

CHAPTER 2

ALTERNATIVES

CHAPTER 2 - ALTERNATIVES

2.1 Introduction

This chapter describes and compares the action alternatives that wholly or partially meet the purpose and need identified in Chapter 1, and a No Action Alternative (Alternative A). Each alternative reflects a different response to significant issues or concerns and each alternative would result in different environmental effects. This chapter concludes with a comparative summary of the alternatives considered in detail. This comparison, combined with the more detailed disclosure of impacts in Chapter 3, provides the information necessary for the decision-maker to make an informed choice between alternatives.

2.2 Development of Alternatives

The Proposed Action was developed by the Interdisciplinary Team and was reviewed and approved by the Responsible Official prior to scoping. The development of alternatives to the Proposed Action began in the spring of 2008. Chapter 1 of this document discloses that no significant issues were identified during internal or external scoping. As documented in Chapter 3 and this project's planning record, the Proposed Action (Alternative B) would not result in unacceptable impacts on any given resource and the Proposed Action would be consistent with applicable laws, rules, regulations, and Forest Plan standards and guidelines. Nevertheless, at the direction of the Forest Supervisor, the Interdisciplinary Team developed an alternative to the Proposed Action in response to concerns identified through internal and/or external scoping. To the extent possible, all action alternatives were designed to fully or partially meet the purpose and need for which the project was proposed.

2.2.1 Concerns Used in Alternative Development

One concern raised by several individuals related to the potential effects of proposed activities within delineated riparian conservation areas (RCAs) under the Proposed Action. In order to clearly display the effects of such activities and the tradeoffs if such activities were eliminated, the Forest Supervisor directed the Interdisciplinary Team to develop an alternative (Alternative C) that would not include harvest activities within RCAs.

2.2.2 Concerns Not Used in Alternative Development

Concerns relating to other resource components were evaluated in the analysis. Net effects to these concerns were limited or would be relatively the same for all action alternatives. These concerns are generally protected by specific laws, Best Management Practices, agency policy, and/or Forest Plan standards.

2.3 Alternatives Eliminated from Detailed Study

In addition to the alternatives fully evaluated in this document, other management approaches were considered by the Interdisciplinary Team in response to preliminary concerns generated from internal and external scoping of the Proposed Action. These alternatives, which were not studied in detail, are described in this section along with an explanation of why the alternatives were not considered further.

2.3.1 Road Restoration Emphasis – One alternative suggested by the public would have included road restoration activities with the proposed timber harvest. This alternative was not considered in detail because, as disclosed in Chapter 1, the project objectives focus solely on reducing the hazards and recurring maintenance needs associated with fire-killed and imminently dead trees and capturing the value of those trees before they deteriorate. Consequently, inclusion of road restoration activities would be outside the scope of the project. The Responsible Official chose to keep the focus of this project narrow, in part, to simplify and expedite the analysis in order to address the stated objectives in a timely manner. While this project does not pursue restoration of pre-existing problems, neither would it forego future opportunities to address those needs.

2.3.2 Retention of All Trees in the RCAs – Design features associated with the Proposed Action prohibit salvage harvest (i.e. cutting and removal) of fire-killed and imminently dead trees within one site potential tree height of any stream. Further, ground-based skidding would not be allowed within one site potential tree height of any stream unless an open authorized road parallels the stream. If a road parallels the stream and is less than one site potential tree height distance from that stream, ground-based skidding may occur upslope of the road and within one site potential tree height of the stream, but all harvest and ground-based skidding would be prohibited between the road and stream.

Another alternative considered but eliminated from detailed study would have prohibited cutting of all fire-killed and imminently dead trees in riparian conservation areas (RCAs) in their entirety, which in the case of all perennial streams and some intermittent streams equates to two site potential tree heights (160 to 260 feet). This alternative was not considered in detail because the analysis concluded that the cutting and removal of fire-killed and imminently dead trees more than one site potential tree height from a stream would not retard attainment of riparian functions or processes. Similarly, the analysis concluded that the felling and retention on site of fire-killed and imminently dead trees within one site potential tree height of a stream, but separated from the stream by a road (i.e. road parallels the stream) would have immeasurable effects on watershed condition indicators. In essence, these dead trees no longer provide any meaningful value relative to stream shade or temperature and are either too far removed from the stream or are not needed to meet desired levels of large woody debris. Relative to riparian functions and processes, this alternative would not result in measurably different effects from the Proposed Action, and consequently, it was eliminated from detailed study.

2.3.3 Determine Unit Width by Site Potential Tree Height – Rather than extending unit boundaries 200 feet above roads, some individuals suggested establishing the upslope unit boundaries at one or one and a half site potential tree heights above the roads, which depending upon the stand's habitat type, could range from 80 to 195 feet. This alternative was not considered in detail due to the high probability that the heights of numerous fire-killed and imminently dead trees would likely exceed these distances and therefore would continue to pose a hazard to users of adjacent roads and continue to be a recurring maintenance problem. Site potential tree heights are based on the potential vegetation group (PVG) for a particular stand, which in turn is based on the stand's habitat type. While the site potential tree height of a stand may reflect the average height of a mature tree for the tree species most common on that habitat type, it does not account for other tree species often found in association on these sites, nor does it account for those trees exceeding the "average height". For example, one site potential tree height in PVG 10 (lodgepole pine stands) is defined as 80 feet. However, Engelmann spruce, subalpine fir, ponderosa pine, and Douglas-fir trees are commonly scattered throughout these stands and mature trees of these species generally exceed 80 feet in height.

