of the Analysis File) on each side of stream channels. All fish-bearing streams retain the interim Riparian Reserve widths of 440 feet on each side of stream channels. Intermittent streams retain the interim Riparian Reserve widths of 220 feet on each side of stream channels except in fourteen cases. Riparian Reserves on 14 intermittent stream segments were analyzed and the boundaries adjusted on one or both sides of the stream channel as follows: one segment adjusted to 175 feet, ten segments adjusted to 110 feet, one segment adjusted to 90 feet, and two adjusted to 110 feet or ridgetop (whichever is less). Approximately 22 acres of Riparian Reserve would be converted to GFMA through these modifications. Approximately two acres of GFMA would be converted to Riparian Reserve to encompass potentially unstable areas. In all cases, the adjustments would meet the Aquatic Conservation Strategy (ACS) Objectives (Section K of the Analysis File contains detailed ACS analysis). Details on Riparian Reserve adjustments are contained in Section O of the Analysis File.

Future stocking of regeneration harvest units would closely resemble the original stand species composition through planting and natural seeding.

Commercial thinnings (CT), density management thinnings (DMT) in Connectivity, and DMT in Riparian Reserves would retain 90-130 trees/acre in most units. In these cases, spacing would vary throughout the thinning units and hardwoods would be thinned along with conifer. Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves which resulted from past harvest/disturbance would be treated to reestablish conifers. Alternative DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments would accelerate development of late-successional forest characteristics in Riparian Reserves and improve habitat conditions for riparian dependent/associated species.

Regeneration harvest units would retain approximately 7 wildlife trees/acre in the GFMA units and 13 wildlife trees/acre in the Connectivity units. Skyline cable systems would be used for harvest in all units except one hardwood conversion unit (6 acres) which would be ground based. Approximately 150 feet of new (semi-permanent) road construction would occur in a Riparian Reserve, but the road would not cross any stream channels and would be fully decommissioned after use.

This alternative could be accomplished through timber sales in FY99, FY2000, & FY2001. Appendix 2 contains detailed unit descriptions. Appendix 3 contains maps showing roads to be constructed, improved or renovated for this alternative.

Regen Harvest Acres (GFMA)	Regen Harvest Acres (Con.)	CT Harvest Acres	DMT Harvest Acres	Hardwd Conver. Acres (GFMA)	Hardwd Conver. Acres (Con.)	Brush Conver. Acres	Total Acres	Total Volume (MBF)
239	110	245	11	8	14	6	633	18,554

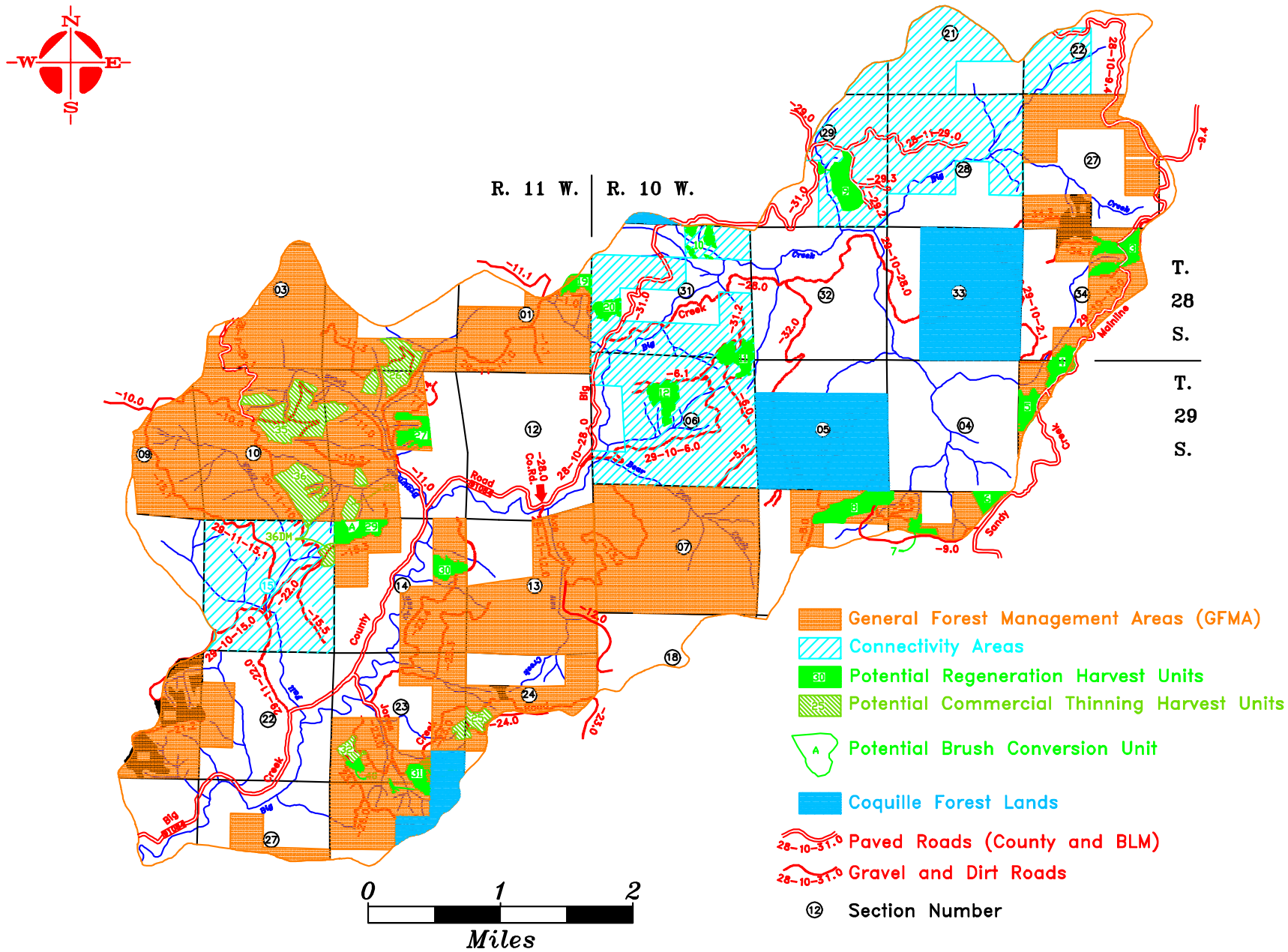
Regen - Regeneration
Con. - Connectivity
CT - Commercial Thinnings (Includes Density management thinning in Riparian Reserves)
DMT - Density management thinnings in Connectivity
Hardwd - Hardwood
Conver. - Conversion
MBF - Thousand Board Feet

N.C. - Rock Decom. (miles)	N.C. - Dirt Full Decom. (miles)	N.C. - Cementitius** Full Decom. (miles)	Road Improve. (Rock) Decommission (miles)	Road Renovation - Rock (miles)	Designated Skid Road Full Decom. (miles)	Road Miles To Be Closed*
1.1	.6	.3	.9	14.1	.2	10.62

N.C. - New Construction
Decom. - Decommission; Roads to be blocked and treated as necessary to restore hydrologic functions after completion of timber sale contract.
Full Decom. - Full Decommission; Roads to be decommissioned, sub-soiled, and planted after completion of timber sale contract.

* - Roads closed under the Road Closure Recommendations, Appendix 4.
** Cement additive to existing soil to temporarily harden surface for timber haul.

Big Creek Analysis Area EA
Alternative II – Proposed Action


N
W
E
S
R. 11 W.
R. 10 W.
T. 28 S.
T. 29 S.
Big Creek
Sandy Mainline
Co.Rd.
Road
County
Jor
Creek
Big Creek
Big Creek
Big

Alternative III - Alternative Action

This alternative consists of 16 regeneration harvest units in the GFMA (361 acres), 4 regeneration harvest units in Connectivity (110 acres), 6 commercial thinning units in GFMA (245 acres), 1 density management thinning unit in Connectivity (11 acres), 2 hardwood conversion units in the GFMA (8 acres), 1 hardwood conversion unit in Connectivity (14 acres), and 1 brush conversion in the GFMA (6 acres); totaling 755 acres. This total includes 90 acres of density management thinning (DMT) in Riparian Reserve and 3 acres of brush/hardwood conversion in Riparian Reserve.

