

Juncrock Timber Sale
Draft Environmental Impact Statement

Appendix D
Aquatics Biological Evaluation



AQUATIC BIOLOGICAL EVALUATION

Juncrock Planning Area

Barlow Ranger District
Mt. Hood National Forest

Summary of Effects

Species	Species Present	Suitable Habitat Present	Effect Determination			
			Alt. I	Alt. II	Alt. III	Alt. IV
Steelhead trout	No	No	NE	NE	NE	NE
Bull trout	No	No	NE	NE	NE	NE
Cutthroat trout	No	Yes	NI	NI	NI	NI
Interior Redband trout	Yes	Yes	NI	NI	NI	NI
Chinook salmon	No	No	NI	NI	NI	NI
Basalt Juga snail	No	Yes	See Text	See Text	See Text	See Text
Columbia Dusksnail	Yes	Yes	See Text	See Text	See Text	See Text
Essential Fish Habitat		No	NE	NE	NE	NE

SUMMARY TABLE KEY:

Steelhead trout: *Oncorhynchus mykiss*, threatened in the Mid-Columbia ESU (Date Listed 3/25/99).

Bull trout: *Salvelinus confluentus*, threatened in the Columbia River Basin (Date Listed 6/10/98).

Coastal Cutthroat trout: *Oncorhynchus clarki clarki*, Forest Service Region 6 Sensitive Species

Interior Redband trout: *Oncorhynchus mykiss gairdneri*, Forest Service Region 6 Sensitive Species.

Chinook Salmon: *Oncorhynchus tshawytscha*, Deschutes River Summer/Fall ESU, Forest Service Region 6 Sensitive Species.

Basalt Juga snail: *Oreobasis spp.*, Forest Service Region 6 Survey and Manage Species.

Columbia Dusksnails: *Lyogyrus spp.*, Forest Service Region 6 Survey and Manage Species.

NE = No Effect

NI = No Impact.

Written by: _____ Date: _____
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Reviewed by: _____ Date: _____
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Introduction

This Biological Evaluation (BE) addresses possible effects to endangered, threatened, proposed threatened, Forest Service Region 6 (R6) sensitive aquatic species, and Forest Service R6 “Survey and Manage” aquatic mollusks from proposed vegetation management through commercial timber harvest in the Juncrock Planning Area (planning area) on the Barlow Ranger District (BRD), Mt. Hood National Forest (MHNF). Review Map 1 for further location. This document is valid as long as design features outlined herein are met. In the event that a certain activity falls outside the design features then a modification or possibly a separate, site-specific analysis would need to occur.

Under the spirit of the standards and Guidelines of the Record of Decision (ROD) for the Amendments to Forest Service and Bureau of Land Management Planning Documents In the Range of the Northern Spotted Owl, of the Northwest Forest Plan (NWFP), as well as the standards and guidelines of the MHNF Land and Resource Management Plan (LRMP) the design of the proposed activities should prohibit or regulate activities in riparian reserves that retard or prevent attainment of the ACS objectives (ROD C-31). The proposed activities should be designed to protect the habitat of federally listed and sensitive species from adverse modification or destruction, as well as to protect individual organisms from harm or harassment as appropriate (FSM 2670.3). All Forest Service projects, programs and activities are to be reviewed for possible effects on threatened, endangered and sensitive (TES) species and findings documented in the decision notice.

Alternatives Including the Proposed Action

Four alternatives were developed including the No Action alternative for analysis in the planning area. They are as follows: Alternative II, the Proposed Action, Alternative III, the Even Aged Approach, and Alternative IV, the Uneven aged Approach with Large Tree Retention, were developed. Alternative I, the No Action Alternative, is described and evaluated. How each alternative responds to the Purpose and Need and Significant Issues are summarized in the Comparison Tables, 7 and 8, pages 11 and 12.

Alternatives Considered and Eliminated From Further Study

Restoration Only Alternative:

An alternative proposed by the public was a Restoration Only Alternative, with no commercial timber harvest. The recommendation was to do the silvicultural treatments, but not remove the wood commercially. The question of how this work was to be financed and accomplished was not addressed. To design such an alternative, money would have to come from restoration funds rather than from timber appropriated funds. This proposal did not meet the purpose of providing a predictable and sustainable output of timber as directed in the Forest Plan and the Northwest Forest Plan.

Helicopter Logging:

An alternative, also proposed by the public, was to helicopter log rather than use the

proposed ground based system. The ground in the proposed units is relatively flat, with the steepest slopes approaching 15%. An existing road system that accesses most units is in place and would remain in place. Proposed temporary roads are low impact roads over flat ground and would be low cost and low impact. These roads can be effectively closed after use and would not become part of the Forest Service road system. There is no need to design an aerial system as roads are in place. Ground-based logging systems are designed to meet Standards and Guides.

Given current market conditions, the volume and value of timber to be harvested lends itself to a ground based system. Costs for logging using a ground-based system average \$60.00 per thousand board feet, while the cost of helicopter logging averages \$360.00 per thousand board feet. At this cost, helicopter logging would not be feasible.

Underburning as a Stand Treatment

One response from the public suggested a controlled burn in Units 10 and 12 would improve forest health. Juncrock is located in an area that ranges from moist hemlock to drier grand fir zones. The trees in these zones are susceptible to fire damage, based on tree species and natural fuels build-ups. A controlled burn would be harmful to residual trees. This treatment in an alternative would not contribute to wood fiber production or meet stated objectives.

ALTERNATIVES

This section describes in detail the no action, proposed action, and the alternatives to the proposed action. Design features common to all action alternatives are listed at the end of the description of the alternatives. See Table 6, page 9 for a comparison of Silvicultural Prescriptions.

Alternative I: No Action Alternative

Under this alternative, the proposed action would not occur. Stands would continue to be crowded, increasing risk from insects and disease. Loss of wood fiber values would continue. No lumber or wood fiber would be produced. No roads would be closed under this alternative. Roads currently closed with guardrails would likely be breached.

Activities that are occurring now, hunting, driving for pleasure, and woodcutting, for example, would continue. Management activities such as road maintenance, noxious weed control and fire suppression would also continue. Habitat areas for protected species or heritage resource sites would remain undisturbed from harvest activities.

Alternative II: Proposed Action -- Uneven Aged Management Approach

Alternative II is a collaborative approach to meet conflicting silvicultural and owl dispersal corridor objectives. The general silvicultural theme is to phase in uneven age management rather than the Forest Plan recommended evenage silvicultural system. The

proposed uneven age system improves stand structure and quality, increasing the vigor and value of leave trees. This uneven aged system does not refer to the mechanical removal of trees that have attained a certain diameter. The proposed system is flexible. The best possible use is made of each stand. Regeneration areas occur where stand health dictates. Regeneration is more reliable and the remaining canopy can be nearly continuous throughout the stand, both vertically and horizontally. Areas that can hold high single layer canopy cover would be maintained.

This alternative is designed to meet the Purpose and Needs using thinning and individual tree selection to remove competing, suppressed, highly disease susceptible or dying trees, regardless of tree diameter. The stem density in individual stands would be variable. Grand fir and western hemlock trees remain in the stands, but in a lower proportion. This alternative allows the remaining leave trees to expand crowns and increase in vigor, while leaving stands with a higher percentage of tree species that are shade intolerant, fire tolerant, and more resistant to insect and disease.

This alternative focuses on recommendations from the White River Watershed analysis, which include:

- 1) Maintain an owl connectivity corridor by maintaining and developing additional mature forest structure types, and minimizing fragmentation of mature forest stands.
- 2) Manage riparian reserves to bring vegetation within the range of historic condition and meet ACS objectives.

Alternative II would treat 550 acres using a ground-based system and include the following harvest treatments:

- ❖ Thin 98 acres of 70 to 90 year old, overstocked stands to a 40 to 70 % canopy closure. The post harvest basal area would range from 80 to 180 ² ft. Ponderosa pine, larch and Douglas fir would be the preferred leave species. Up to 6 acres of riparian reserves would be treated.
- ❖ Thin 121 acres of 90 to 250 year old, overstocked stands to a 40 to 70% canopy closure. The post harvest basal area would range from 80 to 240 ² ft. Approximately 12 acres would require replanting with Douglas fir, ponderosa pine, and larch, the preferred species
- ❖ On 89 acres, use individual tree selection to create a stand with variable densities and a canopy closure varying between 30 and 60%. The post harvest basal area would vary, ranging from 20 to 220 ² ft. The preferred leave trees would be Douglas fir, ponderosa pine and some larch. Up to 9 acres (10%) would need to be replanted. No riparian areas would be entered.
- ❖ On 80 acres, use individual tree selection to create a stand with variable densities and canopy closures varying between 40 and 50%. The post harvest basal area would vary, ranging from 20 to 250 ² ft. The preferred leave trees would be

Douglas fir, ponderosa pine and larch. Western hemlock would be represented in the stand. Up to 20 acres (25%) would need to be replanted. No riparian areas would be entered.