Given the hazard presented by fire-killed trees along open authorized roads and the variability of tree species and tree heights within individual units, the 200 foot distance was selected because it would accommodate the height of a variety of hazard trees while allowing for some additional distance for those that may fall into other trees, roll, or slide into the road, thus erring on the side of public safety along these roads, most of which are heavily used during the summer by recreationists.

2.3.4 Individually Select Hazard Trees – Another commenter suggested visiting each individual fire-killed or imminently dead tree adjacent to the roads to determine the height of each tree, its distance from the road, and its direction of lean to determine if the tree would or could in fact fall into the road. Other criteria that would need to be considered under these scenarios are the likelihood of a tree falling into another tree thus causing it to fall into the road, or the probability of the tree sliding or rolling down the hill into the road.

This alternative was not considered in detail for a variety of reasons. While "leave trees" (i.e. those not meeting the definition of a fire-killed or imminently dead tree) may actually be designated/marked on the ground, these trees are relatively scarce within proposed units. Therefore marking "leave trees" could be accomplished in a relatively short period of time. In contrast, the time required to visit each individual fire-killed or imminently dead tree along 60 miles of road would delay any sale offering until late summer or early fall by which time much of the value of included timber would be lost, thereby

making the sale unattractive to potential purchasers and minimizing the likelihood that any of the three objectives would be accomplished. More importantly, as noted above, given the hazard presented by fire-killed and imminently dead trees and the level of public use on these roads during the snow-free season, a conscious decision was made to err on the side of public safety.

2.4 Alternatives Considered in Detail

This section of the document describes the proposed silvicultural treatments, design features common to all action alternatives, and those alternatives considered in detail including the No Action Alternative (Alternative A). The design of all alternatives described in this document was based on the most current information and technology available at this time. Minor variations in the alternatives due to changed on-the-ground conditions or improved technology prior to implementation would be consistent with the intent of the original alternative.

2.4.1 Silvicultural Treatments

Two silvicultural treatments (i.e. vegetation manipulation) are being proposed with the various action alternatives. The first consists of falling and removing fire-killed and imminently dead trees. The second is limited to falling fire-killed and imminently dead trees and retention of those trees on site.

A fire-killed tree as used in this analysis is defined as any tree that died or is expected to die as a result of the wildfire. The following criteria would be used to identify fire-killed trees: 1) any species that has 70 percent or greater crown scorch, and; 2) any Engelmann spruce, lodgepole pine, subalpine fir, or grand fir that has 50 percent or more of its basal circumference burned.

Imminently dead trees are defined as any tree not directly killed by the fire but subsequently considered dead or dying as a result of windthrow or successful bark beetle attack. A bark beetle infestation would be considered successful if more than 50 percent of the tree's circumference has evidence of frass (i.e. bark beetle boring dust).

2.4.2 Design Features Common to All Action Alternatives

In addition to Forest Plan standards and guidelines designed to mitigate impacts, the Interdisciplinary Team identified the following measures that would be applicable to all action alternatives. These design features have been incorporated to reduce or prevent undesirable effects resulting from proposed management activities.

2.4.2.1 Vegetation

The Purchaser of any timber sale would be required to ensure that prior to moving onto the Sale Area all off-road equipment, which last operated in areas known to be infested with specific noxious weeds of concern, would be free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. The Purchaser must certify in writing before entering onto the Sale Area that equipment is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds.

2.4.2.2 Transportation/Access Management

Upon completion of harvest activities/felling activities all created slash would be removed from the road prisms and ditchlines.

Signs alerting the public of the temporary closure of affected roads would be posted in strategic locations prior to the work commencing. In addition, the individual responsible for tree falling activities would provide sufficient personnel to stop traffic during such activities as necessary to ensure safety of the general public.

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Traffic flow along the #474.2, #579, and FH22 would be interrupted for a maximum of 20 minutes. Other roads associated with this action may be closed to the general public Monday through Friday for the duration of activities along the particular route if necessary to ensure public safety.

Falling, skidding, and log hauling would be prohibited on all Federal holidays and holiday weekends unless otherwise agreed to in writing.

Portions of designated trails within proposed harvest units would be maintained free of logs and/or slash resulting from harvest and post-harvest activities. In addition, ground-based skidding would not be allowed down the designated trails and, should it be necessary to skid across these trails, the Purchaser would be required to reconstruct the disturbed portion of the trail tread following activities.

Should felled trees that are to be retained on site fall across any designated trails, such trees would be bucked and segments of the trees and any associated limbs removed from designated trails, by hand, within 24 hours of felling operations.

To prevent conflicts with snowmobile use, plowing of snow would not be permitted.

