

AQUATIC BIOLOGICAL EVALUATION
Bear Knoll Planning Area

Hood River Ranger District
Mt. Hood National Forest

Summary of Effects

Species	Species Present	Suitable Habitat Present	Effect Determination		
			Alt. I	Alt. II	Alt. III
Steelhead trout	No	No	NE	NE	NE
Bull trout	No	No	NE	NE	NE
Interior Redband trout	Yes	Yes	NI	NI	NI
Columbia Dusksnail	Yes	Yes	NI	NI	NI
Essential Fish Habitat		No	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).

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

Columbia Dusksnails: *Lyogyrus spp.*, Forest Service Region 6 Sensitive Species.

NE = No Effect

NI = No Impact.

Written by: /S/ Christopher S. Rossel Date: April 5, 2005
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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 from proposed vegetation management through commercial thinning timber harvest in the Bear Knoll Planning Area (planning area) on the Hood River Ranger District (HRRD), 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.

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) were used in this analysis. 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

Introduction

This chapter describes and compares the alternatives considered for the Bear Knoll project. It includes a description and map of each action alternative. This section also presents the alternatives in comparative form, emphasizing the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

Alternative I – No Action

Under the No-action alternative, current management plans would continue to guide management of the project area. This alternative is analyzed to offer a baseline for the potential effects of the proposed action and its alternative. Using this baseline, activities such as hunting, driving for pleasure, and wood-cutting would continue. Management activities such as road maintenance, noxious weed control, grazing and fire suppression would also continue. No timber harvest or other associated actions would be implemented to accomplish project goals. No additional roads would be opened or utilized. No roads would be closed under this proposal and open road density would remain at 3.32 miles per square mile, exceeding Forest Plan standards and guidelines.

Alternative II – Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to thin 531 acres within the Bear Knoll planning area. Stands proposed for thinning consist primarily of overcrowded mid seral blocks that average 70-75 years of age. The current stands range from 120-400 square feet of basal area, with 220-600 trees per acre. The species mix is similar in each stand, but stands exhibit various concentrations and distributions of species. Western hemlock, noble fir, and grand fir generally dominate the overstory with minor to moderate amounts of western red cedar. Douglas-fir, western white pine and western larch are scattered throughout. Overstory diameters average approximately 13-16 inches diameter breast height (DBH). Midstory diameters average from 7-12 inches DBH. Overall heights in the project area average 75 feet. The stands average 3-4 snags/acre and 3-4 downed logs/acre. The distribution is scattered in some stands and concentrated in others.

This alternative would reduce the basal area to an average range of 120-160 square feet (220-293 trees per acre). Preferred species, such as Douglas-fir, larch, and noble fir, would be left where they are present in the stands. Existing remnant trees would be left on-site. Snags would be left at the rate of four per acre. Down woody debris would be retained in the treated stands at 240-500 lineal feet per acre and 3-10 % ground cover per acre.

Under the proposed action, a ground based logging system would be used. Fuels reduction of logging slash would be accomplished by machine piling and burning. No riparian reserves would be entered. Table 1, below, shows individual stands proposed for thinning.

The action would temporarily open 3.62 miles of currently restricted use road (closed with a gate), bring 1.16 miles of physically closed road (decommissioned) up to standard, and utilize 1.46 miles of existing disturbed ground (such as existing skid trails) as temporary road. Road maintenance would range from pre-haul maintenance to reconstruction. Temporary roads would be partially obliterated, which includes ripping, re-contouring, re-vegetating and constructing water bars as needed, after completion of the project. Currently restricted use roads that would be opened for the timber harvest would be re-closed with the existing gate after harvest activities. Additionally, 5.52 miles of roads would be closed with a heavy duty, seasonal gate that would be open for winter recreation and 1.78 miles would be closed with earth berms. Of this, 0.85 would be re-closing a currently closed road after harvest. This proposal addresses Key Issue #2 to reduce road miles in the planning area after harvest. The resultant open road density would be 2.32 mi/mi². Refer to Tables 2 and 3 for a detailed description of actions on system and temporary roads.

Under this alternative, activities such as hunting, driving for pleasure, and wood-cutting would continue. Management activities such as road maintenance, noxious weed control, grazing, and fire suppression would continue. Forest Development Road 2640230 would continue to be used as part of the snowmobile system. See Map 4 for locations of stands in Alternative II.