- ❖ On 162 acres, use individual tree selection to create a stand with variable densities and canopy closure varying between 40 and 50%. The post harvest basal area should vary greatly, ranging from 20 to 200² ft. The preferred leave trees would be Douglas fir, ponderosa pine and larch. Approximately 122 acres (75% of the stand) would need to be replanted. Up to 8 acres of riparian areas would be entered and the logs removed.

Slash would be grapple piled and the piles burned in all units.

Reforestation would be by natural regeneration or by planting shade intolerant, fire tolerant species such as Douglas fir, ponderosa pine, and western larch.

Approximately 0.80 miles of road would be constructed and closed after harvest. These are roads where there is no indication of wheel tracks on the ground. See Table 1.

Table 1 Road Construction		
FS Road No.	Access into Unit	Miles
4330018	4	0.45
2130227	18	0.1
Spur off 2130226	15, 15 R, 16, &16R	0.25
Total miles		0.80

Approximately 1.2 miles of road would be reconstructed. These are wheel tracks that exist on the ground, but are not tracked in the Forest Service road system and are not maintained. Reconstructing these roads for use during harvest activities would enable the Forest Service to close them after use. See Table 2.

Table 2 Road Reconstruction		
FS Road No.	Access into Unit	Miles
2100019	19	0.3
2131013	1	0.3
2131011	8	0.4
2130220	18	0.2
Total miles		1.2

Approximately 10.2 miles of roads would be closed to move road densities towards FPS&G's. Tables A-1 and A-2 in the Appendix, list roads proposed for closure.

Alternative II is displayed on Map 1, page 13.

Alternative III: Evenaged Management Approach

This alternative maintains the existing management by a progression of evenage harvest blocks. It is considered the simplest silvicultural system and lends itself to proven silvicultural practices. Stands that have reached culmination would be regenerated using a shelterwood reforestation system. Other stands would be commercially thinned with a partial cut. The only exception, Unit 19, would be managed with an unevenaged system emphasizing large trees to meet visual concerns along Oregon Highway 216.

This alternative would focus on emphasizing existing stand conditions and timber production. Shelterwoods and overstory removals would eliminate disease by removing the majority of trees from the stand and replanting with less susceptible and more resilient species. This alternative is based on the Forest Plan Standards and Guides for C1-Timber Emphasis land and follows the silvicultural management recommendations for the existing disease conditions.

This alternative would treat 550 acres using a ground-based system:

- ❖ Thin 98 acres of 70 to 90 year old overstocked stands to a 40 - 70% canopy closure. The post harvest basal area would vary between 80 to 180 ² ft. Douglas fir, ponderosa pine, and larch, would be the preferred leave species. Up to 6 acres of riparian reserves would be treated.
- ❖ Thin 57 acres of 90 to 250 year old overstocked stands to a 40% to 70% canopy closure. The post harvest basal area would vary from 80 to 240 ² ft. Douglas fir, ponderosa pine, and larch would be the preferred leave species.
- ❖ On 90 acres, use individual tree selection to create a stand with variable densities and a canopy closure averaging between 30 and 60 %. The post harvest basal area would vary, ranging between 20 to 220 ² ft. The preferred leave trees would be Douglas fir, ponderosa pine and larch. Up to 9 acres (10%) would need to be replanted. No riparian areas would be entered.
- ❖ On 289 acres, create shelterwoods, leaving an average of 15 trees per acre. The preferred leave trees would be the largest or healthiest Douglas fir, ponderosa pine or larch. The entire 289 acres would require regeneration. No riparian areas would be entered in these stands.
- ❖ An overstory removal would occur on 16 acres, leaving an average of 10 trees per acre. The preferred leave trees would be Douglas fir, ponderosa pine or larch. A total of 4 acres would need to be replanted. Up to 8 acres of riparian areas would be entered.

Slash would be grapple piled, and the piles burned in all units.

Reforestation would be by natural regeneration or by planting Douglas fir, ponderosa pine, and western larch.

Approximately 0.8 miles of road would be constructed and closed after harvest. These are roads where there is no indication of wheel tracks on the ground. See Table 3.

Table 3 Road Construction		
FS Road No.	Access into Unit	Miles
4330018	4	0.45
2130227	18	0.1
Spur off 2130226	15, 15 R, 16, &16R	0.25
Total miles		0.80

Approximately 1.2 miles of road would be reconstructed. These are wheel tracks that exist on the ground, but are not tracked in the Forest Service road system and are not maintained. Reconstructing these roads for use during harvest activities would enable the Forest Service to close them after use. See Table 4.

Table 4 Road Reconstruction		
FS Road No.	Access into Unit	Miles
2100019	19	0.3
2131013	1	0.3
2131011	8	0.4
2130220	18	0.2
Total miles		1.2

Approximately 10.2 miles of roads would be closed to move road densities towards FPS&G's. Tables A-1 and A-2 list roads proposed for closure.

Alternative III is displayed on Map 2, page 14.

Alternative IV: Uneven Aged Management Approach, With Large Tree Retention.

This alternative responds to the issue of large tree retention generated by the public. Alternative IV appears similar to Alternative II. However, placing a diameter limit of 21 inches DBH changes the post harvest conditions.

This alternative uses thinning and uneven age individual trees selection to remove competing, suppressed, or dying trees under 21 inches diameter at breast height (DBH). Stand densities would be higher, with a BA averaging 173. Gaps would be formed around big trees by removing trees less than 21 inches DBH that compete with the larger trees. Trees over 21 inches located in skid trails, on landings or identified as leaning over roads would be removed.

An existing road would enter Unit 8, leaving Trail# 487A intact. Longer skid distances would be the rule, rather than building new roads or extending existing ones.

Alternative IV would treat 550 acres using a ground-based system, with Units 4 and 15 being **helicopter** logged:

- ❖ Thin 98 acres of 70 to 90 year old, overstocked stands to a canopy closure between 40 to 70%. The post harvest basal area would range between 80 to 180² ft. Douglas fir, ponderosa pine, and larch would be the preferred leave species. Up to 6 acres of riparian reserves would be treated.
- ❖ Thin 121 acres of 90 to 250 year old, overstocked stands, to a 40 to 70% canopy closure. The post harvest basal area would range from 80 to 240² ft. About 12 acres would require regeneration, with Douglas fir, ponderosa pine, and larch the preferred species.
- ❖ On 145 acres, use individual tree selection to create a stand with variable densities and a canopy closure varying between 35 and 65%. The post harvest basal area would vary, ranging from 20 to 250² ft. Trees 21 inches DBH and larger would not be harvested. Exceptions would be trees located near landings, in skid trails, or identified as leaning over roads. The preferred leave trees would be Douglas fir, ponderosa pine or larch. Up to 15 acres (10%) would need to be replanted. No riparian areas would be entered
- ❖ On 169 acres, use individual tree selection to create a stand with variable densities and canopy closure varying between 45 and 55%. The post harvest basal area would vary, ranging from 20 to 220² ft. Trees 21 inched DBH and larger would not be harvested. Exceptions would be trees located near landings, in skid trails, or leaning over roads. The preferred leave trees would be Douglas fir, ponderosa pine and larch. Western hemlock would be represented in the stand. Up to 42 acres (25%) would be replanted. No riparian areas would be entered.
- ❖ On 17 acres, Use individual tree selection to create a stand with variable densities and canopy closures between 40 and 50%. Trees 21 inched DBH and larger would not be harvested. Exceptions would be trees located near landings, in skid trails, or identified as leaning over roads. The preferred leave trees would be Douglas fir, ponderosa pine and larch. About 13 acres (75% of the stand) would be replanted. Up to 8 acres of riparian areas would be entered.

Slash would be grapple piled, and the piles burned in all units.

No roads would be constructed. Long skids would replace road construction.

Access into Unit 19 would require the reconstruction of 0.3 miles of road. See Table 5.

Table 5 Road Reconstruction		
FS Road No.	Access into Unit	Miles
2100019	19	0.3
Total miles		0.3

Approximately 10.2 miles of roads would be closed to move road densities towards FPS&G's. Tables A-1 and A-2 list roads proposed for closure.

Alternative IV is displayed on Map 3, page 15.

The following table summarizes silvicultural prescriptions in the Action Alternatives.