2.4.2.3 Wildlife

The District Wildlife Biologist would be notified of any occupied nests or dens encountered during sale preparation activities and implementation that may be associated with listed, sensitive, or management indicator species. If necessary to maintain key features of nesting/denning habitat or to avoid disruption of nesting/denning activities, prescribed treatments or activities would be modified.

All trees within 100 feet of caves, cave-like structures, or abandoned mine shafts would be left standing to protect potential western big-eared bat habitat.

If future monitoring efforts reveal that a wolf pack has denned within or adjacent to the project area, proposed activities within one mile of the den site would be suspended from April 1 through July 31 if those actions are determined by the District Wildlife Biologist to be disturbing denning activities.

2.4.2.4 Air Quality

Table 2-1 describes various burning activities and the amount of such activities that, based on the results of numerous modeling efforts, could occur without violating guidelines set by Federal air quality regulations.

Table 2-1 Smoke Management Constraints

Season	Broadcast Burning (Activity Fuels)	Landing Pile Burning
Spring	Not Applicable	Not Applicable
Fall	Not Applicable	30 piles/day

Burn piles would not be allowed to smolder over a long period of time (prescribed by mop-up standards defined in the prescribed fire plan).

Prescribed fire plans, developed upon completion of sale preparation, would include a smoke management prescription for wind direction and speed, maximum acres per day, minimum fuel moistures, smoke dispersion, public notification, and monitoring.

Cautionary signs would be posted on project area access roads open to public use during burning.

Daily burning activities would be coordinated with the meteorologist/program coordinator stationed in the Monitoring Unit in Missoula Montana or other appropriate personnel.

2.4.2.5 Watershed/Fisheries

Regardless of SINMAP modeling results, the following guidelines developed from Chatwin et al (1994), Megahan (1979), Gray and Megahan (1981), and Pack et al (1998) would be used to identify landslide prone areas. No harvest or ground-based skidding would occur within these field-identified landslide prone areas:

- ◆ Slopes 49 to 70 percent, uniform slope - Wet or dry terrain dissected by deeply incised gullies.
- ◆ Slopes 49 to 70 percent, uniform or irregular slope - Class 7 bedrock (moist sites as indicated by vegetation or actual seeps), or soil accumulation areas below rock outcrop zones, or slopes where dominant rock joint planes dip sharply down slope or parallel to the slope.
- ◆ Slopes greater than 70 percent, uniform slope - All wet or dry sites.

All refueling of equipment would take place outside of streamside RCAs.

The Purchaser of any timber sale would be required to prepare a Spill Prevention Control and Countermeasures Plan. The Spill Prevention Control and Countermeasures Plan would require the Purchaser to have spill containment and clean-up materials appropriate for the volume and type of fuel on site during project activities.

Petroleum product storage locations would be designated by Forest Service personnel outside of streamside RCAs. Storage containers with capacities of more than 200 gallons would be maintained in a leakproof condition and located within dikes, berms, or embankments lined with impervious material, and sufficient in size to contain 125% of the volume stored at the site. Refueling sites for ground-based equipment would also be designated by Forest Service personnel outside of streamside RCAs and have an approved spill containment plan.

In the event of any leakage or spill of petroleum products, the Purchaser would be required to immediately notify the Forest Service and actions taken to control or clean up the spill.

Following completion of use, cross-ditches would be constructed at intervals of approximately 20 feet where skid trails exceed 20 percent slope. Where logs are available immediately adjacent to the skid trails, logs six inches in diameter or greater would be placed against the ground surface and diagonal to the skid trails at 20 foot intervals instead of cross-ditches being constructed. A Forest Service approved seed mixture would be applied to all skid trails. Cross-ditching and/or placement of logs on skid trails would occur prior to equipment moving to the next harvest unit. Seeding of these skid trails would occur when moisture conditions are appropriate (i.e. prior to the first winter or the first spring following use).

Where practical, all erosion control design features, including BMPs, would be implemented concurrently with the associated activity.

Road maintenance activities would be limited to road surface blading and localized cleaning of ditches filled during project implementation. Cut and fill slopes would not intentionally be disturbed during road maintenance activities. To the extent practical, undercutting the cut slope at the edge of the road prism during blading and shaping of existing roads would be minimized. Should cut or fill slopes be inadvertently disturbed during road maintenance activities, appropriate restorative action (e.g. seeding, mulching, log grid, etc.) would occur commensurate with the level of damage.

Water drafting sites would be designated and approved by Forest Service personnel prior to use. Drafting hoses would be required to be fitted with screens with a 3/32 inch mesh and the appropriate surface area for the pump to achieve a maximum water velocity of 0.4 feet/second at the screen surface, consistent with NOAA guidelines.

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Upon completion of harvest activities, all landings constructed in association with this project would be reshaped to provide adequate drainage, scarified to a minimum depth of 18 inches, slash distributed to cover approximately 30 percent of the reshaped surfaces, and planted with a Forest Service approved seed mixture.

New skid trails shall be constructed outside of RCAs wherever possible. When skid trails must be constructed within RCAs they shall be developed such that degrading effects to RCAs are mitigated. Specifically, prior to such construction, the District Hydrologist would review on-the-ground all requests to construct skid trails within RCAs. Approval or relocation of such activities and/or incorporation of appropriate mitigation measures would be the responsibility of the District Hydrologist.