Table 1 Individual Thinning Stands

Stands	Acres	Existing Condition	Desired Condition
139	77	Basal Area: 240-360 ft ² Stand Attributes: two storied stand, Root Rot pockets, Western Larch, Douglas-fir, and true firs, dense	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²), retain minor species
146 (North side)	57	Basal Area: 200-240 ft ²	Desired Basal Area is 150 ft ² (Range of 140-160 ft ²) Remnant trees will be left in stand (6-7 per acre), retain minor species
146 (South side)		Basal Area: 120-360 ft ² Stand Attributes: some remnant trees, thick, small trees, larger trees already logged	
160	14	Basal Area: 240 –280 ft ² Stand Attributes: canopy gaps in stand, no residual trees, root rot and mistletoe pockets, down wood is light & scattered	Desired Basal Area is 160 ft ² (Range of 140 – 160 ft ²), retain minor species
164	50	Basal Area: 200 –240 ft ² Stand Attributes: canopy gaps in stand, few residual trees, root rot pockets, down wood is light	Desired Basal Area is 160 ft ² (Range of 140 – 160 ft ²), retain minor species
167	19	Basal Area: 240 – 360 ft ² Stand Attributes: canopy gaps in stand, no residual trees, root rot pockets, a lot of down wood concentrated in root rot pockets	Desired Basal Area is 140 ft ² (Range of 140 – 160 ft ²), retain minor species
174	76	Basal Area: 200-400 ft ² Stand Attributes: existing skid roads, root rot pockets, 60% Noble fir	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²), retain minor species
175	40	Basal Area: 200-280 ft ² Stand Attributes: Western hemlock root rot pockets, mistletoe	Desired Basal Area is 160 ft ² (Range of 150-160 ft ²) Maintain the stand with a higher basal area, retain minor species
177	55	Basal Area: 200-280 ft ² Stand Attributes: root rot pockets scattered throughout	Desired Basal Area is 140 ft ² (Range of 140-160 ft ² .) retain minor species in stand
211 & 225	111	Basal Area: 300-400 ft ² Stand Attributes: Stem decays in stand	Desired Basal Area is 120 ft ² (Range of 120-140 ft ²) Retain minor species; retain Western Red Cedar if possible
220	8	Basal Area: 240-280 ft ² Stand Attributes: stand has a mid story & understory, many remnants, Indian Paint present in stand	Desired Basal Area is 160 ft ² (Range of 150-160 ft ² .), retain minor species
217	3	Basal Area: 300 – 340 ft ²	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²)
186	21	Basal Area: 280-300 ft ² Stand Attributes: Stand has scattered openings	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²)
Total Acres:	531		

Road Number	Accesses Stand	Type of Road	Length	Condition after project
TR1-11	174, 175, 186	Temporary	0.40	Rip & Re-contour
TR1-13	174, 175, 164	Temporary	0.08	Rip & Re-contour
TR1-14	164, 167, 175, 177	Temporary	0.40	Rip & Re-contour
TR1-20	139	Temporary	0.43	Rip & Re-contour
TR2-6	146	Temporary	0.15	Rip & Re-contour
		Total miles	1.46	

Road Number	Accesses Stand	Type of Road	Length	Condition after Project
2610000	139, 160, 164, 167, 174, 175, 177, 186, 217 & 220	Open System Road	2.32	Open System Road
2610020	164, 167, 175, 177	Decommissioned Road will need to be added to system & re-opened.	0.85	Level 1 Road closed with berm
2610026	217, 220	Decommissioned Road, will need to be added to system & re-opened	0.31	Level 1 road, closed with a berm
2640000	146, 211, 225	Open System Road	3.39	Open System Road
2640260	211, 225	Open System Road,	0.46	Level 1 Road, closed with a berm behind the dispersed site
2640261	211, 225	Open System Road,	0.16	Level 1 System Road, closed with a berm
2640230	146	Open System Road, part is used as a snowmobile trail	1.62	Level 1 Road, regulated closure, Closed with seasonal gate
4320000	160, 167, 177, &186	Closed System Road, closed by seasonal gate, used as snowmobile route	2.22	Level 1 Road, closed by seasonal gate
4320011	160, 167, 177 & 186	Closed system road, will need to be re-opened	0.53	Closed System Road, closed by seasonal gate
4320012	139	Closed System Road, closed with supergate	0.60	Closed System Road, closed by super gate
		Total Miles	12.46	