All perennial, non fish-bearing streams retain the interim Riparian Reserve widths of 220 feet (one site potential tree height - Section P of the Analysis File) on each side of stream channels. All fish-bearing streams retain the interim Riparian Reserve widths of 440 feet on each side of stream channels. Intermittent streams retain the interim Riparian Reserve widths of 220 feet on each side of stream channels except in seventeen cases. Riparian Reserves on 17 intermittent stream segments were analyzed and the boundaries adjusted on one or both sides of the stream channel as follows: one segment adjusted to 175 feet, thirteen segments adjusted to 110 feet, one segment adjusted to 90 feet, and two adjusted to 110 feet or ridgetop (whichever is less). Approximately 30 acres of Riparian Reserve would be converted to GFMA through these modifications. Approximately two acres of GFMA would be converted to Riparian Reserve to encompass potentially unstable areas. In all cases, the adjustments would meet the Aquatic Conservation Strategy (ACS) Objectives (Section K of the Analysis File contains detailed ACS analysis). Details on Riparian Reserve adjustments is contained in Section O of the Analysis File.

Future stocking of regeneration harvest units would closely resemble the original stand species composition through planting and natural seeding.

Commercial thinnings (CT) and DMT in Connectivity, and DMT in Riparian Reserves would retain 90-130 trees/acre in most units. In these cases, spacing would vary throughout the thinning units and hardwoods would be thinned along with conifer. Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves which resulted from past harvest/disturbance would be treated to reestablish conifers. Alternative DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments would include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments would accelerate development of late-successional forest characteristics in Riparian Reserves and improve habitat conditions for riparian dependent/associated species.

Regeneration harvest units would retain approximately 7 wildlife trees/acre in the GFMA units and 13 wildlife trees/acre in the Connectivity units. Skyline cable systems would be used for harvest in all units except one hardwood conversion unit (6 acres) which would be ground based. Approximately 150 feet of new road (semi-permanent) construction would occur in a Riparian Reserve but the road would not cross any stream channels and it would be fully decommissioned after use.

This alternative could be accomplished through timber sales in FY99, FY2000, & FY2001.

Appendix 2 contains detailed unit descriptions. Appendix 3 contains maps showing roads to be constructed, improved or renovated for this alternative.

Regen Harvest Acres (GFMA)	Regen Harvest Acres (Con.)	CT Harvest Acres	DMT Harvest Acres	Hardwd Conver. Acres (GFMA)	Hardwd Conver. Acres (Con.)	Brush Conver. Acres	Total Acres	Total Volume (MBF)
361	110	245	11	8	14	6	755	25,135

Regen - Regeneration
Con. - Connectivity
CT - Commercial Thinnings (includes density management thinnings in Riparian Reserves)
DMT - Density management thinnings in Connectivity
Hardwd - Hardwood
Conver. - Conversion
MBF - Thousand Board Feet

N.C. - Rock Decom. (miles)	N.C. - Dirt Full Decom. (miles)	N.C. - Cementitius** Full Decom. (miles)	Road Improve. (Rock) Decommission (miles)	Road Renovation - Rock (miles)	Designated Skid Road Full Decom. (miles)	Road Miles To Be Closed*
1.2	.7	.3	.9	16.9	.2	11.14

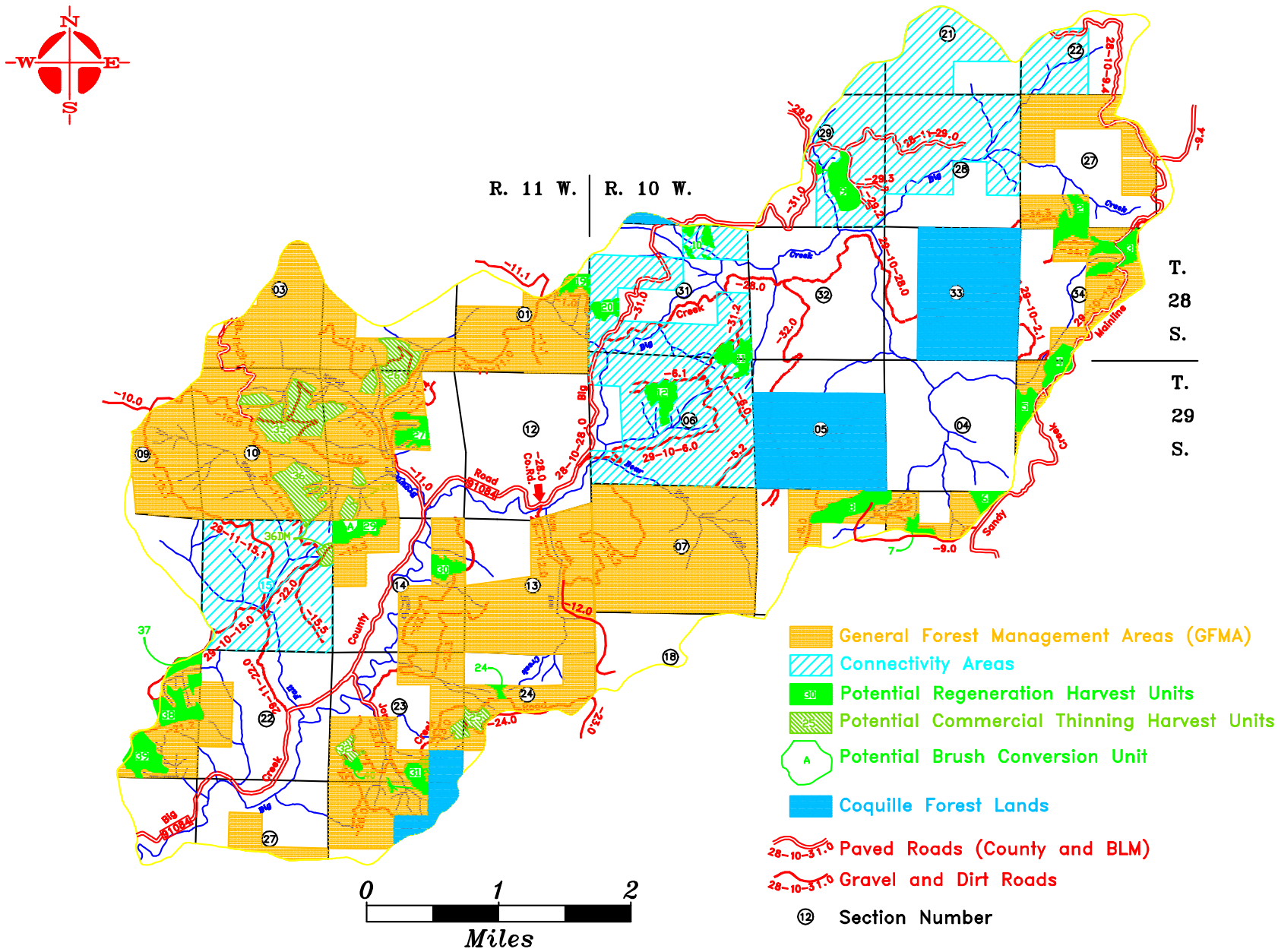
N.C. - New Construction
Decom. - Decommission; Roads to be blocked and treated as necessary to restore hydrologic functions after completion of timber sale contract.
Full Decom. - Full Decommission; Roads to be decommissioned, sub-soiled, and planted after completion of timber sale contract.

* - Roads closed under the Road Closure Recommendations, Appendix 4.
** Cement additive to existing soil to temporarily harden surface for timber haul.

Design Features for Action Alternatives and Monitoring

Design features and monitoring can be found in Appendix 1.