New landings shall not be constructed within that portion of any RCA that is within one site potential tree height of a stream. In addition, new landings shall be constructed outside of the remaining portions of RCAs (i.e. more than one site potential tree height from a stream but within an RCA) wherever possible. When landings must be constructed more than one site potential tree height from a stream but within an RCA, they shall be developed such that degrading effects to RCAs are mitigated. Specifically, prior to such construction, the District Hydrologist would review on-the-ground all requests to construct landings more than one site potential tree height from a stream but within an RCA. Approval or relocation of such activities and/or incorporation of appropriate mitigation measures would be the responsibility of the District Hydrologist.

In order to prevent concentration of water and the associated erosion in “furrows” created by downhill yarding with an off-road jammer, cross-ditches would be constructed by hand on those furrows where the berm would act to concentrate water in the furrow and the furrow is deep enough to channel that water in a direction other than nearly perpendicular to the slope. Cross-ditches would be constructed diagonal to the direction of the furrow at intervals of every 20 feet where the slope of the furrow exceeds 20 percent and the total length of the furrow exceeds 50 feet. These cross-ditches would be installed no later than two weeks after completion of harvest within each affected unit.

2.4.2.6 Visuals

Unless otherwise agreed to in writing, harvest-related slash would be accumulated at landings via whole-tree-yarding and those landing piles burned. Sub-merchantable trees (i.e. <8” dbh) within proposed units along Warm Lake Highway (FH22), roads #579 and #474.2, and within ¼ mile of the South Fork Salmon River would not be felled unless considered a safety hazard to proposed operations.

2.4.2.7 Soil Productivity

Skid trails would be designated in all units proposed for ground-based skidding, including off-road jammer units. To prevent undesirable levels of soil compaction and development of sediment routing features (i.e. furrows), use of ground-based equipment off of designated skid trails would be limited to a maximum of three roundtrips on any undesignated skid trail.

2.4.2.8 Cultural Resources

Native American sites BS-9, BS-15, BS-721, BS-1056 and historic sites BS-1094, BS-1992, and BS-1511 would be avoided during the project. The Forest Archaeologist and/or her representative would visit these sites prior to implementation and identify (i.e. flag) site boundaries. If a tree must be felled and/or removed within a site boundary for safety purposes, the Forest Archaeologist would immediately reinitiate consultation with SHPO prior to its felling.

2.4.2.9 Monitoring

Detailed monitoring plans will be developed for the selected alternative and disclosed with the project's decision document. Monitoring plans would be designed to determine the implementation and general effectiveness of Best Management Practices, design features, and/or restoration activities. Monitoring is designed to accomplish all or some of the following goals:

- ◆ Determine if assumptions made for effects analyses appear correct.
- ◆ Verify implementation of design features and the general degree of effectiveness.
- ◆ Determine if resource objectives are being achieved.

2.4.3 Description of Alternatives

2.4.3.1 Alternative A - No Action

This is a required "no action" alternative that provides a baseline against which impacts of the action alternatives can be measured and compared. Under this alternative no new management activities would occur. Obstructions on trails within the project area would continue to be removed annually or as funding and priorities allow. Warm Lake Highway (FH22) and road #474.1 north of FH22 would continue to be maintained for motorized traffic year-round. The remaining open authorized roads in the project area would continue to be maintained for motorized traffic during the snow-free season. General maintenance on these roads would occur as needed and/or as funding allows. Suppression of wildfires would continue to occur within the project area. All other currently authorized activities (e.g. dispersed recreation, current travel management restrictions, etc.) would continue in the area.

2.4.3.2 Alternative B - Proposed Action

This alternative was developed to meet the project's purpose and need stated in Chapter 1. It represents the Forest Service's best recommendation prior to detailed analysis of the environmental effects. In addition to the custodial maintenance activities described in Alternative A, the Proposed Action (Figure 2-1) would cut and remove fire-killed and imminently dead trees greater than or equal to 8 inches dbh within an estimated 200 feet upslope of open authorized roads and approximately 50 feet downslope of open authorized roads on roughly 1,661 acres. An estimated 4.5 MMBf of timber would be available for harvest using ground-based logging systems. Although the majority of included trees would be felled within or immediately adjacent to the road prism, some ground-based skidding may occur within 200 feet of open authorized roads.

In addition to harvest activities described above, fire-killed and imminently dead trees greater than or equal to 8 inches dbh that are located upslope of an open authorized road and within one site potential tree height of a stream that parallels the road, would be felled and retained on site across an estimated 10 acres. These trees would be felled after harvest activities have occurred. These 10 acres consist of 26 different polygons scattered throughout the proposed units and generally extend 10 to 50 feet above the road and are 200 to 1,600 feet long.

For harvest units situated *above* roads:

- ◆ Tractor skidding on slopes greater than 40 percent would not be allowed.
- ◆ Included material above roads on slopes greater than 40 percent would be removed with an off-road jammer. Off-road jammers in these situations would be confined to the road prism or slopes within the unit that are less than or equal to 40 percent. Should the slope preclude throwing the off-road jammer tongs 200 feet upslope, the depth of the unit would be reduced as necessary (i.e. <200 feet).
- ◆ Included material on slopes less than or equal to 40 percent would be removed by tractor skidding. However, should the Purchaser prefer to remove this material with an off-road jammer it would be allowed.