Alternative III

Alternative III is designed to respond to public concern regarding harvest in scenic viewsheds. To address this concern, Alternative III proposes to thin 289 acres, all within the timber emphasis management area (C1) and defer harvest in designated scenic viewsheds (B2). Like Alternative II, this alternative would reduce the current average stand basal area range to 120-160 square feet. Species such as Douglas-fir, larch, and noble fir would be left where they are present in the stand. Existing remnant trees would be left. Snags would be left at the rate of four per acre. Down woody debris would be retained in treated stands at 240-500 lineal feet per acre and 3-10 % ground cover per acre.

The action would temporarily open 3.62 miles of currently restricted use road (closed with a gate), bring 1.16 miles of physically closed road (decommissioned) up to standard, and utilize existing disturbed ground (such as existing skid trails) for 0.88 miles of temporary road. Road maintenance would range from pre-haul maintenance to reconstruction. Temporary roads would be partially obliterated, which includes ripping, re-contouring, re-vegetating and constructing water bars, as needed, after completion of the project. Currently restricted use roads that would be opened for the timber harvest would be re-closed with the existing gate after harvest activities. Additionally 0.85 miles would be re-closed with earth berms. This proposal addresses Key Issue #2 by using existing disturbed ground for roads and skid trails. The open road density would remain the same, 3.32 mi/mi². Refer to Tables 2 and 3 for a detailed description of actions on system and temporary roads.

A ground based logging system would be used. Fuels reduction of activity fuels would be accomplished by machine piling and burning logging slash. No riparian reserves would be entered. Table 4, below, shows individual stands included in this alternative.

Under this alternative, activities such as hunting, driving for pleasure, and wood-cutting would continue. Management activities such as road maintenance, noxious weed control, grazing, and fire suppression would continue.

Stands	Acres	Existing Condition	Desired Condition
160	14	Basal Area: 240 –280 ft ² Stand Attributes: canopy gaps in stand, no residual trees, root rot and mistletoe pockets, down wood is light & scattered.	Desired Basal Area is 160 ft ² (Range of 140 – 160 ft ²), retain minor species.
164	50	Basal Area: 200 –240 ft ² Stand Attributes: canopy gaps in stand, few residual trees, root rot pockets, down wood is light.	Desired Basal Area is 160 ft ² (Range of 140 – 160 ft ²), retain minor species.

167	19	Basal Area: 240 – 360 ft ² Stand Attributes: canopy gaps in stand, no residual trees, root rot pockets, a lot of down wood concentrated in root rot pockets.	Desired Basal Area is 140 ft ² (Range of 140 – 160 ft ²), retain minor species.
174	76	Basal Area: 200-400 ft ² Stand Attributes: existing skid roads, root rot pockets, 60% Noble fir	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²), retain minor species.
175	40	Basal Area: 200-280 ft ² Stand Attributes: Western hemlock root rot pockets, mistletoe.	Desired Basal Area is 160 ft ² (Range of 150-160 ft ²) Maintain the stand with a higher basal area, retain minor species.
177	55	Basal Area: 200-280 ft ² Stand Attributes: root rot pockets scattered throughout.	Desired Basal Area is 140 ft ² (Range of 140-160 ft ²) retain minor species in stand
211	14	Basal Area: 300-400 ft ² Stand Attributes: Stem decays in stand	Desired Basal Area is 120 ft ² (Range of 120-140 ft ²) Retain minor species; retain Western Red Cedar if possible
Total Acres:	289		

See Map 5 for stands in this alternative.

Road Number	Accesses Stand	Type of Road	Length	Condition after project
TR1-11	174, 175, 186	Temporary	0.40	Rip & Re-contour
TR1-13	174, 175, 164	Temporary	0.08	Rip & Re-contour
TR1-14	164, 167, 175, 177	Temporary	0.40	Rip & Re-contour
		Total miles	0.88	

Road Number	Accesses Stand	Type of Road	Length	Condition after Project
2610000	160, 164, 167, 174, 175, 177 & 186	Open System Road	2.32	Open System Road
2610020	164, 167, 175, 177	Decommissioned Road will need to be added to system & re-opened.	0.85	Level 1 Road closed with berm
2640000	211	Open System Road	3.39	Open System Road
4320000	160, 167, 177, & 186	Closed System Road, closed by super gate, used as snowmobile route	2.22	Level 1 Road, closed with super gate
4320011	160, 167, 177 & 186	Closed system road, will need to be re-opened	0.53	Closed System Road, closed by super gate
		Total miles	9.81	

See Map 6 for the transportation system.