Big Creek Analysis Area EA
Alternative III – Alternative Action



Summary of Consequences - Relative Impacts of Alternatives

Consequence	Alternative I No Action	Alternative II Proposed Action	Alternative III Alternative Action
Landscape Pattern (Issue 1)			
Late-successional forest removed (acres)	0	274	389
Incipient old-growth forest removed (acres)	0	0	28
Habitat removal from important connection areas (acres)	0	0	74
Contribute to the District's ASQ (Issue 2)			
Estimated timber volume (MBF)	0	18,554	25,135
Estimated timber volume from Connectivity (MBF)	0	4,321	4,321
Riparian Reserve Functions (Issue 3)			
Net Reduction of Riparian Reserve (Acres)	0	20	28
Potential future LWD recruitment	No change	Enhanced	Enhanced
Impacts to "high value" Riparian Reserves	None	Low	Medium
Roads (Issue 4)			
Open road density (Miles/Section)^2	4.04	3.29	3.25
Miles of new road corridor (potential barriers to wildlife movements)	0	2.0	2.4

III. AFFECTED ENVIRONMENT

VEGETATION: The Big Creek Analysis Area lies within the Port-Orford-cedar variant of the western hemlock zone (see Big Creek Watershed Analysis). Much of the area was affected by the 1868 fire which resulted in much of the forest vegetation having birthdates of 1860 -1890. The species composition reflects this combination. Timber sale data from previously harvested (100-120 year old) stands throughout the analysis area reveals that the percentage of Douglas-fir stems ranges from 60 to 75%, with a mixture of Port-Orford-cedar (< 31%), western hemlock (<15%), hardwoods (<15%), grand fir (<10%), and a trace (<1%) of western redcedar. Visual observations of these stands indicate that the understory is comprised of small hemlock, Port-Orford-cedar, myrtle, chinkapin, tanoak, and a variety of shrub species. Within the few patches of residual older forests, the percentage of hemlock and Port-Orford-cedar increase to approximately half the stand composition. Additional information on vegetation diversity can be found on pages 71 - 76 of the Big Creek Watershed Analysis.

Currently, 40% of the forest cover is in late-successional habitat (defined as forests > 80 years of age), with over half of that within some variation of 'Reserve' land use allocation. Additional information on stand ages can be found on pages 12, 13, 74, and 100 of the Big Creek Watershed Analysis.

WILDLIFE: The analysis area contains numerous ecologically and economically important wildlife species. Table C-1 Appendix C of the Big Creek Watershed Analysis contains a list of all vertebrate wildlife species known or suspected to occur. There are 31 wildlife species or species groups of special management concern. These 31 species/groups fall into two categories; some require further site-specific analysis under the regional planning efforts (Northwest Forest Plan); the others are of special local concern. These species of concern rely on the pattern and distribution of key habitats or habitat features such as complex forest structure, late-successional forests, snags and down logs, and rocky habitats.

SOILS/GEOLOGY: The proposed units within the Big Creek Analysis Area are composed of soil types that fall into one of three classifications: The Digger - Preacher - Remote, Preacher - Blachly, or Preacher - Bohannan associations. These soil types are described in detail in the Coos County soil survey of 1989. The Digger - Preacher - Remote soils are shallow to moderately deep, steep to very steep slopes, gravelly and loamy soils derived from sedimentary rock. The Preacher - Bohannan soils are deep to moderately deep, have gentle to moderately steep slopes, and gravelly and loamy soils that formed from sedimentary rock. The Preacher - Blachly soils exhibit deep well drained characteristics on gentle to moderately steep slopes, are clayey in nature and are derived from arkosic sandstone or basalt or sedimentary rock.

Of these soil types the 14F, 15F, 46F, and 58F are the most sensitive to landslides as noted in the Big Creek Watershed Analysis. The erosion hazard is high when bare soil is exposed to rain on steep and very steep slopes. Erosion is moderate when slopes are less than 50%.

The Big Creek Analysis Area has four major fault lines running on a NE to SW direction.

Three fault lines are closer to the Sandy Creek subwatershed, and the other fault line cuts across the upper portions of the Fall and Brownson Creek drainages. For the majority of the units proposed for harvest, fault lines are not a factor. However, some units have elevational changes in the middle of the unit resulting in steep cliffs that could impair yarding by reducing deflection. These are due to uplifts within the formation rather than between faults. EA Units 8, 12, and 35 are impacted by faults and EA Unit 25 is straddled across two different formations.

GEOMORPHOLOGY/HYDROLOGY/WATER QUALITY: Big Creek is a 16,661-acre 6th field subwatershed, within the Middle Fork Coquille watershed. Big Creek is a gentle gradient (0.5%), 5th order stream for most of its length, with steep tributaries including Big, Brownson, Fall, Bear Pen, Axe and Jones Creeks. The subwatershed has about 186 miles of stream channels and a drainage density approaching 7.2 mi/mi^2. Intermittent 1st and 2nd order streams, seeps, or springs, and perennial 1st and higher-order streams are present throughout the Big Creek Analysis Area. Most of the subwatershed is low elevation and below the transient snow zone, except for small portions of upper Big Creek. About 60% of the annual runoff occurs between December and February. Streams are flashy and very responsive to storms with hydrographs showing sharp rises and steep drops. High flows occur <5% of the time, moderate flows 45% of the time, and low flows 50% of the time.

Water quality in Big Creek is affected by watershed processes and land use practices. The primary source of sediment delivery to channels is debris avalanches and shallow rapid debris flows into source streams. This process occurs on an infrequent basis, but yields high sediment delivery volumes. There are many in-channel sources of sediment in lower Big Creek, especially from Rosgen stream types A5, A6, B6, F5 and F6. Watershed analysis showed there were higher turbidities in the Jones Creek drainage during storms, due to the parent material of the area.

Many 1st and 2 nd order channels are either entrenched or heavily embedded with fine sediment (silt and sand). High turbidities from fine sediment delivery are regularly noted during spawning surveys. While certain soils within the analysis area are naturally predisposed to produce fine sediment suspensions during high runoff periods, impacts from past land-management practices have undoubtedly exacerbated the process, with respect to both in-channel and out-of-channel sources. These conditions are likely to exist throughout the private and public land area that was tractor logged before 1980.

Big Creek exceeds the South Coast Basin Standard for summer water temperature from the mouth to Bear Pen Creek, and is listed in the DEQ's 305(d) report.

There are 22 occupied residences in the analysis area, consuming water for domestic and irrigation purposes from surface, spring or groundwater sources. Two water rights on record, permit numbers 34907 and 48468, have spring-fed points of diversion on BLM within Sec. 21, T. 29 S., R11 W., WM. These permit holders use spring water for domestic use and have existing Right-of-Way Agreements with BLM. The points of diversion and transmission lines appear to be within Riparian Reserves.

FISHERIES: The Big Creek watershed supports populations of coho salmon, fall chinook salmon, winter steelhead, coastal cutthroat trout (resident and sea-run), Pacific lamprey, brook lamprey, speckled dace, prickly sculpin, reticulate sculpin, threespine stickleback, and largescale sucker. Oregon Coast coho salmon are listed as threatened under the Endangered Species Act (ESA). Furthermore, Oregon Coast steelhead and coastal sea-run cutthroat trout are federal candidate species; stock status reviews are ongoing to determine if future listings may be warranted. The distribution of resident and anadromous fish within the analysis area is described in the Big Creek Watershed Analysis (p.114); further revisions to fish distribution, based on electroshocking in spring of 1997 and 1998, are on file in the Myrtlewood Resource Area (Section O of the Analysis File). Additional information on fish stocks can be found on pages 16, 114-117 and 126-133 of the Big Creek Watershed Analysis.

RIPARIAN RESERVES: The Big Creek Analysis Area contains about 5,037 acres of interim Riparian Reserve on BLM-managed lands. Age class distribution is as follows: 0-40 yrs (48%), 41-80 yrs (12%), 81-120 yrs (13%), 121-160 yrs (24%), 161-20 yrs (trace), and 200+ yrs (2%). While the majority of these Riparian Reserves contain low to moderate amounts of soft, embedded, down logs from previous harvest (decay class 3+), "hard" (class 1 and 2) down logs are virtually absent. Only 2% of Riparian Reserve stands are greater than 160 years old; it is at this age that trees reach a size that they contribute appreciably to large wood quantities. Over the next forty years, riparian stands currently 120-160 years old (24% of Riparian Reserve) will "self-thin" and begin to provide class 1 logs to riparian forests and streams. However, because the great majority of stands are <40 years old, it would take up to 120 years to reach optimal wood recruitment levels in Riparian Reserves. Additional information on the condition of Riparian Reserves can be found in the Big Creek Watershed Analysis (pp. 82-86) and Riparian Reserve Evaluation (pp. 146-160).

TRANSPORTATION SYSTEM: At present, the open road density on BLM-managed lands within the analysis area is approximately 4.0 mi/mi^2. The road systems access both federal and private lands, consequently the Bureau have existing Reciprocal Right-Of-Way Agreements with Georgia Pacific-West, Menasha Corporation, Al Pierce Lumber Company, and Lone Rock Timber Company. These Reciprocal Right-Of-Way Agreements give all land owners access to their lands, and at the same time, reduce road density by eliminating the need for duplicate road systems. In addition, lands managed by the Coquille Tribe use the road system to access their lands.