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For harvest units situated *below* roads:

- ◆ Uphill tractor skidding on slopes greater than 10 percent would not be allowed.
- ◆ Included material below roads on slopes exceeding 10 percent would be removed with an off-road jammer. In these situations, off-road jammers would be confined to the road prism.
- ◆ Included material below roads on slopes less than or equal to 10 percent may be removed by uphill tractor skidding if not located within an RCA. However, should the Purchaser prefer to remove this material with an off-road jammer it would be allowed but the off-road jammer would be confined to the road prism.

A fire-killed tree, as used in this analysis, would be defined as any tree that died or is expected to die as a result of the wildfire. The following criteria would apply: 1) all species that have 70 percent crown scorch, and; 2) any Engelmann spruce, lodgepole pine, subalpine fir, or grand fir that has 50 percent or more of its basal circumference burned. Imminently dead trees would be defined as any tree not directly killed by the fire but subsequently considered dead as a result of windthrow or successful bark beetle attack. A bark beetle infestation would be considered successful if more than 50 percent of the tree's circumference has evidence of frass (i.e. bark beetle boring dust).

Salvage-related slash would be whole-tree-yarded, accumulated at landing locations, piled, and burned. No road construction, reconstruction, or road restoration would occur. Roads currently closed with earthen dikes and/or boulders would not be opened to facilitate salvage activities. Use of roads currently closed with gates would be permitted if the current closure order allows administrative use of the road.

As part of the Burned Area Emergency Response (BAER) effort, the culvert at the #473 road crossing of Lodgepole Creek was removed in the fall of 2007, thus eliminating authorized motorized access to the #473 road. However, an unauthorized road prism is currently in place that connects the #474.2 road with the #473 road south of the Lodgepole Creek culvert location. This alternative would use this existing unauthorized road (0.7 miles) as a temporary road in order to access the #473 road. Post-implementation management of the existing transportation system within the project area would not change under this alternative. All existing road restrictions would be reinstated upon completion of harvest activities.

Within Riparian Conservation Areas (RCAs), as defined below, the following restrictions would apply. Megahan/Ketcheson modeling completed for this assessment concluded that the following design features would be sufficient to avoid or minimize sediment delivery (Section 3.11).

- ◆ *Perennial Streams (and Intermittent Streams Providing Seasonal Rearing and Spawning Habitat)* - The RCA shall consist of two site potential tree heights as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) would occur within one site potential tree height of any stream. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh that are located upslope of an open authorized road and within one site potential tree height of a stream that parallels the road, would be felled and retained on site. Ground-based skidding would not be allowed within one site potential tree height of any stream unless an open authorized road parallels the stream. If a road parallels the stream and is less than one site potential tree height distance from that stream, ground-based skidding may occur upslope of the road and within one site potential tree height of the stream, but all harvest and ground-based skidding would be prohibited between the road and stream.

- ◆ *Intermittent Streams Not Providing Seasonal Rearing and Spawning Habitat* - The RCA shall consist of one site potential tree height as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) would occur within one site potential tree height of any stream. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh that are located upslope of an open authorized road and within one site potential tree height of a stream that parallels the road, would be felled and retained on site. Ground-based skidding would not be allowed within one site potential tree height of any stream unless an open authorized road parallels the stream. If a road parallels the stream and is less than one site potential tree height distance from that stream, ground-based skidding may occur upslope of the road and within one site potential tree height of the stream, but all harvest and ground-based skidding would be prohibited between the road and stream.

- ◆ *Ponds, Lakes, Reservoirs, and Wetlands* - The RCA shall consist of one site potential tree height as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) would occur within one site potential tree height of any of these waterbodies. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh that are located upslope of an open authorized road and within one site potential tree height of a waterbody that parallels the road, would be felled and retained on site. Ground-based skidding would not be allowed within one site potential tree height of any waterbody unless an open authorized road parallels the waterbody. If a road parallels the waterbody and is less than one site potential tree height distance from that waterbody, ground-based skidding may occur upslope of the road and within one site potential tree height of the waterbody, but all harvest and ground-based skidding would be prohibited between the road and waterbody.

Logs greater than eight inches in diameter would be placed perpendicular to the direction of flow below six drainage structures on the #478 road to capture erosion prior to its delivery to Rice Creek.

Within harvested units along the #470 and #472 roads, fire-killed trees in the 3 to 7 inch dbh range would be felled and retained on site (post-harvest) with the goal of achieving a post-harvest quantity of 500 linear feet of obstructions per acre on approximately 100 acres. Felled trees would be severed as necessary to ensure their entire lengths are in contact with the ground surface and situated perpendicular to the direction of slope.