Table 6 Silvicultural Prescription Summary						
Silviculture Prescription	Alternative 2		Alternative 3		Alternative 4	
	Treatment Acres	*Regeneration Acres	Treatment Acres	*Regeneration Acres	Treatment Acres	*Regeneration Acres
Thinning stands 70 to 90 years old	98	0.0	98	0.0	98	0.0
Thinning stands 90 to 250 years old	121	12	57	0.0	121	12
Individual Tree Selection, with 10% of the area needing regeneration	89	9	90	9	145	15
Individual Tree Selection with 25% of the area needing regeneration	80	20	0.0	0.0	169	42
Individual Tree Selection with 75% of the area needing regeneration	162	122	0.0	0.0	17	13
Shelterwood with 100% regeneration	0.0	0.0	289***	289	0.0	0.0
Final Overstory Removal	0.0	0.0	16	4	0.0	0.0
Total Acres Treated	550	163	550	302	550	82
Total MMBF	9 MMBF**		16 MMBF		5.7 MMBF	

*The amount of acres requiring regeneration is only an estimate. The amount may vary in each unit and between treatment types

**MMBF – Million Board Feet,

***Includes 42 acres of clearcuts with reserve trees, Units 13, 17, & 20

Design Features Common to all Action Alternatives:

Harvest Systems:

- 1) All paint marking that would be visible from Oregon Highway 216, Rd. 2130 and Trail 471A would face away from the road.
- 2) Harvest equipment and activities would be excluded from Habitat and GTR Areas. This includes decking, skidding, hauling, parking, or camping.
- 3) Where possible, landings and temporary roads would not be located within 300 feet of the boundary of Habitat Areas. Proposed landings or temporary roads

closer to Habitat Areas would be reviewed by the ID Team and approved by the District Ranger before use.

Riparian Reserves and Clear Creek Irrigation Ditch:

- 1) Leaving additional trees would increase the structural component to the stream channel and food prone area. In Unit 14R, leave an estimated 5 to 15 additional trees, (20 to 48 inches DBH). These trees would be girdled and allowed to fall naturally. In Unit 11, the portion of trees that fall across Forest Service road 2130 into the riparian reserve would be cut off and left for riparian reserve enhancement.
- 2) No equipment would be closer than 50 feet of the centerline of Clear Creek ditch.
- 3) Hand buck and pile slash within 50 feet of the centerline of the ditch.
- 4) There would be no skidding across the ditch.
- 5) Tree planting would not occur on the ditch berm.
- 6) Directionally fall trees away from streams, Clear Creek ditch, and areas specified as “no cut” areas.
- 7) No skid trails are allowed closer than 50 feet of the ditch unless they are located on existing skid trails or roads.

Fuels Treatments:

- 1) Activity slash would be grapple piled and these piles would be burned to reduce fine fuels. Grapple piles would be located on existing skid roads and trails where possible.
- 2) Large down woody material would not be piled.
- 3) Equipment used to grapple pile slash would be confined to existing skid trails where possible
- 4) Hand buck and hand pile slash within 50 feet of the centerline of Clear Creek ditch, if needed.
- 5) Slash piling would be accomplished around owl seasonal restrictions.

Wildlife Requirements:

- 1) Leave three dead trees/acre, (minimum 16 inches DBH and 40 feet tall) as wildlife trees. Leave green trees if no dead trees are available.
- 2) Leave a minimum of 240 linear feet of down woody material per acre. Preference is for full-length trees.
- 3) An owl seasonal operating restriction of March 1 through July 15 would apply to Units 1, 8, 10 and 23.

Recreation

- 1) Use of OHV trails would be restricted during harvest activities. Keep OHV trails and Rimrock Trail 471A open during harvest activities where practicable and safe to do so from Monday through Friday. Trails would be open for use on Saturday and Sunday between April 1 and October 30.
- 2) Rimrock Trail # 471A would be closed during harvest activities.
- 3) Limit the number of skid trails or temporary roads crossing OHV trails or Rimrock Trail 471A. When skid roads or temporary roads must cross a trail,

close and obscure the first 100 feet the entrance.

Visuals

- 1) Retain groups of regeneration in Unit 19 for multistory visual diversity and screening.
- 2) Flush cut sumps that would be seen from Oregon Highway 216.

Vegetation Design Features Specific to Individual Units

Table A-3 shows design criteria specific to individual units in the action alternatives.

Transportation Design Features Common to all Alternatives

See Table 7 for transportation system comparisons between Alternatives.

- 1) Restrict commercial haul when soil moisture is 16% or greater and during freeze/thaw cycles.
- 2) Limit log haul to Monday through Friday on Forest roads 2130 from 2130225 to Oregon Highway 216. Saturday, Sunday and Holidays log haul would be prohibited.
- 3) Log haul on Forest Service road 2130 from Clear Creek Campground to the Junction of the Forest road 2130250 would be prohibited.
- 4) The power line road Forest road 2130012 (Units 18, 19 & 21) is closed to skidding and hauling.
- 5) There is a winter CFR closure to vehicles over 40 inches wide from Dec. 1 to April 1 on Forest roads 2130, 4310, and 4330.
- 6) Long-term road closures would utilize berms or non-movable closure devices.
- 7) Close and obscure the first 100 feet of all temporary roads and skid trail entrances from open system roads and OHV trails.
- 8) Where closed roads are crossed by motorcycle trails, scatter slash on both sides of the trail.

Table 7 Transportation System Summary			
Road Treatments	Alternative II	Alternative III	Alternative IV
	Miles	Miles	Miles
Roads Closed	10.2	10.2	10.2
Road Construction*	0.55	0.55	0.3 (long skids, rather than extending roads)
Road Drainage corrected	0.5	0.5	0.5
Road Reconstruction*	1.2	1.2	0.0 (long skids, rather than temp. roads)

*Includes system and temporary roads

Table A-3 shows design criteria for individual roads and individual units.

Comparison Tables for all Alternatives:

The following tables are a summary comparison between alternatives as they relate to the Purpose and Needs and Significant Issues.

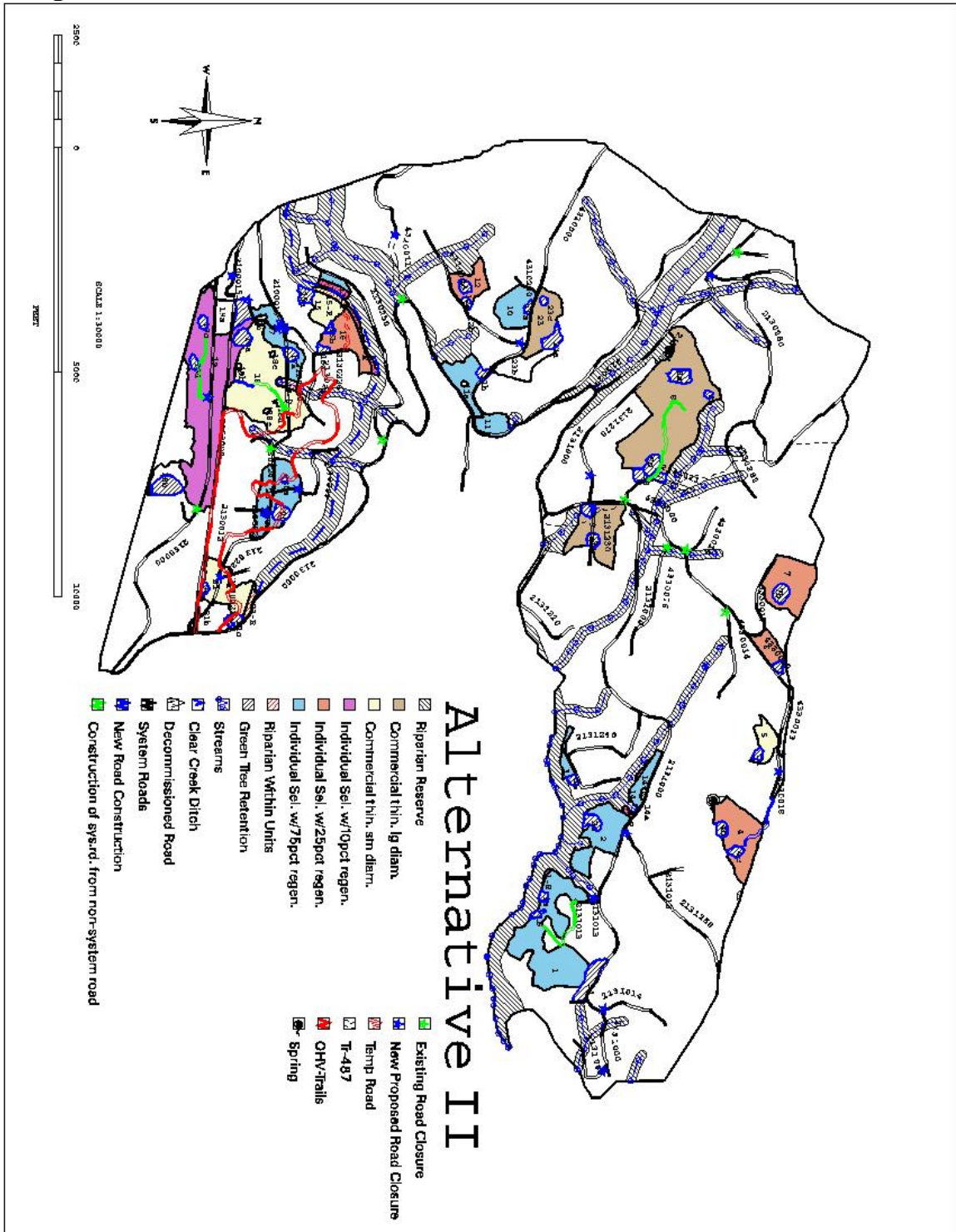
Table 8 How Alternatives Respond to Purpose and Need				
Objectives	Alternative I	Alternative II	Alternative III	Alternative IV
Provide lumber and wood fiber	0 MMBF*	9 MMBF	16 MMBF	6 MMBF
Total Net Value	0.0	\$432,450	\$1,273,890	\$128,840
Acres of overstocking, insects & disease reduced	0 acres	550 acres,	550 acres	550 acres
Desired BA: 80-120 sq.ft.	246 sq.ft. BA per acre existing	125 sq.ft. BA acre post harvest	58 sq.ft BA per acre post harvest	143 sq.ft BA per acre post harvest
Acres requiring regeneration	0 acres	163 acres	302 acres	82 acres
Leaning and Unhealthy trees Removed	No	Yes	Yes	Yes
Average BA % of shade tolerant trees in stands	31%	17%	14%	18%