The BLM controls approximately 65% (70 miles) of the transportation system (108 miles total) in the analysis area. Approximately 86% (60 miles) of the BLM-controlled roads are either gravel or bituminous surfaced. Many of the unsurfaced roads in the analysis area fall into two categories: either newly constructed roads or old roads in some stage of hydrologic recovery. Most older dirt spurs and roads on BLM-managed lands are not contributing sediment to stream channels from their surfaces.

IV. ENVIRONMENTAL CONSEQUENCES

Alternative I - No Action

Under this alternative, no timber harvest, road decommissioning, or mitigation would take place within the analysis area at this time.

Direct and Indirect Effects (Alt. I)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative I maintains the most existing late-successional and old-growth habitat, but foregoes opportunities to facilitate future development of late-successional forest characteristics in younger stands and hardwood/brush stands.

No late-successional forests or forests with late-successional forest characteristics (large diameter trees, broken and decayed trees, large down logs and snags) would be harvested. Approximately 40% of BLM-managed lands in the analysis area contain stands >80 years of age and 25% contain forests >120 years of age. Approximately 60% of these late-successional forests are in Reserves. Old-growth forests (those >200 years of age) occur on <2% of the analysis area (Table W-1, Section I of the Analysis File). Late-successional forests in the analysis area along the Middle Fork Coquille River corridor would remain intact; these forests are important potential habitat for bald eagles and some other river-oriented species. Dense conifer stands, with little diversity in plant species or structure, would continue to develop diversity slowly. Brush fields and hardwood stands resulting from past management would continue to develop slowly toward later-successional stages.

The analysis area contains all or portions of 3 Connectivity Blocks (see Big Creek WA for maps of Connectivity Blocks). Blocks 1 and 2 contain 59% and 44% of late-successional forests, respectively; most of these are 81-120 years of age. See Table W-2 (Section I of the Analysis File) for a further breakdown of age classes in Connectivity Areas.

Key Indicator: Habitat Connections

All existing connections on BLM-managed lands would remain intact including the three important connection areas in the north and west parts of the analysis area that were identified in the Big Creek Watershed Analysis (p. 96).

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would not contribute any volume toward the decadal ASQ for the District. Based on the FRMP, there is planned regeneration harvest in GFMA and Connectivity, commercial thinning in GFMA, and density management thinning in Connectivity. All of these treatments contribute to the Districts's ASQ. Opportunities to manage Connectivity, convert

brush and hardwood stands to conifer, or commercial thin in the GFMA would be delayed or foregone.

Riparian Reserve Function (Issue 3)

All Riparian Reserves associated with proposed regeneration harvest units would remain at interim reserve widths. The No-Action Alternative would not affect the development of the 160 year-old age class in the Riparian Reserves. DMT would not occur within Riparian Reserves, therefore we forego the opportunity to enhance the structural characteristics (including future LWD) in these stands. Habitat conditions for species associated with or dependant upon Riparian Reserves would remain unchanged.

Roads (Issue 4)

Key Indicator: Open road density

The following table summarizes the effects of roads for all alternatives:

Table 1: Road Density

	Alt. I	Alt. II	Alt. III
Miles of new road construction[1]	0	2.0	2.4
Open Road Density on BLM (miles/sq. mile)[2]	4.04	3.29	3.25

[1] All new road construction would be fully decommissioned or decommissioned; includes designated skid road.
[2] Open roads = roads accessible to motorized vehicles. Target open road density in the FRMP is 1.1 miles/sq. mile with a maximum of 2.9 miles/sq. mile.

There are no direct or indirect effects to open road density under the No-Action Alternative.

Key Indicator: Impacts to wildlife

The existing open road density within the analysis area would perpetuate the current level of disturbance to wildlife, discouraging the use of habitats adjacent to these open roads. No new roads would be constructed; therefore, no new barriers (corridors or graveled surfaces) to movement would be created. Since open road density on BLM would remain the same, the potential for loss of roadside down log habitat through theft and salvage would not change. The overall effect of the No-Action Alternative would be continued disturbance to wildlife and adverse impacts to wildlife habitat at the current high level. None of the recommended road decommissioning proposed under the action alternatives would be completed at this time. Barrier effects of roads on wildlife movements will remain unchanged. Decreased connectivity of habitats due to road barriers limit the ability of wildlife to recolonize habitats and isolates populations making them more susceptible to local extirpation.

Cumulative Effects (Alt. I)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

There are no late-successional forests on private lands, and none are expected to develop because of short rotation ages. Approximately 20 acres of hardwood forests in Riparian Reserves will be treated to reestablish conifers through Jobs-In-the-Woods (JIW) riparian restoration projects (EA No. OR120-98-12), which will facilitate development of future late-successional forest characteristics. The Coquille Indian Tribe is expected to harvest approximately 334 acres in the analysis area within the next few years, most of which is late-successional forest. The largest, most contiguous blocks of late-successional habitat and key late-successional habitat near the Coquille River would not be affected by Coquille Indian Tribe harvest. The overall percentage of late-successional forest in the analysis area would be expected to increase by >1,000 acres over the next 4 decades as new stands enter the 80+ year age class.

Key Indicator: Habitat Connections

Currently active timber sales (Sandy Creek Analysis Area EA, No. OR128-96-21) will harvest approximately 273 acres of late-successional forest adjacent to the northeast part of the Big Creek Analysis Area. With Alternative I, no additional late-successional forests would be harvested; therefore, there would be no additional cumulative effects to habitat connections. Mature and older forest connections between mainstem Big Creek and the surrounding uplands would continue to be weak as private land is harvested.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Delayed harvest may result in lost opportunities for commercial and density management thinnings in some stands. Growth in some of these stands would be reduced due to competition, resulting in decreased long-term volume and value. Delaying hardwood and brush conversions would result in lost opportunities for stands to be reestablished with conifer, again resulting in decreased long-term volume. Not harvesting within this analysis area would shift the burden of meeting the District's ASQ commitment to other watersheds, resulting in greater cumulative effects to those areas.

Riparian Reserve Functions (Issue 3)

Key Indicator: LWD recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced recruitment of large logs to streams and riparian areas. Recruitment is expected to increase as stands age. In addition, riparian restoration projects to be completed through Jobs-In-the-Woods (EA OR120-98-12) would enhance LWD recruitment potential in portions of this

analysis area. The No-Action Alternative would not add to cumulative effects of large wood depletion in the Big Creek watershed, nor would it accelerate tree growth and enhance potential future large wood accumulations in Riparian Reserves that are currently <50 years old.

Key Indicator: Riparian dependent/associated species

Riparian restoration projects to be completed through Jobs-In-the-Woods (EA OR120-98-12) would enhance late-successional forest characteristics, including snag development and LWD recruitment potential in Riparian Reserves. JIW projects will include treating about 20 acres of hardwood stands to reestablish conifers and creating snags within approximately 100 acres of Riparian Reserves (1-2 snags/acre). These projects will benefit riparian dependent/associated species. Harvest on Coquille Indian Tribe lands would be consistent with BLM harvest guidelines including the ACS. The availability of late-successional forest in Riparian Reserves is expected to remain fairly steady for 2 decades then increase gradually until all Riparian Reserve stands are in the 80+ year age class. Habitats on private lands receive only limited protection, which restricts habitat connectivity, especially along mainstem Big Creek.

Roads (Issue 4)

Key Indicator: Open road density

Road density on BLM-managed lands would remain the same. However, total road density is likely to increase as private landowners build or reopen (and leave open) roads to harvest private lands.

Key Indicator: Impacts to wildlife

Road density on private lands may increase as new roads are constructed or old roads are reopened to facilitate harvest. An unknown amount of existing roads may be closed or decommissioned on BLM through future restoration projects. Barriers to wildlife movements due to roads will likely remain steady or increase slightly if overall road density increases due to activities on private land.

Alternative II - Proposed Action

Direct and Indirect Effects (Alt. II)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative II removes some late-successional forest, but does not affect any incipient old-growth habitat. It does not remove any late-successional forest from the Middle Fork Coquille

River corridor. It also captures some opportunities to facilitate development of late-successional forest characteristics in young and hardwood/brush stands.