Best Management Practices (BMPs) and Design Criteria

BMPs and Design Features Common to all Action Alternatives:

Sections 208 and 319 of the Clean Water Act of 1972, as amended (1977 and 1987) acknowledge land treatment measures as being an effective means of controlling non-point sources of water pollution and emphasizes their development. These land treatment practices are known as Best Management Practices, (BMPs). BMPs are identified in the Forest Plan as a practice or combination of practices that are the most effective and practical (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

BMPs are applied as a system of practices rather than a single practice. They are designed to accommodate site-specific conditions and are incorporated into the design features. Site-specific design features include such things as the design of project units, in which boundaries are moved to exclude seeps and springs found during planning. BMPs are identified within the Design Features below:

Harvest Systems

- 1) Where possible, use existing skid trails (BMP).
- 2) All paint marking that would be visible from Forest Development Road 4300 would face away from the road.
- 3) Directionally fall trees away from riparian reserves (BMP).
- 4) Rutting within skid trails should not exceed 12 inches in depth over more than 10 percent of a designated skid trail system.

Fuels Treatments:

1. The preferred method of treatment for units with activity fuels in the excess of 26.7 tons per acre is machine piling and burning.
2. Piling of down woody material, 9 inches in diameter and larger, should be avoided.
3. To the extent feasible, machine piles would be located on skid trails and landings (BMP).
4. All prescribed burning would be scheduled in conjunction with the State of Oregon to comply with the Oregon State Implementation Plan to minimize the adverse effects on air quality. Burning would be conducted when smoke dispersion conditions are favorable. (Forest Plan, Chapter four, Standard FW-040).
5. All prescribed burning of activity fuels would comply with Forest Service Manual direction (Forest Service Manual 5100, Chapter 5140).

Aquatic Resources:

1. Log trucks or logging equipment shall not use Forest Development Road 4320 between the 4320012 and 4320014 junction.

Wildlife Requirements:

1. Leave 4 dead trees/acre, (minimum 16 inches diameter breast height and 40 feet tall) as wildlife trees. Leave green trees if no dead trees are available.
2. All other snags would be left, except those identified as safety hazards.
3. Leave a minimum of 240-500 lineal feet per acre of down woody material and 3-10 percent ground cover. Preference is for full-length trees.
4. A regulative closure (Code of Federal Regulations) would be placed on Forest Development Roads 2640230 and 4320000, except for vehicles under 40 inches wide from December 1st to April 1st.
5. A seasonal restriction (March 1-July 15) would be placed on all harvest operations within 0.25 miles of the proposed stands associated with LSRs.

Recreation

1. Designated snowmobile trails would utilize a locking gate capable of being opened with 12 inches of snow.
2. No logging would occur during snowmobile use periods.

Visuals

- a. No stumps would be visible along Forest Development Road 4300, and trees would be marked away from roads.

Noxious Weeds

- a. Prior to coming onto National Forest system lands, the purchaser/contractor would employ whatever cleaning methods are necessary to ensure that off road equipment is free of soil, seeds, vegetative matter or other debris that could contain or hold seed. Cleaning of equipment may include pressure washing or use of compressed air and shall be done outside of the Mt. Hood National Forest Boundary. The Contract Officer or Inspector shall enforce the specification as per FSM #2080.44-8 by inspecting all heavy equipment and machinery before allowing operation at the project site. An inspection report shall be filed in project contract folders for administrative review and/or audit. The inspection report should include: a) The last location that the contractor's equipment was operated prior to entering the Mt. Hood National Forest, b) the location of the cleaning station, and c) the date of equipment inspection and the results. Imported gravel, soil, and/or rock shall come from a certified weed-free source; certification may be requested from the residing county weed and pest control division or from a Forest Service botanist upon inspection of the source. Gravel and soil that is recovered, removed, or excavated from roads, ditches, or culverts in the project area should remain onsite if possible or may be moved to an approved storage area off-site if necessary. Consult with the district botanist to identify storage sites.
- b. Revegetation of partially obliterated roads, landings, or temporary skid trails would be completed after project completion when weather conditions are feasible. The purchaser would use acceptable native or non-persistent non-native seed mixes at the site. Any straw mulch that is purchased for erosion control would be certified weed-free.