*MMBF – Million Board Feet

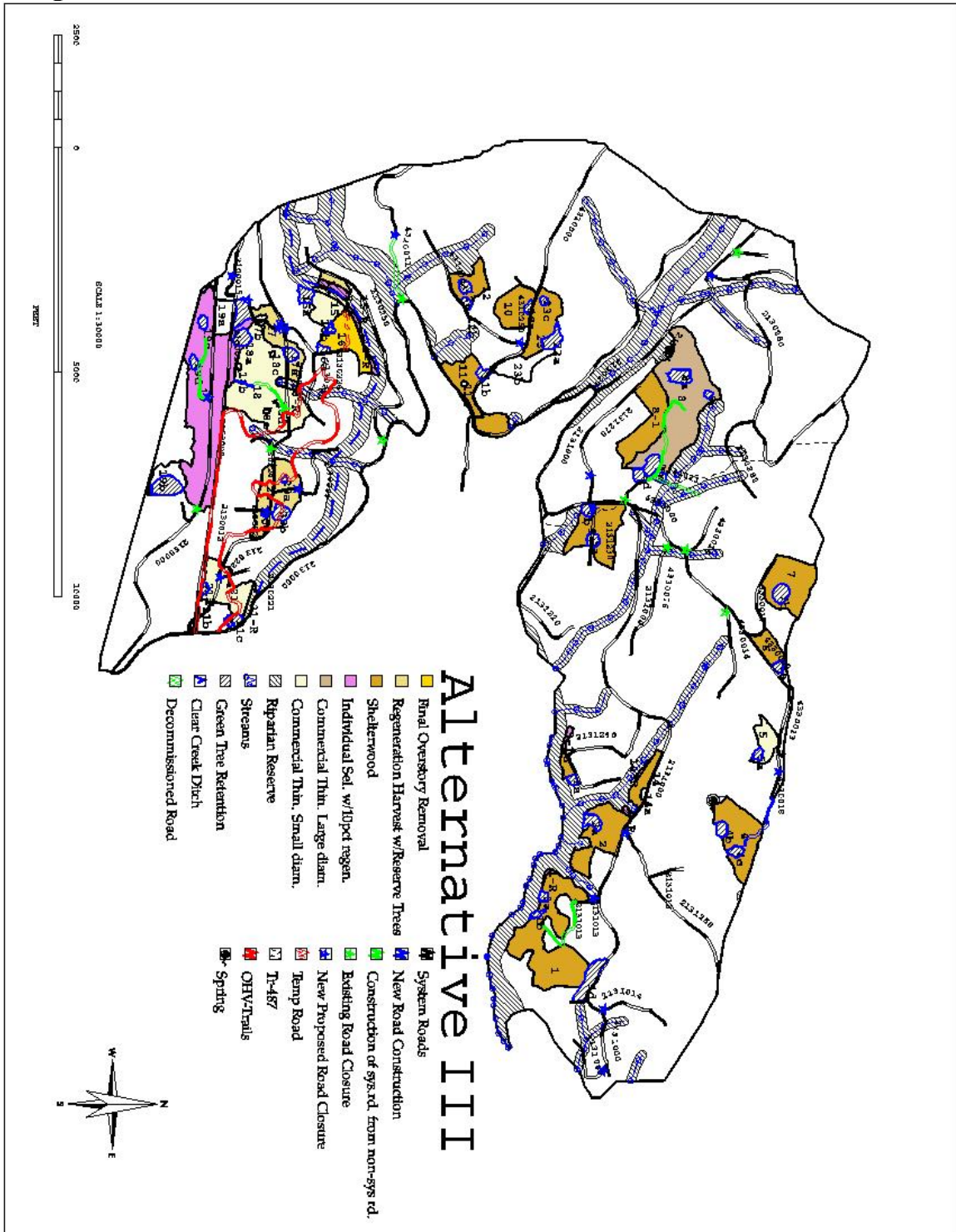
Table 9 How Alternatives Respond to Significant Issues				
Significant Issues	Alternative I	Alternative II	Alternative III	Alternative IV
Temporarily relocate Trail	No	Yes	Yes	No
Miles of road constructed or re-constructed	0.0	2.0	2.4	0.3
Cut trees larger than 21”	No	Yes	Yes	No*.

*Except for trees leaning over roads, and near landings

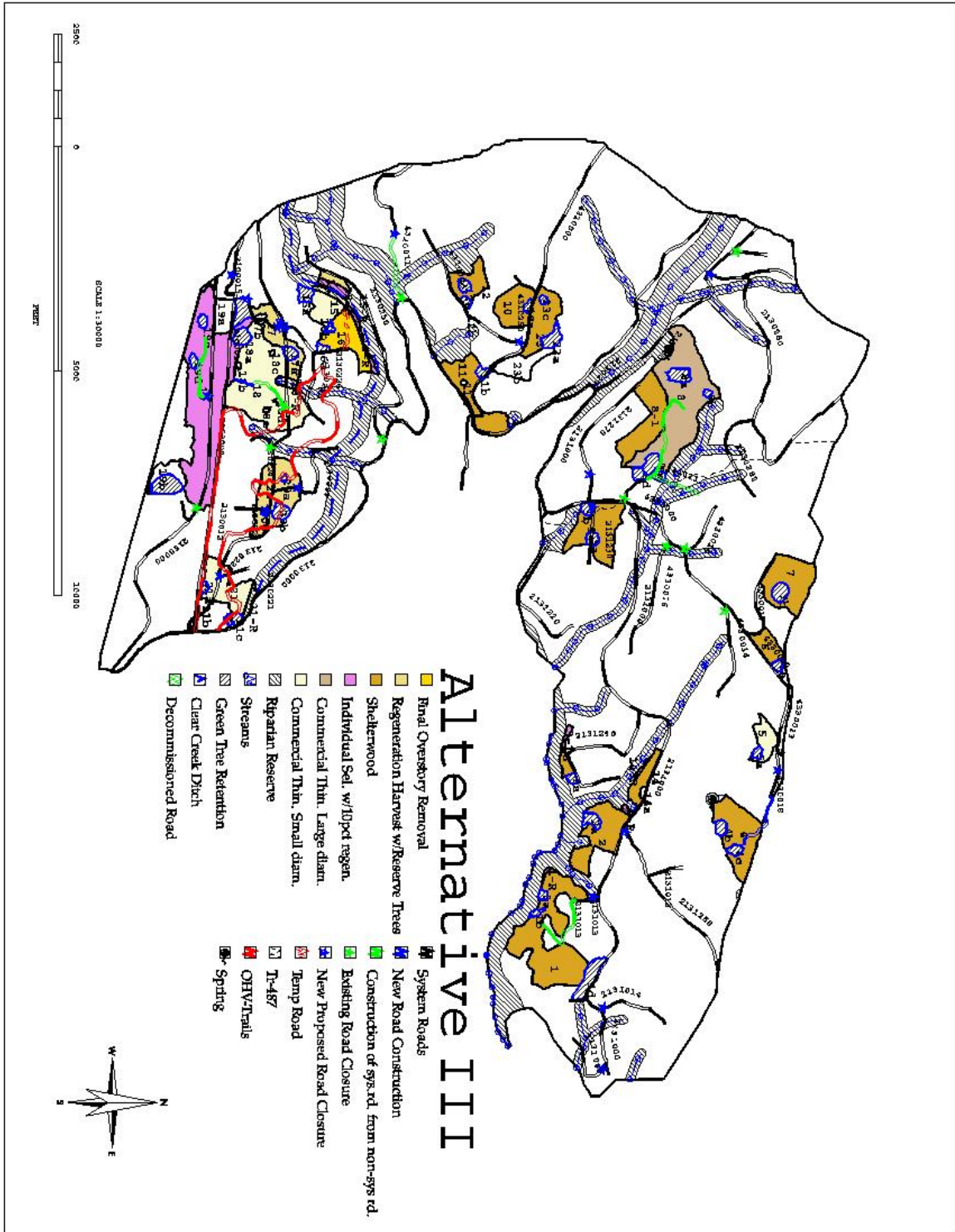
Map 1 Alternative II



Map 2, Alternative III



Map 3 Alternative IV



Project Location and Description of Existing Condition:

The planning area (3,865 acres) is located in both the White River (3,625 acres) and Beaver Creek (240 acres) fifth field watersheds. White River has been identified in the NWFP as a Tier 2 Key Watershed where high quality water is important, but may not contain at-risk fish stocks, (NWFP, p. B-91). Beaver Creek under the NWFP (ROD, p. C-39) has been designation as a non-Key watershed even though Threatened Middle Columbia River ESU (MCR) summer steelhead trout *Oncorhynchus mykiss spp.* are present in the watershed, and the watershed contributes directly to conservation of at-risk anadromous salmonids and resident fish species.