This alternative would harvest 274 acres (7.5%) of late-successional forests in the analysis area (171 on GFMA, 103 on Connectivity), none of which are incipient old-growth forest. Approximately 9 acres (net) of late-successional forests would be permanently removed from Reserves through changes in Riparian Reserve boundaries. No late-successional forest would be removed from the Coquille River corridor, which is important to maintain future nesting options for bald eagles and other species associated with rivers and late-successional forests. After harvest, approximately 37% of BLM-managed lands in the analysis area would contain stands >80 years of age, and 24% would contain forests >120 years of age. The percentage of old-growth forests in the analysis area would stay the same (Table W-1, Section I in the Analysis File).

After harvest, Connectivity Blocks 1 and 2 would contain 58% and 38% of forests >80 years of age, respectively. Harvest units would remove 31 acres of late-successional forest from Block 1 and 65 acres from Block 2. Harvest units would affect the most common late-successional forest age class; therefore, they do not further unbalance forest age class distribution in Connectivity Areas. Further breakdown of age classes in Connectivity Areas is contained in Table W-2 in Section I of the Analysis File. The FRMP states that each Connectivity Block should contain 25-30% late-successional forest; this alternative meets this requirement.

With a minimum harvest age of 60 years in the GFMA, late-successional forest characteristics would not likely develop again once a stand is harvested. The 150-year area control rotation on Connectivity areas should allow some late-successional forest characteristics to develop before the stands are harvested again.

Changing Riparian Reserve boundaries would result in the net loss of approximately 20 acres of Reserves. The areas removed from Reserves would probably never reach late-successional conditions under current rotation ages. Approximately 90 acres of young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves, which resulted from past harvest/disturbance, would be treated to reestablish conifers. These treated stands in Riparian Reserves should develop late-successional characteristics earlier.

Key Indicator: Habitat Connections

Alternative II retains connections in 3 important areas identified in the Big Creek Watershed Analysis (p. 96), and captures some opportunities to facilitate long-term reestablishment of connections currently broken by young and hardwood/brush stands. However, some late-successional forest connections between uplands and riparian areas would be broken or constricted as a result of harvest.

Existing connections would slowly improve as young and mature stands develop, as the contrast between edges decreases, and as canopy gaps close. Conifer forest connections currently broken by brush/hardwood stands would reconnect as these stands are restored to conifers. Connections along Riparian Reserves on BLM-managed land would improve in the

future (20+ years) as a result of the Riparian Reserve treatments in young conifer stands and reestablishment of conifer in brush/hardwood stands. Connections broken by regeneration harvest units from this EA would begin to re-form as the canopy closes and matures 20 or more years in the future.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would provide an estimated timber volume of 18,554 MBF, of which approximately 17,791 MBF would contribute to the District's decadal ASQ commitment (an estimated volume of 763 MBF is from density management in Riparian Reserves, which does not count towards the ASQ). Approximately 4,321 MBF (of the total 18,554 MBF) would contribute to the volume for the District that is expected to come from Connectivity. Approximately 245 acres (of the 633 total acres treated) would be commercially thinned and approximately 11 acres (of the total acres treated) would be density management thinned in the Connectivity. These treatment acres would provide additional harvest options in the future that would not be available if thinning of these stands was deferred. Approximately 22 acres (of the total acres treated) would be hardwood conversion and approximately 6 acres (of the total acres treated) would be brush conversion. These treatment acres would reestablish conifer for future management options.

Riparian Reserve Functions (Issue 3)

The modified Riparian Reserve network and treatments in Riparian Reserves were designed to adequately protect aquatic resources and meet the ACS objectives (detailed information is contained in Section K of the Analysis File).

Key Indicator: Large wood recruitment potential

Density management and hardwood/brushfield conversions in Riparian Reserves are expected to enhance future recruitment of LWD over the long term. Riparian Reserve width reductions would not reduce potential for LWD recruitment over the long term.

Under Alternative II, about 90 acres (<2 %) of the Riparian Reserves in the Big Creek Analysis Area are proposed for density management thinning. Treatments in Riparian Reserves would generally be the same as the associated commercial thinnings in the uplands, and would enhance the future recruitment of LWD.

Due to the small diameter and high decay rate of woody material recruited from stands <40 years old, the wood provides little in terms of in-stream structure and channel stability. While small diameter logs contribute to organic matter important in food webs, density management thinning in Riparian Reserves is not likely to impact functions associated with down wood in the short term. In the long term (15+ yrs), the growth rate of individual trees and the resultant structural diversity is expected to increase in the thinned Riparian Reserves. This would benefit aquatic habitat and channel stability, because larger pieces of woody structure would be available in a shorter period of time than would occur without thinning.

All Riparian Reserves proposed for reductions are on Rosgen Type-A channels. They are intermittent or seasonally flowing, moderate in gradient (4-20%), and receive the vast majority of wood from local stream-side sources (e.g., windfall, landslides). Of the material delivered to these streams, 95% originates from within 110 feet of the stream bank (see Section J of the Analysis File). Furthermore, wood recruitment over a ridge is highly improbable. Thus, the proposed Riparian Reserve boundary adjustments on fourteen stream segments would not appreciably decrease the large wood recruitment potential.

Under Alternative II, three acres within Riparian Reserves are proposed for hardwood/brushfield conversion. The reestablishment of conifer would improve riparian habitat and channel stability, because larger pieces of woody structure would be available in a shorter period of time than would occur without treatment.

The 150 feet of road construction (EA Unit 31) and 400 feet of designated skid road in Riparian Reserve (EA Unit 41) would not affect LWD recruitment. The few conifer trees removed for the road construction have virtually no chance of reaching the stream channel, because construction is in the outer portion of the Reserve and an existing road already interrupts delivery potential. Trees removed for the designated skid road (which is in a hardwood conversion area) are hardwoods [alder] and would not contribute LWD to the stream.

Key Indicator: Riparian dependent/associated species

Riparian Reserve reductions under Alternative II would have minimal impacts to Riparian dependent/associated species.

This alternative would result in a 20 acre (net) decrease in Riparian Reserves, 9 of which are currently late-successional forests. No important habitat microsites (rocks, small wet areas, concentrations of down logs or snags) would be exposed or threatened by the Riparian Reserve reductions. Most adjusted Riparian Reserves would be at least 110 feet wide on each side to accommodate home ranges of relatively immobile wildlife species.

Riparian Reserve reductions are scattered across the landscape, so they are unlikely to compromise function for upland species, whose conservation is dependent on the Riparian Reserve network. The net reduction of 20 acres of Riparian Reserves represents 0.4% of the estimated Riparian Reserve acres in the analysis area.

Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves, which resulted from past harvest/disturbance, would be treated to reestablish conifers. Special DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments would include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments in Riparian Reserves would accelerate development of late-successional forest characteristics and improve habitat conditions for riparian dependent/associated species.

Watershed analysis cautioned against reducing Riparian Reserves in identified “high value” areas. This alternative includes reductions in two potentially “high value” areas (i.e. forest >120 years of age and Riparian Reserves in Brownson Creek drainage). EA Unit 11 contains Riparian Reserves with forests >120 years of age. The design for this unit includes reducing a Riparian Reserve on one intermittent stream segment by 1 acre; however, 2 acres of forest >120 years old would be added to Riparian Reserves. Therefore, there would be an overall benefit, because there would be a net increase of 1 acre in this age-class in Riparian Reserves.
Riparian Reserves in Brownson Creek drainage were identified in watershed analysis as having “high value” due to the high proportion of late-successional forest, and potential to provide connections and continuity between drainages. EA Unit 27 is located in Brownson Creek drainage and would include reductions of approximately 7 acres of Riparian Reserves. A closer inspection of Riparian Reserves in this unit revealed that they were not of “high value” because they do not provide connections or continuity of habitat (see Wildlife Report, Section I for details).

The 150 feet of road construction and 400 feet of designated skid road in Riparian Reserve would be fully decommissioned after harvest. These actions would have an adverse short-term effect of possibly creating a partial barrier to movements for some small wildlife species. There would be a positive long-term effect, because a hardwood stand in Riparian Reserve would be restored to conifers.

Roads (Issue 4)

Key Indicator: Open road density

The new construction would result in a short-term increase in open road density. However, the net result of all road work proposed in this alternative is a reduction in open road density on BLM-managed land from 4.04 to 3.29 mi/mi^2 in the analysis area (see Table 1). This would move the road density toward the target of 1.1 mi/mi^2.

Key Indicator: Impacts to wildlife

Overall, this alternative would provide a net benefit to wildlife, because of the amount of road decommissioning.