2.4.3.3 Alternative C – Response to RCA Concern

This alternative was developed in response to concerns that activities within RCAs under Alternative B could result in unacceptable effects on water quality, fisheries, and/or riparian habitats. In addition to the custodial maintenance activities described in Alternative A, this alternative (Figure 2-2) would harvest fire-killed and imminently dead trees greater than or equal to 8 inches dbh within an estimated 200 feet upslope of open authorized roads and approximately 50 feet downslope of open authorized roads on roughly 1,249 acres. An estimated 3.3 MMBf of timber would be available for harvest using ground-based logging systems. Although the majority of included trees would be felled within or immediately adjacent to the road prism, some ground-based skidding may occur within 200 feet of open authorized roads.

In addition to harvest activities described above, fire-killed and imminently dead trees greater than or equal to 8 inches dbh within an estimated 200 feet upslope of open authorized roads and approximately 50 feet downslope of open authorized roads would be felled and retained on site on another 422 acres. This treatment would occur within those portions of RCAs that lie more than one site potential tree height from a stream unless an open authorized road parallels the stream. If a road parallels the stream and is less than one site potential tree height distance from that stream, felling and retention of trees on site may occur upslope of the road and within one site potential tree height of the stream, but felling of trees would be prohibited between the road and stream. Under this alternative ground-based skidding through any portion of an RCA would be prohibited. Therefore trees would also be felled and retained on site in those portions of units where the presence of an RCA above the road prevents access to the road.

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For harvest units situated *above* roads:

- ◆ Tractor skidding on slopes greater than 40 percent would not be allowed.
- ◆ Included material above roads on slopes greater than 40 percent would be removed with an off-road jammer. Off-road jammers in these situations would be confined to the road prism or slopes within the unit that are less than or equal to 40 percent. Should the slope preclude throwing the off-road jammer tongs 200 feet upslope, the depth of the unit would be reduced as necessary (i.e. <200 feet).
- ◆ Included material on slopes less than or equal to 40 percent would be removed by tractor skidding. However, should the Purchaser prefer to remove this material with an off-road jammer it would be allowed.

For harvest units situated *below* roads:

- ◆ Uphill tractor skidding on slopes greater than 10 percent would not be allowed.
- ◆ Included material below roads on slopes exceeding 10 percent would be removed with an off-road jammer. In these situations, off-road jammers would be confined to the road prism.
- ◆ Included material below roads on slopes less than or equal to 10 percent may be removed by uphill tractor skidding if not located within an RCA. However, should the Purchaser prefer to remove this material with an off-road jammer it would be allowed but the off-road jammer would be confined to the road prism.

A fire-killed tree, as used in this analysis, would be defined as any tree that died or is expected to die as a result of the wildfire. The following criteria would apply: 1) all species that have 70 percent crown scorch, and; 2) any Engelmann spruce, lodgepole pine, subalpine fir, or grand fir that has 50 percent or more of its basal circumference burned. Imminently dead trees would be defined as any tree not directly killed by the fire but subsequently considered dead as a result of windthrow or successful bark beetle attack. A bark beetle infestation would be considered successful if more than 50 percent of the tree's circumference has evidence of frass (i.e. bark beetle boring dust).

Salvage-related slash would be whole-tree-yarded, accumulated at landing locations, piled, and burned. No road construction, reconstruction, or road restoration would occur. Roads currently closed with earthen dikes and/or boulders would not be opened to facilitate salvage activities. Use of roads currently closed with gates would be permitted if the current closure order allows administrative use of the road.

As part of the Burned Area Emergency Response (BAER) effort, the culvert at the #473 road crossing of Lodgepole Creek was removed in the fall of 2007, thus eliminating authorized motorized access to the #473 road. However, an unauthorized road prism is currently in place that connects the #474.2 road with the #473 road south of the Lodgepole Creek culvert location. This alternative would use this existing unauthorized road (0.7 miles) as a temporary road in order to access the #473 road. Post-implementation management of the existing transportation system within the project area would not change under this alternative. All existing road restrictions would be reinstated upon completion of harvest activities.

Within Riparian Conservation Areas (RCAs), as defined below, the following restrictions would apply. Megahan/Ketcheson modeling completed for this assessment concluded that the following design features would be sufficient to avoid or minimize sediment delivery (Section 3.11.1).

- ◆ *Perennial Streams (and Intermittent Streams Providing Seasonal Rearing and Spawning Habitat)* - The RCA shall consist of two site potential tree heights as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) or ground-based skidding would occur within or through these RCAs. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh and within RCAs, but more than one site potential tree height from a stream, would be felled and retained on site. An exception would be if an open authorized road parallels the stream. If a road parallels the stream and is less than one site

potential tree height distance from that stream, falling and retention of trees on site may occur upslope of the road and within one site potential tree height of the stream, but falling of trees would be prohibited between the road and stream. Skidding through any portion of this RCA would be prohibited. Therefore trees would also be felled and retained on site in those portions of units where the presence of an RCA above the road prevents access to the road.