The planning area in the Clear Creek subwatershed (sixth field subwatershed of the White River watershed) is located in T 05S, R 10E, S(s) 3-10, 17, 18, and T 05S, R 09E, S(s) 1, 12, 13. The lower reaches of Clear Creek and Frog Creek (tributary to Clear Creek), along with multiple unnamed tributaries to Clear Creek, are the primary waterways in the planning area. Clear Creek irrigation ditch (Clear Creek ditch) is also located in the planning area (headgate is located upstream of the planning area at T 05S, R 9E, S 10 NW/SE). The northern areas of Upper and Middle Beaver Creek subwatersheds (sixth field subwatersheds to Beaver Creek watershed) makeup the southern area of the planning area in T 05S, R 10E, S(s) 17-20 (Upper Beaver Creek) and T05S, R 10E, S(s) 17 and 20 (Middle Beaver Creek).

The Clear Creek subwatershed, and the areas in Upper and Middle Beaver Creek subwatersheds, which are under the jurisdiction of the MHNH have been heavily managed during the past century by grazing, irrigation, timber harvesting, road building, fires, recreational activities such as off highway vehicles (OHV), and restoration activities. All these activities have had an effect to the existing condition of stream channels and the quality and quantity of fish habitat, including stream flow levels, stream channel sediment quantity, large woody material (LWM) quantity, pool quality and quantity, and water temperature.

Watershed Description:

Information on the Beaver Creek watershed is limited due to the majority of the watershed being managed by the Confederate Tribes of Warm Springs (CTWS). The planning area in the Beaver Creek watershed is isolated to 240 acres (87 acres being proposed for treatment) of flat ridgeline with no riparian reserves present. The flat ridgeline separates out the northern subwatershed boundaries of Upper and Middle Beaver Creeks, and the southern boundary of Clear Creek subwatershed. No riparian reserves have been identified in the portion of the planning area, which is located in the Beaver Creek watershed. The headwaters of an unnamed Indian Creek tributary (Middle Beaver Creek subwatershed) at T 05S, R 10E, S 20 SE/NE ends just southeast of the planning area. Beaver Creek watershed flows in a southeastern direction with the Warm Springs River (Beaver Creek is a tributary to Warm Springs River) entering the Deschutes River just downstream of the town of Warm Springs, Oregon at T 08S, R 14E, S 21. Fish species, which are present in the Beaver Creek watershed are: MCR summer

steelhead trout, Deschutes River summer chinook salmon *O. tshawytscha*, resident rainbow trout *O. mykiss spp.*, and pacific lamprey *Entosphenus tridentatus* (personal communication with P. O'toole, CTWS, 2002).

White River originates from the White River Glacier located on the eastern flanks of Mt. Hood. The White River is about 49 miles in length and the watershed drains primarily east to northeast to its confluence with the Deschutes River about 5.25 miles downstream from the city of Maupin, Oregon. Elevation in the watershed ranges from 6,525 feet to 800 feet. Precipitation amounts range from 100 inches to 12 inches per year. Primary forest ecotypes include sub-alpine fir/mountain hemlock in the Cascade crest zone, grand fir/Douglas-fir in the mid elevations zone and xeric ponderosa pine/Oregon white oak in the lower elevation zone along the eastern Mt. Hood National Forest Boundary (White River Watershed Analysis, 1995).

The White River Watershed starts to become segmented about one mile from its confluence with the Deschutes River by a series of three falls with the upper most falls, White River Falls at RM 2.0, being impassable to all upstream migrating fish. Below this point, MCR summer steelhead trout, MCR spring chinook salmon and bull trout *Salvelinus confluentus* have access. Above the falls, only native resident interior redband trout *O. mykiss gairdneri*, sculpin *Cottus spp.*, non-native resident rainbow trout (hatchery stocks), and brook trout *S. fontinalis* are present.

There is about 4.0 miles of perennial, fish bearing streams in the planning area. The two primary streams are Clear Creek and Frog Creek with one unnamed tributary, which is fish-bearing at T 05S, R 10E, S 9 SW/NE (from the confluence upstream about 500 feet). Clear and Frog Creeks are moderate to small sized streams with cobble to sand substrates. Clear Creek has its hydrology modified by water withdrawals, which supports the Clear Creek ditch. Clear Creek ditch is fish bearing due to no fish screen being present at the headgate of the ditch. Exceptions to fish screening of water diversions from fish bearing streams has not been given to the Clear Creek ditch. Therefore it is not in accordance with the Oregon Revised Statute 509.615.

Clear Creek is a 5th order stream, which originates from Clear Lake (T 04S, R 09E, S(s) 31 and 32), then flows southeast through a narrow to broad, V, U, and trough shaped valley with moderate to steep side slopes to its confluence with the White River about 11 miles downstream [T 05S, R 10E, S 11 NW1/4 (Clear Creek Stream Survey 1990)]. Clear Creek is a pinnate shaped subwatershed, which has 3 identified reaches, which vary from an A3 to E6 Rosgen channel type (Rosgen, 1996). Streambank erosion was low throughout with stream gradients varying from 2 to 4%. Review Table 10 for stream channel habitat indicators for stream reaches located in the planning area of Clear and Frog Creeks.

Stream	Reach	Reach Length (ft)	Average Width (ft)	Bankfull width/depth ratio	Mean Gradient %	Dom. Substrate
Clear Cr.	1	8434	22.3	11.4	4.0	CO/SB
Clear Cr.	2	19516	22.6	9.7	3.0	CO/SA
Frog Cr.	1	9300	16.9	15.3	2.0	GR
Frog Cr	2	10080	23.4	13.6	1.5	GR

Fish habitat conditions are considered good due to good amounts of small and brush sized woody debris in the main channel. This debris has played a vital role in defining the channel's characteristics, pool formation, and fish refuge during high flows. Review Table 11 for LWD, pools, and primary pools habitat indicators for stream reaches located in the planning area of Clear and Frog Creeks.

Stream	Reach	Percent Surface fines <1 mm- (LRMP Standard <20%)	LWM/mi	LWM LRMP Standard	Primary Pools (3+)/Mi	Pools/Mi LRMP Standard (3+) by channel width	Pools all depths/Mi	Rosgen Channel Type
Clear Cr.	1	12	45	106	N/A	111-156	5.0	A3
Clear Cr.	2	11	172	106	N/A	113-158	2.9	B3
Frog Cr.	1	36*	40	106	0.6	52.4	17.6	B4
Frog Cr.	2	46	25	106	0.0	82.9	6.8	B4c

N/A = information not available

* = Average percent fines from two sites in Reach 1 of Frog Creek between RM 0.0-2.5

Pool habitats are very important to salmonids during all life stages. Salmonids will utilize pools for both spawning and rearing activities. Spawning adult salmonids will use the clean gravel areas located in the pool tail crest for building redds (egg nest), as well as both juveniles and adults utilize pools for feeding, resting, and hiding from predators.

In Clear Creek Reach 1, pools were relatively large averaging more than 1000 square feet in surface area. The deepest pool was 4.5 feet and the average residual depth of all Reach 1 pools was 2.5 feet. In Reach 2 of Clear Creek, pools were large and shallow with an average depth of 2.8 feet and an average residual depth of 1.8 feet. Riffles in Reach 2 were deep, with a maximum depth of 3.5 feet. The LRMP standards for pools per mile require a minimum three-foot deep pool, every five to seven bankfull widths for cobble-dominated streams. The White River Watershed Analysis, 1995 (WRWA) displayed that this is far outside the range of natural conditions (RNC) for this watershed, being more characteristic of anadromous, west side streams. The WRWA did define the importance of measuring all pools but did not give a RNC for the watershed, stating that the RNC should be calculated by stable channel morphology and stable channel forms. Pool

frequency will typically increase with increased stream gradient. A B3 stream channel type with a gradient of 3% will typically have a pool-to-pool spacing of 3-4 bankfull channel widths. Compared to a 4-5 bankfull channel widths pool to pool spacing for a B3c (<2%) stream gradient (Rosgen 1996). Reach 2 of Clear Creek has been identified as a B3 channel type, and therefore, should range between 58 and 78 pools per mile. An A3 channel type with a 4% stream gradient will typically be a step/pool, cascading channel (Rosgen 1996). Reach 1 of Clear Creek has been identified as an A3 channel type, and therefore, should range between 59 to 79 pools per mile.