Alternative II would create 2.0 miles of new road corridors, of which 0.9 miles would be fully decommissioned and revegetated. Even though closed, the remaining 1.1 miles of decommissioned (but not revegetated) new road construction could continue to present partial barriers to species such as small mammals until the road surface revegetates and covers over with forest litter (perhaps 15-25 years). By breaking or weakening connections between habitats, these barriers limit the ability of certain wildlife to recolonize habitats and isolate populations making them more susceptible to local extirpation. Approximately 10.6 miles of existing roads would be decommissioned or closed, and open road density would fall to 3.29 mi/mi^2. The proposed reduction in open road density would result in less disturbance to wildlife, and should allow increased utilization of available habitat. A reduction in open road

density could also decrease the amount of roadside down-log habitat removed through theft and roadside salvage. Aquatic species such as amphibians are not expected to be impacted by road-related sedimentation (Section B of the Analysis File - Sediment Delivery).

New road corridors may take 20 years or more to reestablish trees that would close the canopy gap. However, most new road construction occurs within unit boundaries or in adjacent recent plantations. Only 200' of new road construction occurs through forest outside proposed unit boundaries (a young stand on adjacent private land); therefore, roads would not break forest corridors beyond the extent created by the proposed regeneration harvest units. In general, road decommissioning and the decrease in open road density (compared to Alternative I) would reduce harassment to wildlife. Barrier effects of existing roads would decrease in the long-term as decommissioned roads revegetate.

Cumulative Effects (Alt. II)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative II would result in a net loss of late-successional forests from the analysis area in the short and long term. No late-successional forests remain on private lands, and none are expected to develop because of short rotation ages. The harvest of 274 acres of late-successional habitat in this alternative would be partially offset in the long term by the 110 acres of young forest and hardwood/brush forest in Riparian Reserves which would be treated to facilitate development of future late-successional forest characteristics (20 acres of riparian restoration projects from Jobs-In-the-Woods, EA No. OR120-98-12, and 90 acres of DMT from this alternative). The Coquille Indian Tribe is expected to harvest approximately 334 acres in the subwatershed within the next few years, most of which is late-successional forest. The largest, most contiguous blocks of late-successional habitat and key late-successional habitat near the Coquille River would not be affected by Coquille Indian Tribe harvest. The overall percentage of late-successional forest in the analysis area would be expected to slightly decrease over the next 2-3 decades as the influx of new 80+ year old stands nearly offsets the loss due to harvest. After 3 decades, the overall percentage of late-successional stands would likely increase as many Reserve stands begin to enter the 80+ year age class (Big Creek WA).

Key Indicator: Habitat Connections

The Sandy Creek Analysis Area EA (No. OR128-96-21) included an assessment to harvest approximately 273 acres of late-successional forest adjacent to the northeast part of the Big Creek analysis area. With Alternative II, an additional 152 acres of late-successional forest would be harvested from this area; together these two actions remove 425 acres of late-successional forest from northeast Big Creek/northwest Sandy Creek. When other older harvests units are included, the result is nearly 2 mi^2 in early-successional stands less than 15 years of age along the shared boundary. This area, however, was identified in both the Sandy-Remote and the Big Creek Watershed Analysis as an area to concentrate harvest units in order to protect other areas of greater concern, such as interior habitats and late-successional forests adjacent to small LSRs.

Mature and older forest connections between mainstem Big Creek and the surrounding uplands would continue to be weak as private land is harvested.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Alternative II provides approximately 5.5% of the decadal ASQ commitment for the District. The 4,321 MBF (of the total 18,554 MBF) provides approximately 33% of the expected Connectivity ASQ volume for this decade (see Tables E-1 & E-2, page E-9 of FRMP-ROD).

Riparian Reserve Functions (Issue 3)

Key Indicator: Large wood recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced the large wood recruitment potential on approximately half of the Riparian Reserve acreage. The proposed Riparian Reserve reductions amount to 22 acres (0.4 %) of Riparian Reserve in the analysis area, but is expected maintain large wood recruitment to the affected streams, as discussed above. As illustrated in the Big Creek Riparian Reserve Evaluation (Figure C-4), the proportion of the Riparian Reserve with stands 160+ years of age is expected to increase from 2.2% at present to approximately 39% over the next 70 years. This maturation of Riparian Reserves is expected to enhance future LWD recruitment over time. Density management treatments in the Riparian Reserves and the riparian restoration projects to be completed through Jobs-In-the-Woods are designed to further enhance LWD recruitment to streams on BLM-managed lands in the long term.

Key Indicator: Riparian dependent/associated species

Snags, a critical late-successional forest characteristic, will be created within approximately 100 acres of Riparian Reserves through a JIW project (1-2 snags/acre). Approximately 20 acres of hardwood forests in Riparian Reserves would also be treated to reestablish conifers under JIW. These actions, along with density management treatments in Riparian Reserves, would result in an overall long-term benefit to riparian dependent/associated species on BLM-managed lands, because development of late-successional habitat would be accelerated. Harvest units on Coquille Indian Tribe lands would retain Riparian Reserves consistent with the ACS. The availability of late-successional forest in Riparian Reserves is expected to remain fairly steady for 2 decades then increase gradually until all Riparian Reserve stands are in the 80+ year age class. Private lands offer less protection along streams than federal or Tribal lands; this limits the value of riparian habitats on private lands (especially along lower Big Creek) and interrupts connectivity of higher-quality riparian habitat on BLM and Tribal land.

Roads (Issue 4)

Key Indicator: Open road density

There would be a net decrease in the road density within the analysis area on BLM-administered lands. Additional road closures and road improvements are expected to occur

through other management activities, such as Job-in-the-Woods. The combined activities further contribute to attaining the target road density. Future timber harvest on BLM-administered lands in the analysis area may offer opportunities to close additional roads, further decreasing road density on public lands. However, overall open road densities in the analysis area may not improve, because of management activities on private lands.

Key Indicator: Impacts to wildlife

Road density on private lands may increase as new roads are constructed or old roads are reopened to facilitate harvest. Cumulatively, this alternative would provide benefits to wildlife above Alternative I, because there would be a net decrease in the overall number of roads in the analysis area.

Alternative III - Alternative Action

Direct and Indirect Effects (Alt. III)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative III would harvest substantially more late-successional forest than Alterative II, including some incipient old-growth forest. Some of this late-successional forest would be removed from the important Middle Fork Coquille River corridor. This alternative does capture some opportunities to facilitate development of late-successional forest characteristics in young and hardwood/brush stands.

This alternative would harvest 389 acres (11%) of late-successional forest in the analysis area, including 28 acres of incipient old-growth forest and 74 acres of late-successional forest along the critical Middle Fork Coquille River corridor. Approximately 15 acres (net) of late-successional forest would be permanently removed from Riparian Reserves through changes to Riparian Reserve boundaries. Post harvest, approximately 36% of BLM-managed lands in the analysis area would contain stands >80 years of age and 24% would contain forests >120 years of age. The percentage of old-growth forests in the analysis area would change by < 1% (detailed information in Table W-1, Section I of the Analysis File).

The effects to Connectivity Blocks in the analysis area would be the same as Alternative II.

Changing Riparian Reserve boundaries would result in the net loss of approximately 28 acres of Reserves as compared to 20 acres in Alternative II. Otherwise, the potential for the analysis area to provide long-term late-successional forest would be similar to Alternative II.

Key Indicator: Habitat Connections

Alternative III removes late-successional forest from 1 of 3 important connection areas and captures some opportunities to facilitate long-term reestablishment of connections currently broken by young and hardwood/brush stands.

Some connections between uplands and riparian areas would be broken or constricted as a result of harvest. Two of the 3 existing important connecting areas identified in the Big Creek Watershed Analysis (p. 96) would be maintained; one would be weakened in the Anderson Mountain area where 74 acres (3 regeneration harvest units) would be removed.

Existing connections would slowly improve as young and mature stands develop, as the contrast between edges decreases, and as canopy gaps close. Conifer forest connections currently broken by brush/hardwood stands would reconnect as these stands are restored to conifers. Connections along Riparian Reserves on BLM-managed land would improve in the future (20+ years) as a result of the Riparian Reserve treatments in young conifer stands and reestablishment of conifer in brush/hardwood stands. Connections broken by regeneration harvest units from this EA would begin to re-form as the canopy closes and matures 20 or more years in the future.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would provide an estimated timber volume of 25,135 MBF, of which approximately 24,372 MBF would contribute to the District's decadal ASQ commitment (an estimated volume of 763 MBF is from density management in Riparian Reserves, which does not count towards the ASQ). Approximately 4,321 MBF (of the total 25,135 MBF) would contribute to the volume for the District that is expected to come from Connectivity. Approximately 245 acres (of the 755 total acres treated) would be commercially thinned and approximately 11 acres (of the total acres treated) would be density management thinned in the Connectivity. These treatment acres would provide additional harvest options in the future that would not be available if thinning of these stands was deferred. Approximately 22 acres (of the total acres treated) would be hardwood conversion and approximately 6 acres (of the total acres treated) would be brush conversion. These treatment acres would reestablish conifer for future management options.