- ◆ *Intermittent Streams Not Providing Seasonal Rearing and Spawning Habitat* - The RCA shall consist of one site potential tree height as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) or ground-based skidding would occur within or through these RCAs. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh and within these RCAs would not be felled unless an open authorized road parallels the stream. If a road parallels the stream and is less than one site potential tree height distance from that stream, falling and retention of trees on site may occur upslope of the road and within one site potential tree height of the stream, but falling of trees would be prohibited between the road and stream. Skidding through any portion of this RCA would be prohibited. Therefore trees would also be felled and retained on site in those portions of units where the presence of an RCA above the road prevents access to the road.
- ◆ *Ponds, Lakes, Reservoirs, and Wetlands* - The RCA shall consist of one site potential tree height as determined by the stand's potential vegetation group (PVG). No salvage harvest (i.e. cutting and removal) or ground-based skidding would occur within or through these RCAs. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh and within these RCAs would not be felled unless an open authorized road parallels the waterbody. If a road parallels the waterbody and is less than one site potential tree height distance from that waterbody, falling and retention of trees on site may occur upslope of the road and within one site potential tree height of the waterbody, but falling of trees would be prohibited between the road and waterbody. Skidding through any portion of this RCA would be prohibited. Therefore trees would also be felled and retained on site in those portions of units where the presence of an RCA above the road prevents access to the road.

Based on the analysis documented in Chapter 3, Alternative C would not comply with Forest Plan standards for visual quality objectives. The Responsible Official has determined that implementation of this alternative would require a non-significant amendment of the Forest Plan in order to allow proposed activities to dominate the viewshed along roughly two miles of sensitive routes (Warm Lake Highway and the South Fork Salmon River). Should this alternative be selected, a non-significant Forest Plan amendment would be prepared and attached to the decision document for this project (Section 3.6).