Large woody material is also an important physical structure component to both quality and quantity of fish habitat in a stream system. The LWM creates complex habitat such as quality pools, hiding cover for fish, and retains substrates. The LRMP standard for LWM is 106 pieces per mile (see Table 11 that are at least 35 feet long, and greater than 12 inches in diameter at the small end of the log (LRMP FW-094 and 095). Stream survey data from 1990 shows Clear Creek reaches 1 and 2 are located in the planning area. Reach 2 is above the LRMP standard, but reach 1 is below the LRMP standard. Stream survey data from 1997 shows Frog Creek, reach 1 and 2 are below the LRMP minimum standard for LWM.

The WRWA (p. 6-11) recommends giving Clear Creek ditch a riparian area land allocation. As stated in the WRWA, "This Reserve is intended to be consistent with the management strategy of the MT. Hood Forest Plan (see FW-085, FW-086, FW-706, FW-707, FW-708, B7-049, and B7-050)." This perennial fish-bearing ditch flows into a natural fish bearing stream channel (McCubbins Gulch), which the LRMP mandates the forest to maintain a suitable water temperature for fish using the natural channel. Although this reserve along the constructed portion, (which timber Units 13R, 15R, 16R, and 21R are adjacent to) is not intended to prohibit maintenance to protect its function as a water transmission corridor. Therefore, LWM in the ditch is undesirable due to high maintenance costs to remove the LWM and the damage, which could occur from LWM being in the ditch, such as blowing out the dirt fill berm. Future recruitment of LWM in the ditch is also undesirable.

The primary tributary to Clear Creek is Frog Creek, which contributes about 10% of the total flow. Summer low flow for Frog Creek is 1 to 2 cfs. Frog Creek is a Class I, 2nd order stream. Located in the upper Frog Creek drainage, about 2.9 miles above the planning area, is a diversion structure that diverts up to 80% of Frog Creek to an irrigation ditch that feeds into Clear Creek. At this point the Clear Creek ditch begins, currently diverting about 70% of the stream flow from Clear Creek into the ditch, with 100% flow diversion permitted. These perennial flowing ditches alter the bankfull (channel maintenance flows) discharge in both Clear and Frog Creeks. This may impact fish habitat by reducing the seasonal flushing actions that are inherent to mountain streams (Clear Creek riparian survey, 1990 and Rosgen, 1996).

Interior redband trout throughout the Oregon interior basins, which originally derived from the Columbia River system are well known to be hereditary resilient to high water temperatures (Behnke R., 1992). Interior redband trout have been found in water

temperatures over 28 °C (Behnke R., 1992). Interior redband trout spawn in Clear Creek and Frog Creek during the latter half of April. Fry are believed to leave the gravel in late June, depending on water temperatures. As of 1998, the Oregon Department of Environmental Quality (ODEQ) has placed Clear Creek (RM 0 to 15.1) and White River (RM 0 to 12) on the 303(d) list for water temperature. However, the 7 day running average was not exceeded in 1997 through 2001 at any of the three data collecting sites located in Clear Creek during the spawning or incubation period. Frog Creek is the largest tributary to Clear Creek and currently meets Oregon state water quality standards. McCubbins Gulch (a natural stream channel, fed with 100% of Clear Creek ditch water) is only managed to meet Oregon state water quality standards for water temperature. Water temperature data in McCubbins Gulch has only been recorded for one year (2001), which was during an extreme summer drought. Water temperature remained in Oregon state water quality standards with exceeding 17.8 °C for only 6 consecutive days. Review Table 12 for additional information.

Stream	Location	Days over Max 7 Day Average >17.8 °C in 1998, 1999, and 2001	
Clear Creek	Above confluence of Camas Creek	0 (1998)	0 (1999)
Clear Creek	At Keeps Mills Campground	0 (1999)	0 (2001)
Frog Creek	At confluence of Frog Creek	0 (1997)	
McCubbins Gulch	About 1.75 miles upstream of McCubbins Gulch Campground	6 (2001)	

Fish and Aquatic Mollusk Presence/Absence

Threatened			
Species	Suitable Habitat	Presence	Surveys
Mid-Columbia River Steelhead Trout (ESU)	N	N	Y
Columbia River Bull Trout (ESU)	N	N	Y
R6 Sensitive Species			
Coastal Cutthroat Trout	Y	N	Y
Interior Redband Trout	Y	Y	Y
Deschutes River Summer/Fall Chinook Salmon (ESU)	N	N	Y
R6 Survey and Manage Species			
Basalt Juga <i>Oreobasis spp.</i>	Y	N	Y
Columbia dusky snail <i>Lyogyrus spp.</i>	Y	Y	Y
Essential Fish Habitat			
Chinook and Coho	N	N	N/A ¹

¹ N/A = Not Apply

Threatened Species

Mid-Columbia River steelhead trout (NMFS)

Mid-Columbia River steelhead trout are not present in the planning area, but are present about 17 miles downstream below a 180 foot long-standing natural falls called White River Falls at RM 2. There is no substantiated historical or present evidence that steelhead have ever been above White River Falls. Mid-Columbia River summer steelhead are present in the Beaver Creek watershed, and have suitable spawning and rearing habitat in both Upper and Middle Beaver Creek subwatersheds. Spawning adults have been seen, and are believed to continually utilize the lower reaches of Indian Creek, which is on CTWS land at about RM 0.75, but with potential habitat up to Bear Springs Meadow at about RM 5.0 (personal communication with M. Weldon, CTWS, 2002). Fish distribution in the Upper Beaver Creek subwatershed is unavailable, therefore, will not be discussed.

Columbia River Bull Trout (USFWS)

There is no evidence of Columbia River bull trout use in the planning area, above White River Falls, or in Beaver Creek watershed. Bull trout have been found in neighboring basins (Hood River and Deschutes River).

R6 Sensitive Aquatic Species

Interior Redband Trout

Presence of interior redband trout has been documented in the White River watershed and in the planning area. Timber units (project site scale) entering riparian reserves that are known to have interior redband trout present are: 1R, 13R, 15R, 16R, and 21R. Interior redband trout are known to be present up to RM 12.8 of Clear Creek (migration barrier located at Clear Creek Dam located about 7 miles upstream of the planning area), as well as Frog Creek (RM 7.75) and its major tributaries, Clear Creek ditch (entire length), and one unnamed tributary to Clear Creek (RM 0.25) located about 0.5 mile downstream of Frog Creek Confluence to Clear Creek. Suitable rearing habitat is present in other unnamed intermittent tributaries to Clear Creek in the planning area. I believe that these tributaries maybe used by interior redband trout during times of the year that running water is present. This would be expected to be during the winter and spring months. Review map 2 for further detailed information on interior redband distribution in the planning area.

Interior redband trout have been documented in the Beaver Creek watershed located on the CTWS lands. Interior redband trout were documented up to about RM 2.5 and suspected up to RM 5.0 in Indian Creek of the Middle Beaver Creek subwatershed. Three juvenile barriers were identified in Indian Creek, which were all culverts at RM(s) 0.75, 2.5, and 4.5 (personal communication with M. Weldon, CTWS, 2002).

Coastal Cutthroat Trout

There is no substantiated evidence that coastal cutthroat trout are present in the White River Watershed. There is suitable habitat in the planning area for coastal cutthroat trout.

Coastal cutthroat trout have been found in neighboring basins (Fifteenmile Creek and Hood River).

Deschutes River Summer chinook salmon

Deschutes River Summer chinook salmon have been documented in Beaver Creek watershed on CTWS lands. Chinook salmon are present in both Beaver Creek and Indian Creek drainages (RM 0.75) (personal communication with M. Weldon, CTWS, 2002).

R6 Survey and Manage Aquatic Mollusks

Columbia duskysnail and Basalt Juga snail

Although the two aquatic mollusk species listed as “Survey and Manage”: Basalt Juga *Oreobasis* n. sp. 2 and the Columbia duskysnail *Lyogyrus* n. sp. 1. are not R6 sensitive or federally listed as threatened or endangered, the MHNH does manage known sites. Surveys were conducted during 2000 and 2001 at multiple locations throughout the planning area. Habitat types that were surveyed varied from seeps and springs, small cold streams, and irrigation ditches. Only the Columbia duskysnail has been documented in the White River watershed including the planning area. Basalt Juga has not been found in any survey conducted on the Mt. Hood National Forest. Units 2, 2R, 8, 11, 14, 14R, 21, and 21R have documented Columbia duskysnail populations that are located 1/8 of a mile of the mentioned units. Review Map 4 for further information. The Columbia duskysnail was present in multiple habitat types such as springs, seeps, tributaries to Clear and Frog Creeks, and the Clear Creek ditch.