Riparian Reserve Functions (Issue 3)

The modified Riparian Reserve network and treatments in Riparian Reserves were designed to adequately protect aquatic resources and meet the ACS objectives (detailed information is contained in Section K of the Analysis File).

Key Indicator: LWD recruitment potential

This alternative would reduce Riparian Reserves by 30 acres on seventeen stream segments as compared to 22 acres on fourteen stream segments in Alternative II. Total acres of density management treatment in Riparian Reserves would be the same as Alternative II. The direct and indirect impacts to large wood recruitment potential would be the same as in Alternative II.

Key Indicator: Riparian dependent/associated species

Overall impacts to riparian dependent/associated species would be higher than Alternative II.

This alternative would reduce Riparian Reserves by 28 acres (net); 15 of these acres are currently late-successional.

Riparian Reserve reductions would be scattered across the landscape in 8 units (as compared to 6 units in Alternative II), so they would be unlikely to compromise function for upland species, whose conservation is dependent on the Riparian Reserve network. The net reduction of 28 acres of Riparian Reserves represents 0.6% of the estimated Riparian Reserve acres in the analysis area.

EA Units 38 and 39 also contain potentially “high value” Riparian Reserves because of their potential to connect to the adjacent subwatershed and offer late-successional forest in the Middle Fork Coquille River corridor. In EA Unit 38, one side of a Riparian Reserve would be reduced to 110' to follow an existing road (approximately 2 acres of reduction); the Riparian Reserve reduction area would have been fairly ineffective for Riparian Reserve values since it was isolated from the rest of the Riparian Reserve network by the road. Additional reductions in Riparian Reserves in EA Unit 38 would be 6 acres on 2 intermittent streams. These 6 acres contain late-successional forest in the important Middle Fork Coquille River corridor which could potentially be used by bald eagles; although, it is not currently being used. The Riparian Reserve reduction in EA Unit 39 would affect a relatively insignificant area (approximately 1 acre of predominately alder) in a small part of an existing Riparian Reserve network which retained full interim Riparian Reserve widths.

All other impacts would be the same as Alternative II.

<u>Roads (Issue 4)</u>

Key Indicator: Open road density

The new construction impacts would be the same as Alternative II. There would be reduction in the open road density on BLM-managed land from 4.04 to 3.25 mi/mi^2 in the analysis area (see Table 1) which is slightly lower than in Alternative II. This alternative would also move the road density toward the target of 1.1 mi/mi^2.

Key Indicator: Impacts to wildlife

Overall, this alternative would provides similar net benefits to wildlife as Alternative II; more road corridors are created but additional roads are being decommissioned.

This alternative would create 2.2 miles of new road corridor, of which 1.0 would be fully decommissioned and revegetated. Even though closed, the remaining 1.2 miles of decommissioned (but not planted) new road construction could continue to present partial barriers to species such as small mammals until the road revegetates and covers over with forest litter (perhaps 15-25 years). By breaking or weakening connections between habitats, these barriers limit the ability of certain wildlife to recolonize habitats and isolate populations

making them more susceptible to local extirpation. Approximately 11.1 miles of existing roads would be decommissioned or closed, and the open road density would fall to 3.25 mi/mi^2. The proposed reduction in open road density would result in less disturbance to wildlife, and should allow increased utilization of available habitat. A reduction in open road density could also decrease the amount of roadside down-log habitat removed through theft and roadside salvage. Aquatic species such as amphibians are not expected to be impacted by road-related sedimentation (Section B of the Analysis File - Sediment Delivery).

Other impacts are the same as Alternative II.

Cumulative Effects (Alt. III)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

This alternative would remove 389 acres of late-successional forest in the short-term as compared to 274 acres in Alternative II. Therefore cumulative impacts would be slightly higher than Alternative II. Other cumulative effects would be similar to Alternative II.

Key Indicator: Habitat Connections

This alternative would harvest 190 acres of late-successional forest as compared to 152 in Alternative II. Together with actions in the adjacent subwatershed (Sandy Creek), a total of 463 acres of late-successional forest would be harvested from northeast Big Creek/northwest Sandy Creek as compared to 425 acres in Alternative II. Therefore cumulative impacts would be slightly higher than Alternative II.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Alternative III provides approximately 7.6% of the decadal ASQ commitment for the District. The Connectivity volume is the same as Alternative II.

Riparian Reserve Boundary Functions (Issue 3)

Key Indicator: Large wood recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced the large wood recruitment potential on approximately half of the Riparian Reserve acreage. The proposed Riparian Reserve reductions amount to 30 acres (0.6 %) of Riparian Reserve in the analysis area, but are expected to maintain large wood recruitment to the affected streams, as discussed above. As illustrated in the Big Creek Riparian Reserve Evaluation (Figure C-4), the proportion of the Riparian Reserve with stands 160+ years of age is expected to increase from 2.2% at present to approximately 39% over the next 70 years. This maturation of Riparian Reserves is expected to enhance future LWD recruitment over time. Density

management treatments in the Riparian Reserves and the riparian restoration projects to be completed through Jobs-In-the-Woods are designed to further enhance LWD recruitment to streams on BLM-managed lands in the long term.

Other cumulative impacts would be the same as Alternative II.
Key Indicator: Riparian dependent/associated species

Same as Alternative II.

Roads (Issue 4)

Key Indicator: Open road density
Same as Alternative II.

Key Indicator: Impacts to wildlife
Same as Alternative II.

Other Environmental Effects

None of the EA units are in or near 1) Areas of critical environmental concern, 2) Farm lands, prime or unique, 3) Flood plains, 4) Wild and scenic rivers, or 5) Wilderness values. Therefore, none of the alternatives have impacts on these resources.

Common to All Action Alternatives

Air Quality

Prescribed burning would adhere to smoke management/air quality standards of the Clean Air Act and State Implementation Plan. This would mitigate the expected impacts.

Cultural Resource Values

The Big Creek Analysis Area has been the location of both prehistoric and historic cultural activities. Reported and recorded cultural resource locations are briefly described in the Big Creek Watershed Analysis (page 134). None of these locations are within or in the vicinity of the harvest units covered in this document. Field reconnaissance did not reveal the presence of additional cultural resources. Therefore, this project is not expected to effect prehistoric or historic cultural resources. However, if any potential cultural resources are encountered during project-related work, all work in the vicinity should stop and the District Archeologist must be notified at once.

Native American Treaty Rights

The Big Creek Analysis Area is within the boundaries of traditional territory described for the Coquille Indian Tribe. Although the Coquille Indian Tribe signed two treaties with the United States (in 1851 and 1855), neither were ratified by the Congress, and so are not in force. In

1996, Congress created the "Coquille Forest", composed of fifty-four hundred acres of BLM-managed land in the vicinity of this analysis area. Four parcels of Coquille Forest land (comprising 1,047 acres) are found within this analysis area. The District has been involved with the Coquille Indian Tribe in the coordination of planned activities within the analysis area. None of the proposed alternatives are expected to affect Tribal uses.

Hazardous Materials/Solid Waste

No hazardous materials have been found to date in the action alternative units. Section R of the Analysis File contains the HazMat review. All Action Alternatives are subject to Federal and State regulatory guidelines for petroleum product use and storage. Spill Prevention, Control and Countermeasure Plans (SPCC) are required under the Oregon Forest Practices Act (Rule OAR 629-57-3600) and by Department of Environmental Quality (Rule OAR 340-108, inclusive). Spill containment capabilities on equipment sites are recommended.

Threatened and Endangered Species

The analysis area is within the range of five federally listed Threatened and Endangered Species: the northern spotted owl, marbled murrelet, bald eagle, peregrine falcon, and Oregon Coast coho salmon. In addition, Critical Habitat for northern spotted owls has been designated in the analysis area. Impacts to these species and Critical Habitat have been or will be addressed in consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. All mandatory terms and conditions from the Biological Opinions have been or will be incorporated in accordance with the Endangered Species Act.