- c. If noxious weed plants are emergent, during harvest activities, pretreatment using approved control methods prior to project activity on all proposed roads would be required. Species-specific bio-controls would be utilized to assist with approved control applications as per weed treatment plans. Treatment would continue as needed for up to 5 years. Monitoring data would be collected prior to and after each treatment and treatment would be adjusted as necessary to control noxious weed infestations.

Transportation

1. Restrict commercial haul when soil moisture is high enough for subgrade material to be in its plastic limit (BMP).
2. Long-term road closures would utilize berms or non-movable closure devices.
3. Partially obliterate temporary roads and skid trails, which would include ripping, re-contouring, re-vegetation, and water barring as necessary (BMP).
4. Time construction activities to minimize erosion (BMP).
5. Control surface road drainage to disperse runoff and minimize erosion and sediment from the road (BMP).
6. Appropriate water sources would be selected for compacting and dust abatement that assure stream flow and fish protection measures are met.
7. Spoils and brush disposal locations would be pre-located to reduce the likelihood of spreading noxious weeds.

Design Features Specific to Alternative II

Install a heavy-duty gate (supergate) at the end of Forest Development Road 2640235, between the end of the road and the snowmobile access tunnel.

Effectiveness of Best Management Practices

Extensive water quality monitoring within the Bull Run Watershed indicated that implementation of BMPs resulted in no effect on turbidity or suspended sediment from timber harvest operations (Bull Run Annual Activity Schedule 1994, page 39).

In the Oregon Coast Range and western Cascade Mountains riparian buffers of 100 feet or more have been reported to provide as much shade as undisturbed late successional/old-growth forests (Steinblums 1977), so activities associated with Alternatives II and III should not affect stream shade.

Effectiveness of stream buffers at improving water quality adjacent to logging operations was studied in three watersheds in western Washington and found that 200 foot buffers would be effective to remove sediment in most situations if the buffer were measured from the edge of the floodplain (FEMAT). Activities associated with Alternatives II and III are greater than 200 feet from streams and the associated floodplains so there would be no effects anticipated to sediment deposition.

The effectiveness of water quality BMPs are further discussed in Chapter 3, Section 3.1.

Monitoring of Best Management Practices

The Project Specific BMPs and practices listed above are standard operating procedures and they have been implemented in many previous projects. Past experience, research and monitoring indicate that these practices are highly implementable and highly effective based on the criteria found in the Forest Plan.

Once the BMPs are identified and implemented, monitoring is done on a Forest-wide basis to determine their effectiveness. After harvest operations are completed, these BMPs would be included in the pool of Forest wide projects available for monitoring their effectiveness. Monitoring implementation of project specific BMPs is ongoing during project planning, layout and sale administration. Monitoring reports can be found on the Forest's web site at <http://www.fs.fed.us/r6/mthood> under Forest Publications.

After planning, a cross walk would be prepared to check the provisions of the Timber Sale Contract and other implementation plans with the EA to insure that required elements have been accounted for.

During implementation, Timber Sale Administrators monitor compliance with the Timber Sale Contract which contains provisions for resource protection including but not limited to: seasonal restrictions, snag and coarse woody debris retention, stream protection, erosion prevention, soil protection, road closures and protection of historical sites.

Post harvest reviews would be conducted where needed prior to post harvest activities such as slash treatment, or firewood removal. Suitable nesting and dispersal habitat or non-habitat and snag and coarse woody debris retention is reviewed. Level II surveys of perennial fish bearing creeks would continue. Based on these reviews, post harvest activities would be adjusted where needed to achieve project and resource objectives.