Essential Fish Habitat

Chinook and coho essential habitat (designated by NMFS) stops at White River Falls. No documented historical use of chinook or coho salmon is known to occur above the White River Falls. Chinook salmon are present in the Beaver Creek watershed; therefore, essential habitat is present up to the headwaters of Beaver Creek watershed.

Determination of Effects

Issues and Analysis Methodology

The following LRMP standard and guidelines were used to guide the analysis methodology:

- Spawning habitat (e.g. pool tailouts and glides) shall maintain < 20% fine sediment (i.e. particles <1 mm in diameter) on an area weighted average, FW-097.
- At least 90% of potential and naturally occurring in-channel large woody material (LWM) shall be maintained, FW-092.
- Retention of multi-piece accumulations of LWM and fallen trees with attached root wads should be emphasized, FW-093.
- Conifer and hardwood trees necessary for stream bank stability, long term wood input, and diversity of wildlife and plant communities should be maintained, FW-135. Note this is recognized for Class IV (non fish-bearing intermittent) streams, seeps, springs, and headwaters.
- Seven (7) day moving average of the daily maximum water temperature shall not exceed 64 °F (17.8 °C) unless specifically allowed under a Department-approved basin surface water temperature management plan (Oregon State Water Quality Standard for water temperature, OAR 340-41), as well as LRMP.

Direct and Indirect Effects of Alternative I, No Action

Short and Long-Term Effects

Short-term direct and indirect effects are those that could occur during project implementation and in five years after projects are completed. Long-term direct and indirect effects are those that could occur between 5 and 50 years after the projects are completed.

There should be no short-term direct or indirect effects to aquatic habitat or individuals by implementing this alternative. There would be no soil disturbance because logging operations, road construction/closing, or prescribed fire activities would not occur. No riparian vegetation would be disturbed. The existing stream channel and aquatic habitat conditions should stay the same until the next high flow event occurs. Amounts of LWM throughout the planning area and fine sediment levels in Clear and Frog Creeks would still not meet LRMP standards and guidelines.

There should be no noticeable long-term effect to aquatic habitat or individuals by implementing this alternative. Stand conditions over the landscape would not be improved, and thus desirable stand conditions mentioned in the purpose and need would not be met. In the event of a large fire or insect infestation, more acres would be available for consumption, which may include riparian stands. Although the chances for this to occur are possible, the chance for this to occur to a large enough scale to impact aquatic resources is negligible. A restoring trend towards meeting standards and guidelines would occur for LWM in the planning area.

Cumulative Effects

There should be no cumulative effects by implementing this alternative.

Irreversible and Irrecoverable Effects

There would be no irreversible or irretrievable effects to aquatic habitat or resources as a result of implementing this alternative.

Species Specific Effects Determinations of Alternative I: No Action:

Threatened, Endangered, and Proposed Species

Threatened Species (NMFS)

Mid-Columbia River Steelhead Trout

A “**No Effect**” (NE) determination is warranted to Mid-Columbia River steelhead trout. Mid-Columbia steelhead trout upper limits are at White River Falls, as well as no identified riparian reserves are present in either the Upper or Middle Beaver Creek subwatersheds, which is located in the planning area.

Threatened Species (USF&WS)

Columbia River Bull Trout

A “**No Effect**” (NE) determination is warranted to Columbia River bull trout. Bull trout upper limits are at White River Falls.

R6 Sensitive Aquatic Species

Interior Redband Trout

A “**No Impact**” (NI) determination is warranted to interior redband trout. Existing conditions would be maintained by implementing alternative I: No Action.

Coastal Cutthroat Trout

A “No Impact” (NI) determination is warranted for coastal cutthroat trout.

Deschutes River Summer Chinook Salmon

A “No Impact” (NI) determination is warranted for Deschutes River summer chinook salmon.

R6 Survey and Manage Aquatic Mollusks

There would be no potential negative impacts to Columbia dusksnails and its habitat from the no action. The species habitat, life cycle, microclimate, or life support requirements at the 7th field or greater watershed scales would be maintained at existing conditions.

Essential Fish Habitat

Chinook and Coho Salmon

A “No Effect” (NE) determination is warranted to chinook and coho essential habitat. Chinook and coho essential habitat stops at White River Falls. No stream channels are known to be present in the planning area, which flow into either the Upper or Middle Beaver Creek subwatersheds were essential fish habitat for chinook salmon is present.

Direct and Indirect Effects of Alternative II Proposed Action – Uneven Aged Approach, Alternative III – Even Aged Approach, and Alternative IV – Diameter Limit

Short and Long-Term Effects

All alternative II, III, and IV actions have the same direct and indirect effects unless otherwise specified.

The alternative II, III, and IV actions at the 5th and 6th field watershed scales, and project level scale would have a negligible increase of fine sediment (<1mm in diameter) to fish spawning and rearing habitat, as well as to aquatic mollusk or their habitat. I believe, due to the proximity of fish presence to actions associated with alternatives II, III and IV, as well as the design layout and best management practices being adhered to, there would be no short or long-term direct or indirect effects to fish or their spawning and rearing habitat, as well as aquatic mollusks or their habitat from fine sediment.

The alternative II, III, or IV actions would meet the LRMP for LWM as covered under FW-092 and FW-135. An estimated overall increase (< 1%) of LWM in both the short and long-term at the 5th and 6th field watershed scales would be expected. At the project level scale, both fish bearing (Units 1R and 11) streams and non-fish bearing (Units 2R and 14R) streams, would benefit from an increase of LWM to the stream channel and

flood prone area for both the short and long-term depending on wood routing during periods of natural flooding. In Unit 14R, an estimated increase of 5 to 15 trees, (20 to 48 inches DBH) would come from diseased trees located at the outer edge (100 to 125 feet) of the riparian reserve. The trees would be girdled and allowed to fall naturally in the riparian reserve, in which they could fall into either the flood prone area as well as the stream channel. In Unit 11, the portion of trees that fall down hill of Forest roadway 2130 into the riparian reserve would be bucked and left. This LWM would directly help maintain and develop future salmonid spawning and rearing habitat, by helping retain clean spawning gravels and developing primary pools, and supplying complex resting cover in both the short and long-term as it moves through the stream system in both Clear Creek and the White River drainages.

Cutting trees and removing trees in the riparian reserve along Clear Creek Ditch, Units 13R, 15R, 16R, and 21R, causes no loss to the LWM. The ditch is not managed for LWM. It is only managed for temperature. Due to the management direction LWM within the ditch riparian reserve would be maintained at current levels. Salmonid spawning and rearing habitat would be maintained at current low levels.

Cutting trees in riparian reserves reduces the tree canopy. I believe that design layout and best management practices would retain adequate direct shade to the natural stream channels and Clear Creek irrigation ditch. There would be no short or long-term direct or indirect effects to water temperature, which would continue to meet Oregon state water quality standards for water temperature.

Cumulative Effects

The 5th and 6th field watersheds found in the planning area have been managed during the past century for grazing, irrigation, timber harvesting, road building, fires, recreational activities, such as off highway vehicles (OHV), exotic fish introduction, and restoration activities. Cumulative effects from these activities in the White River and Beaver Creek watersheds has had both a direct and indirect connection to the level of water quality and quantity, which can influence the health of the native resident interior redband trout populations that are present in the two watersheds. The selected alternative II, III, or IV action would improve the over all riparian conditions at the 5th and 6th field watershed scale, while maintaining or improving other resource uses in the watershed.

The Aggregate Recovery Percentage (ARP) model is used by the Mt. Hood National Forest to model the possible cumulative effects, from a base and peak flow standpoint, for a given watershed from proposed activities. The ARP calculated at the 6th field watershed scale, Clear Creek, as of 1999 is at about 76%, and the selected alternative action should only decrease that slightly, from 0 to 1 percent under alternatives II and IV, and from 1 to 2 percent under alternative III. The Upper White River 5th field watershed scale, as of 1999 is at about 82%. The threshold of concern for the Upper White River (5th field watershed) using the ARP calculations is 65%. Implementing one of the selected alternative II, III, or IV action should not have any noticeable change at this scale.

Cumulatively, watershed conditions in the short-term may be slightly decreased by harvest activities, but would be improved in the long-term by improving the number, type and health of the trees and stands over the long-term.

Irreversible and Irrecoverable Effects

There would be no irreversible or irretrievable commitment of aquatic resources as a result of the selected alternative II, III, or IV action. Potential changes in habitat conditions described above would recover over time. Fish and aquatic insect populations fluctuate naturally, but any fluctuations caused by selecting either alternatives II, III, or IV action would not result in local extinctions.