Northern Spotted Owl

Regeneration timber harvest would remove suitable nesting, foraging, and dispersal habitat from within the home range of three of the known owl sites within or near the analysis area. Removal of habitat from within their home range exacerbates the critical condition of owl sites in the planning area and decreases site viability. The action alternatives of this proposal would result in a "May Affect, Likely to Adversely Affect" for the Northern Spotted owl, because habitat would be removed thereby reducing foraging and dispersal habitat. In addition, 83 acres (Alternative II) or 120 acres (Alternative III) of suitable habitat for spotted owls would be removed from designated Critical Habitat for spotted owls.

The conservation strategy for the Northern Spotted Owl within the Northwest Forest Plan relies primarily on a system of large reserve areas (LSRs), and maintenance of viable owl sites outside these reserves are not critical for the conservation of the species. Similarly, the LSR network and northern spotted owl Critical Habitat encompass nearly the same number of acres on the District (within < 0.5%).

Marbled Murrelet

Although all proposed harvest units and adjacent suitable habitat will have met the two year Marbled Murrelet survey protocol prior to harvest, the action alternatives of this proposal would result in a "May Affect, Likely to Adversely Affect" for the murrelet since the removal of potential future habitat that is currently unoccupied would preclude nesting in the future. If additional occupied behavior is detected, effected units will be dropped or

harvest season will be modified as appropriate to comply with the results of consultation with the USFWS.

EA Unit 30 is within 0.25 mile of an occupied murrelet site; however, through informal consultation with the USFWS, we determined that full seasonal restrictions were unnecessary because only a small part of the occupied stand is within 0.25 mile of EA Unit 30. The majority of the occupied stand is > 0.25 mile from the unit and is insulated from harvest unit activities by a ridge. The unit does not affect existing habitat. All murrelet activity in the occupied site was located over 0.5 mile from the unit. The survey station located nearest the unit did not receive any murrelet detections. To lessen the chance of disturbing nesting murrelets, harvest activities should not occur April 1 - July 1.

Bald Eagle

No bald eagles are known to nest within or near the analysis area. Suitable habitat may be present along the Middle Fork Coquille River. Isaacs (personal communication) felt bald eagles historically nested along the river as far up as Remote. Nests averaged 0.5 mile from water in Oregon (see Section I of the Analysis File). Effects to future bald eagle habitat were considered under the Landscape Pattern issue. Potential impacts to bald eagles will be consulted on and will meet the objectives outlined in the 1986 Recovery Plan for the Pacific Bald Eagle.

Peregrine Falcons

Peregrine falcons have not been observed within the analysis area. Although no known nest sites have been located, nest search surveys will be conducted on selected nearby cliffs to verify that peregrine falcons are not nesting in the area. Should peregrine falcons be observed nesting in or near the analysis area, seasonal restrictions may be placed to protect the nesting and brooding at the site. No activities would occur within 1.0 mile of a known, active falcon nest from 1 January - 15 August. Additional restrictions on habitat manipulation could be implemented in the nest vicinity.

Coho Salmon

Big Creek is within the Oregon Coast coho salmon ESU. The approximate distribution of coho salmon habitat within the analysis area is illustrated in the Big Creek WA (Figure III.6-5). Units 26 (CT), 27 (Regen), 28 (CT) and 35 (CT) are the only proposed units adjacent to coho salmon habitat. Units 26, 28 and 35 (commercial thinning units) would have at least a 220' no-harvest buffer along the associated fish-bearing streams; Unit 27 (regeneration harvest unit) would have a 440' no-harvest buffer along the associated fish-bearing stream. The proposed road construction would occur on stable benches and ridges with no stream crossings. Given the protection afforded by the Riparian Reserve and no-harvest buffers, consistency with the ACS objectives (see Section K), conformity with the NMFS March 18, 1997 Biological Opinion, and the additional provisions of the design features, the impacts of action alternatives on coho salmon are expected to be limited to those associated with short-term turbidity from culvert work. The proposed actions are subject to formal consultation with the NMFS, and will be modified as appropriate to comply with the resulting Biological Opinion.

Survey and Manage Species

Red Tree Vole

Red tree vole habitat calculations were rerun in May 1998 using a modified query and updated Forest Operation Inventory (FOI) database. All regeneration harvest units under Sandy-Remote, Rock Creek, and Indian Creek EAs were subtracted as a conservative estimate of habitat removal by these recent Middle Fork Coquille watershed timber sales. An estimated 45% of BLM-managed lands in the Middle Fork Coquille watershed meet definitions of red tree vole habitat. The figure drops to 44% if Alternative III regeneration harvest acres are subtracted. This value exceeds the recommended habitat threshold of 40% and eliminates the need for surveys (BLM Instruction Memorandum No. OR-97-009).

Del Norte Salamander

Protocol surveys for the Del Norte Salamander have been completed. Suitable habitat was searched but no Del Norte salamanders were located. The analysis area is approximately 13 miles north of the known range of the salamander.

Mollusks

According to latest guidance, surveys for Survey and Manage (S&M) mollusks will be required in the proposed harvest units. Protocol surveys are ongoing and appropriate management guides will be implemented on sites occupied by S&M mollusks prior to any ground-disturbing activities. The intent of these management guidelines is to ensure the local species viability.

Lichens, Bryophytes, Fungi, and Vascular Plants

Surveys are required for Survey and Manage Component 2 species (lichens, fungi, bryophytes, and vascular plants) and Protection Buffer species (bryophytes and fungi) for actions within the Big Creek Analysis Area. However, actions implemented prior to FY2000 do not require surveys for the Survey and Manage or Protection Buffer species that are included in Table 5 of the S&M EA. Surveys for these species will begin as soon as the technical feasibility problems can be solved (i.e. FY1999 actions <u>may</u> be surveyed <u>if</u> the feasibility problems are solved in time). Survey protocols for the remaining Component 2 lichens, bryophytes and vascular plants not included in Table 5 of the S&M EA have already been developed. Surveys for these species groups will be completed by summer 1999. A complete, up-to-date botanical report is available on file.

Protection Buffer survey protocols for the 2 species of bryophytes which potentially occur in the analysis area have not been developed, but surveys are currently being conducted. Protection Buffer fungi protocols have not been developed, but surveys are currently ongoing. Our surveys are occurring during the season when these species are visible.

Surveys are only required for those species whose ranges and habitats are known or suspected to occur within the project areas. These surveys will be conducted prior to each timber sale's notice of advertisement. A summary of the species to be surveyed, their key habitat features and timing of surveys are provided in Section N of the Analysis File.

Managing locations of S&M and Protection Buffer species found during field surveys will ensure the local species persistence. Sites will be managed according to established management recommendations.

Management of Protection Buffer species will be according to the protection buffers described on pages C-20 and C-27 in the ROD. Locations of Protection Buffer species will result in a land use allocation change from General Forest Management Area (GFMA) to an unmapped Late Successional Reserve (LSR) or managed late-successional area, depending on the species.

Although no surveys are required, Component 1 Survey and Manage species may be located while conducting other surveys. Sites for these species will be managed according to established management recommendations. Suspected Survey and Manage species will be sent to regional experts for verification.

Noxious Weeds

Noxious weeds, such as Scotch broom, French broom, gorse, and tansy ragwort are currently scattered throughout the analysis area and occur primarily along roads and in disturbed areas. Any disturbance is likely to increase the chances of noxious weed infestation. The design features outlined in the action alternatives (i.e., washing of vehicles prior to entry and mulching/seeding) would help reduce the risk of noxious weed spread.

Sensitive Plant Survey

No negative impacts are expected to any special status plant species occurring within the analysis area. Surveys for those species suspected to occur within the analysis area is currently ongoing. If locations of special status plants are found, appropriate protection measures will be implemented. A description of the special status plant pre-field review is included in Section N of the Analysis File.

Irreversible and Irretrievable Commitment of Resources

Some irreversible and irretrievable commitment of resources would result from the proposed actions. Crushed rock from quarries would be committed to reconstruction and construction of the road system. Energy used to grow, manage, and harvest trees, and in other management activities is generally irretrievable. Irreversible and irretrievable commitments as stated above are discussed in the Coos Bay District FRMP.

V. LIST OF PREPARERS

The following is a list of the Big Creek Analysis Area Interdisciplinary Team members:

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