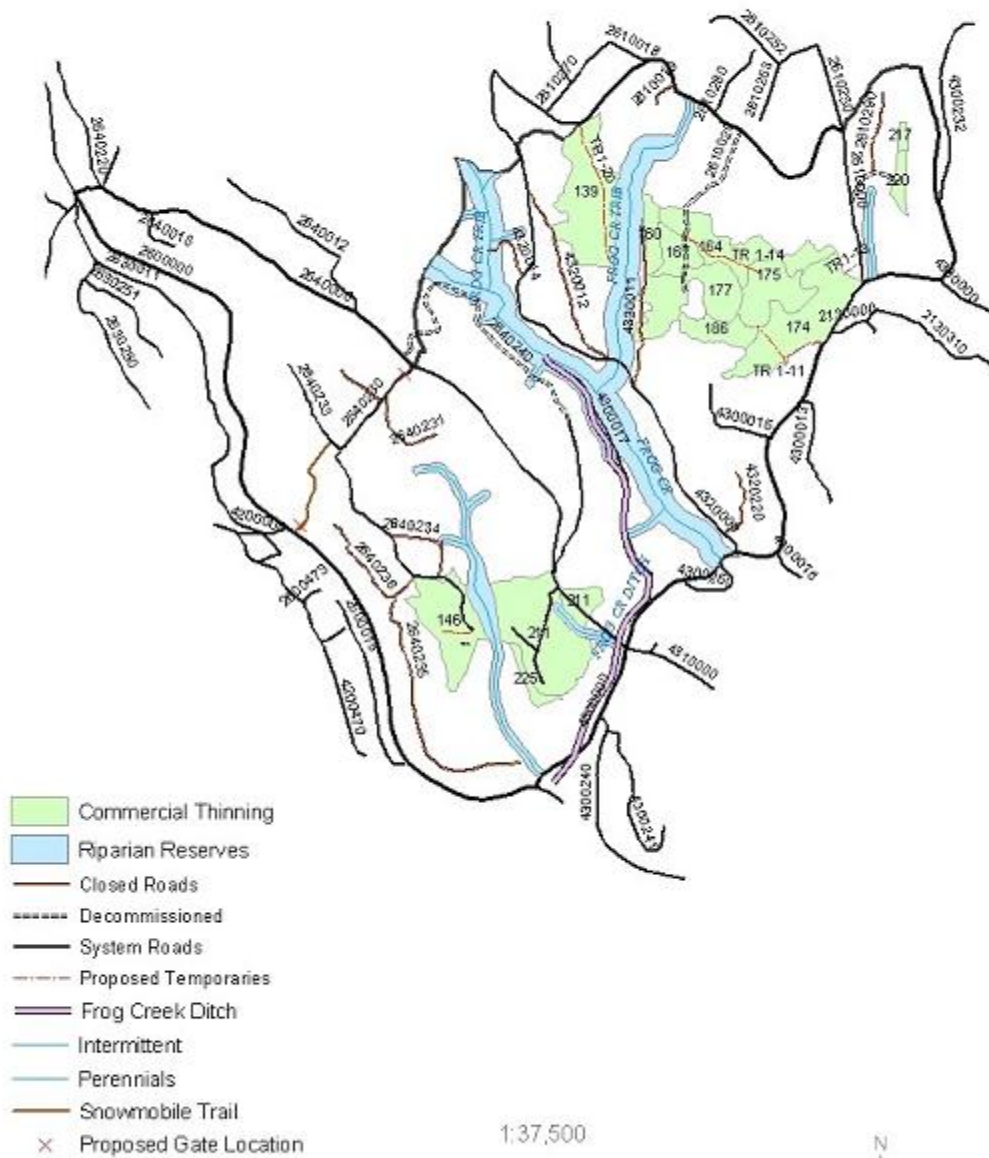
Monitoring of noxious weeds and invasive plants would be conducted where appropriate to track changes in populations over time and corrective action would be prescribed when needed.