Species Specific Findings of Alternatives II, III, AND IV

Threatened, Endangered, and Proposed Species

Threatened Species (NMFS)

Mid-Columbia River Steelhead Trout

A “**No Effect**” (NE) determination is warranted to Mid-Columbia River steelhead trout. Mid-Columbia steelhead trout upper limits are at White River Falls, which is a long-standing natural fish barrier, as well as no stream channels are known to be present in the planning area, which flow into either the Upper or Middle Beaver Creek subwatersheds.

Threatened Species (USF&WS)

Columbia River Bull Trout

A “**No Effect**” (NE) determination is warranted to Columbia River bull trout. Bull trout upper limits are at the White River Falls.

R6 Sensitive Aquatic Species

Interior Redband Trout

A “**No Impact**” (NI) determination is warranted to resident interior redband trout for the proposed actions in alternative II, III, and IV. Following design layout and adhering to design features in the alternative actions II, III, and IV there would be long-term “benefits” from higher spawning and rearing habitat, which would be created by increased LWM levels in the Clear Creek and White River drainages from the proposed actions of alternative II, III, and IV.

Columbia River Coastal Cutthroat Trout

A **“No Impact” (NI)** determination is warranted to Columbia River coastal cutthroat trout.

Deschutes River Summer Chinook Salmon

A **“No Impact” (NI)** determination is warranted for Deschutes River summer chinook salmon.

R6 Survey and Manage Aquatic Mollusks

There would be no potential negative impacts to Columbia dusksnails and it’s habitat from alternatives II, III, or IV. The species habitat, life cycle, microclimate, or life support requirements at the 7th field or greater watershed scales would be maintained at existing conditions. Even if design features and BMP failed and individuals were killed by the selected action the area could be re-colonized by individuals from other up or downstream colonies.

Essential Fish Habitat

Chinook and Coho Salmon

A **“No Effect” (No Effect)** determination is warranted to chinook and coho essential habitat. Chinook and coho essential habitat stops at White River Falls. No stream channels are known to be present in the planning area, which flow into either the Upper or Middle Beaver Creek subwatersheds were essential fish habitat for chinook salmon is present.

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Appendix for Juncrock Timber Sale

TABLE A-1 - ROADS PROPOSED FOR CLOSURE MCCUBBINS OHV ROAD ANALYSIS AREA COMMON TO ALTERNATIVES II, III AND IV				
FS ROAD NO.	UNIT ACCESS	TREATMENT	NEW MILES CLOSED	TIMING
2130221	21	After harvest, reclose with a berm at the junction of 2130-220 and scarify; scatter slash behind the berm and both sides of motorcycle crossings.	0.00	Timber Contract
2130222	20	After harvest, reclose with a berm at the junction of 2130-220, and scarify, scatter slash both sides of behind berm.	0.00	Timber Contract
2100019 Existing non-system road off Hwy 216	19	After harvest, close with a berm at the junction of Hwy 216, scarify, and scatter slash for the first 100 feet.	0.34	Timber Contract
2130223	20	After harvest, close with a berm at the end of rock surface on south edge of unit. .	0.43	Timber Contract
2130226 & 2130225	15, 15R, 16, 16R	After reforestation, closure on 2130226 closes this road.	0.44	Essential KV post reforestation
2130226	15, 15R, 16, 16R	After reforestation, close 2130-226 with a berm before the junction of 2130-220; leave room for trailer turn-around.	0.28	
TOTAL MILES CLOSED			1.49	

**TABLE A-2 - ROADS PROPOSED FOR CLOSURE NON-OHV ROAD ANALYSIS AREA
COMMON TO ALTERNATIVE II, III AND IV**

FS ROAD NO.	UNIT ACCESS	TREATMENT	NEW MILES CLOSED	FUNDING
2130250	13, 13R	After reforestation, reclose 1.25 miles with a berm at the existing location.	0.0	Essential KV post reforestation
2131011 First segment	8 and Alt. III 8-1	After harvest, reclose 0.25 miles with berm at the existing berm location; scatter slash beyond the berm to discourage unauthorized use, but protect trail tread.	0.0	Timber Contract
2100015	Hilynix Units	After harvest, close with berm at State Shop fence line; scatter slash beyond the berm to discourage unauthorized use.	0.15	Timber Contract
2100016	17	After harvest, close with dirt berms at the junction of 2130-220 and at State Shop fence line.	0.30	Timber Contract
2130220	Hilynix Units & 17	After reforestation, close with a berm after the junction of 2100-016, leave room for trailer turn-around.	0.45	Essential KV post reforestation
2130280, 281 & 282	N/A	Close with a berm at the junction of 2130-000; allow for a dispersed campsite and administrative ATV access in the berm.	2.36	Non-Essential KV
2131012	N/A	Correct erosion problems and close with berm.	0.30	Funding to be identified
2131013	1, 1R	After reforestation, close with a berm 50 to 100 feet from the junction of 2131-000; scatter slash beyond the berm to discourage unauthorized use.	0.50	Essential KV
2131014	N/A	Close with a berm 100 feet back from the junction of 2131-000; scatter slash beyond the berm to discourage unauthorized use.	0.33	Non-Essential Alt II Essential KV Alt III
2131220	N/A	Self close. No ACS issues	0.76	Funding to be identified
2131230	9	After harvest, close with a berm at the edge of Unit 9, allow access to old gravel stockpile. Scatter slash beyond the berm to discourage unauthorized use. Keep trail open	0.27	Timber Contract
2131250	N/A	Close 2131-250 with a berm 100 feet back from the junction of 2131-000; scatter slash beyond the berm to discourage unauthorized use.	0.79	Non-Essential KV
2131270	8 and Alt. III 8-1	After harvest, close with a berm at timber edge west of the first plantation off 2131-000 scatter slash beyond the berm to discourage unauthorized use.	0.72	Timber Contract
4310011	N/A	The existing guard rail closure is ineffective.	0.74	Non-Essential KV
4310014	12	After harvest, close with a berm 50 to 100 feet from the junction of 4310-000; scatter slash beyond the berm to discourage unauthorized use.	0.69	Essential KV
4330018	4	After reforestation, close with a berm 50 to 100 feet from the junction of 4330-013; scatter slash beyond the berm to discourage unauthorized use.	0.16	Non-Essential Alt III Essential KV Alt II
2131000	N/A	Close with a berm at Mile Post 3.66; scatter slash beyond the berm to discourage unauthorized use.	0.19	Non-Essential KV
TOTAL MILES CLOSED			8.71	

Table A-3
Transportation Design Features Specific to Individual Units.

UNIT	ACRES	Alternatives II and III
Unit 1	51	Keep 2131013 as level 1 system road, berm near 2131 road. Convert existing nonsystem road off end of 2131013 to long term temporary road,
Unit 1R	1	
Unit 2	23	Temporary roads only (if needed)
Unit 2R	1	
Unit 3	3	Temporary roads only (if needed)
Unit 3-1	1	
Unit 4	25	Build long-term temporary road from end of 2131012, obliterate after use, Berm 2131250 road near 2131 junction. Alternative IV will helicopter this unit.
Unit 5	8	Landing off Rd 43330013
Unit 6	8	Landing off Rd 4330017
Unit 7	23	Landing off Rd 4330017
Unit 8-1	12	
Unit 8	69	Use Rd 2131011 and reconstruct the existing non-system spur road. Reberm and reestablish Trail 474. The existing road bed may not be widened beyond The existing limits into the Habitat or GTR Area.
Unit 9	23	No equipment of Rd 2131230 within GTR, Restore trail tread, Berm road after use. The existing road bed may not be widened beyond The existing limits into the Habitat or GTR Area.
Unit 10	14	Landing on Rd 4310250
Unit 11	21	
Unit 12	9	Berm Rd 4310014 after use
Unit 13	3	Open existing Rd 2130250 and Reberm after use.
Unit 13-R	3	
Unit 14	7	Temporary roads only (if needed)
Unit 14-R	3	
Unit 15	9	Long term temporary road through Unit 16, obliterate after use. Alternative IV will helicopter log this unit.
Unit 15-R	3	
Unit 16	16	Long term temporary road through Unit 16, obliterate after use. Berm Rd 2130226 near Rd 2140220
Unit 16-R	3	
Unit 17	14	Berm Rd 2100016 at the junction of Rd 2130220 and the State Shop fence line. Berm 2130220 west of junction, leaving recreation turnaround. The existing road bed may not be widened beyond The existing limits into the Habitat or GTR Area.
Unit 18	57	Reconstruct the existing non-system road. Reberm at junctions with Rd 2130220. The existing road bed may not be widened beyond The existing limits into the Habitat or GTR Area.

Unit 18-R		
Unit 19	82	Reconstruct existing non-system road off Hwy 216. Berm after use. The existing road bed may not be widened beyond the existing limits into the Habitat or GTR Area.
Unit 20	26	Berm 2130223 at north edge of stand.
Unit 21	18	Berm Rd 2130221 at junction with 2130220.
Unit 21-R	2	
Unit 22		
Unit 23	17	