Comparison of Alternatives

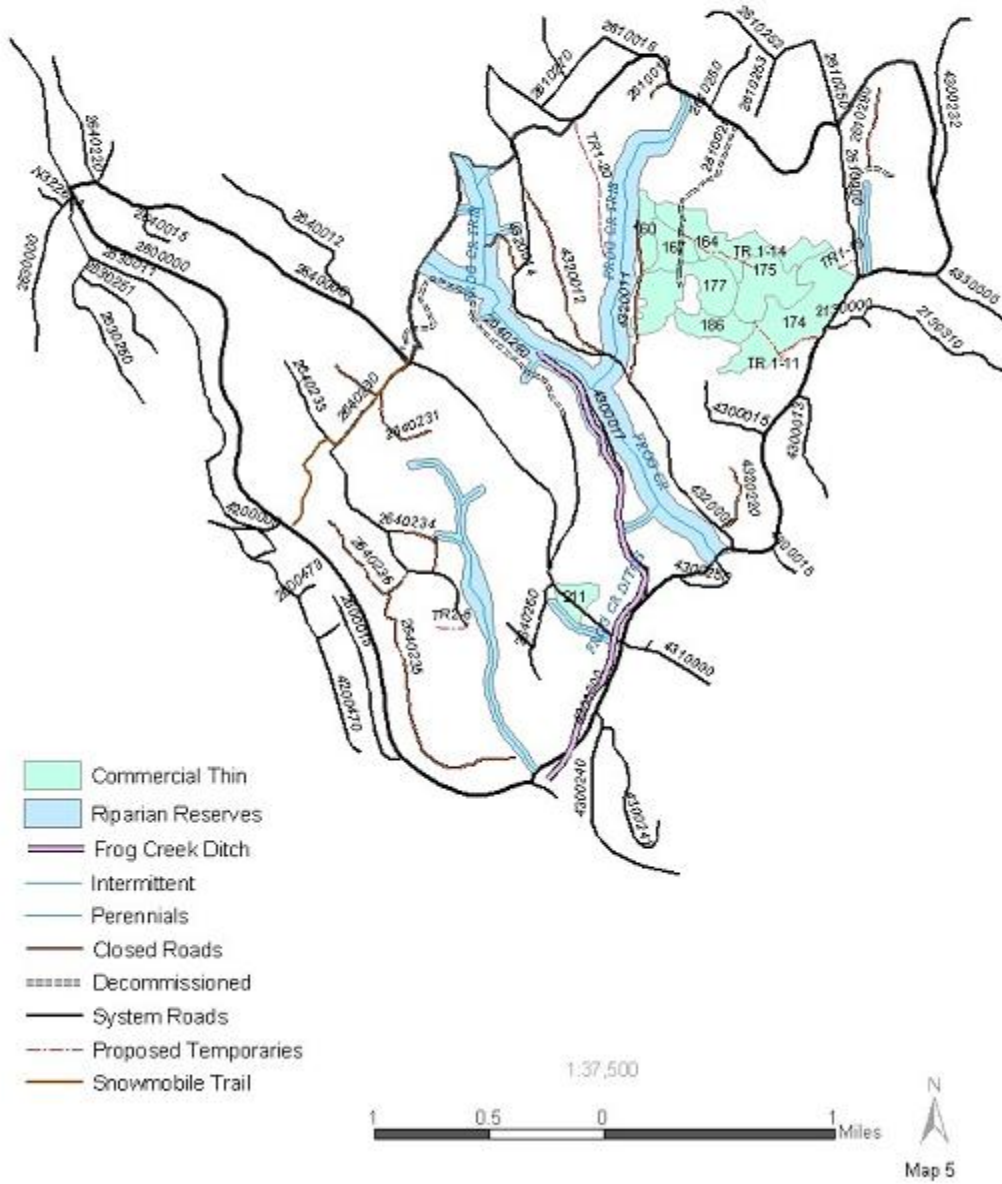
This section provides a comparison of implementing each alternative. Information in Table 7 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 7 Alternative Comparison			
	Alternative I No Action	Alternative II Proposed Action	Alternative III
Key Issue #1 Harvesting in Scenic Viewsheds	No harvest	Harvest of 242 acres in Scenic Viewshed (B2)	No harvest in Scenic Viewshed (B2)
Key Issue #2 Road Management/ Transportation Concerns			
<ul style="list-style-type: none"> • Use of Existing Roads and Previously-disturbed Ground • Miles of Roads Closed 	N/A 0 Miles	All roads on existing roadbeds and previously-disturbed ground 7.30 Miles	All roads on existing roadbeds and previously disturbed ground 0.85 Miles
Acres of Stand Improvement	0 Acres	531 Acres	289 Acres
Approximate Timber Output	0.0 MMBF	4.4 MMBF	2.4 MMBF

Bear Knoll Planning Area Thinning Alternative II



Bear Knoll Planning Area Thinning Alternative III



Bear Knoll Planning Area



- Closed Roads
- - - Decommissioned Roads
- Non System
- Road System
- Snowmobile Trail
- Stand Delineation

1:37,500



Case 2022-20