Figure 2-1 Alternative B – Proposed Action

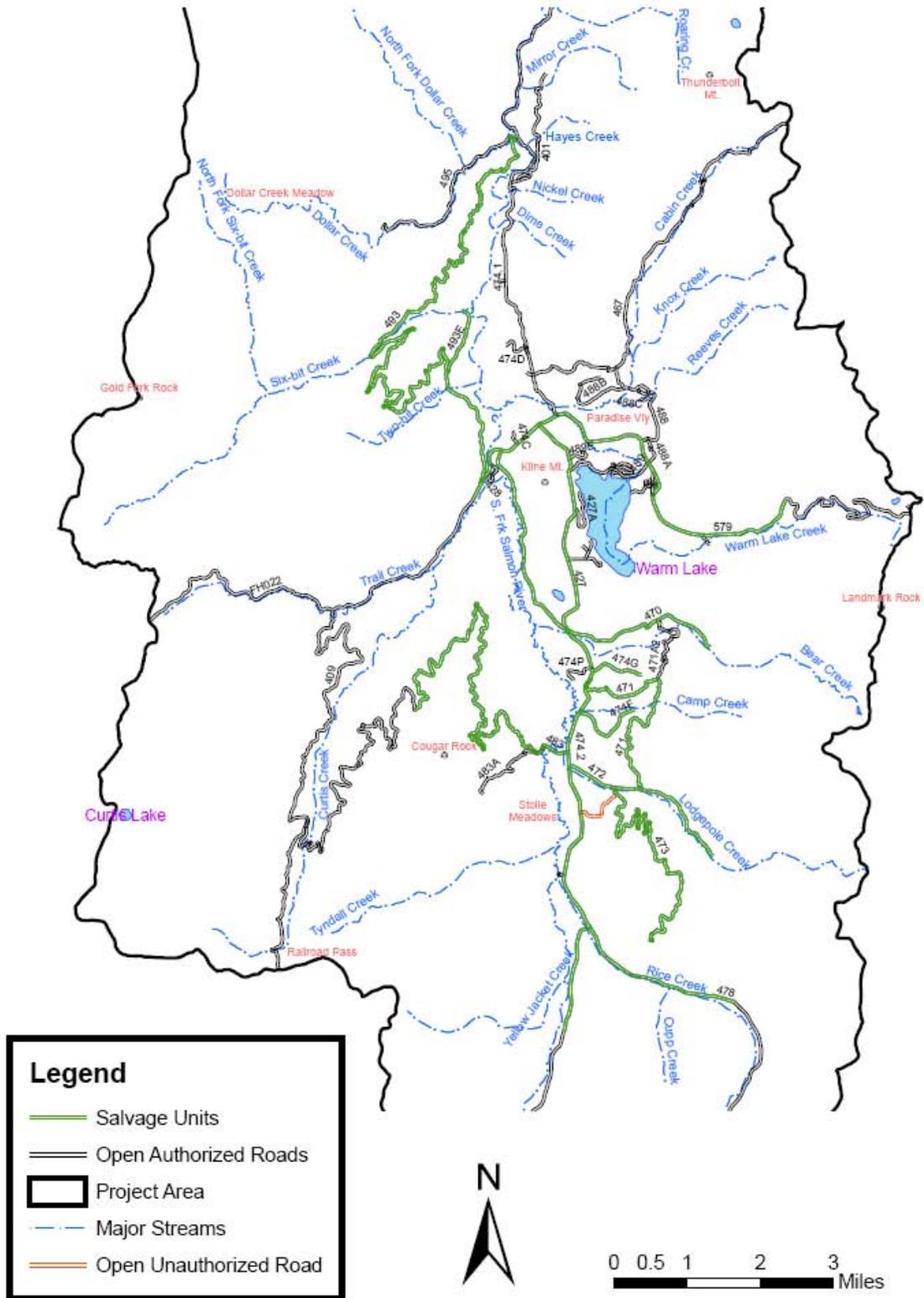
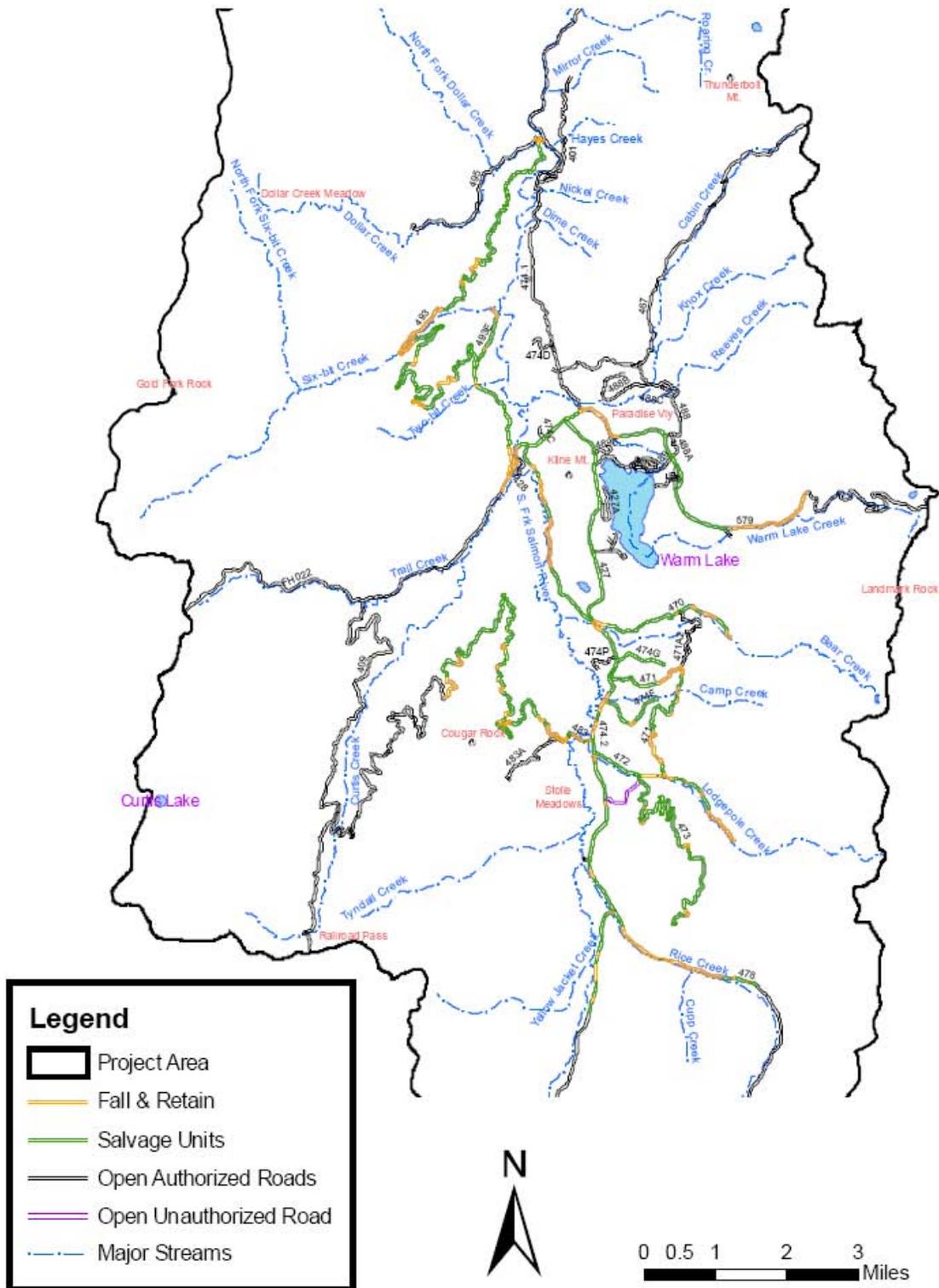


Figure 2-2 Alternative C – Response to RCA Concern



2.5 Summary Comparison of Alternatives

Table 2-2 presents a comparative summary of principle activities and the environmental effects for the alternatives being considered in detail. The summary is limited to the effects on project objectives, Forest Plan standards, and other resources the Interdisciplinary Team deemed important for an informed decision. A brief discussion of the similarities and differences between the alternatives follows the table.

Table 2-2 Comparison of Activities and Effects

Project Objective Indicators	Alt. A	Alt. B	Alt. C
Miles of Road Where Hazard Trees are Addressed	0	60	60
Road Maintenance Concern Addressed?	No	Yes	Yes
Wood Products Salvaged (MMbf)	0	4.5	3.3
Forest Plan Consistency/Other Key Items	Alt. A	Alt. B	Alt. C
Results in the Development of any IRA?	No	No	No
Activities Comply with Wild and Scenic River Standards?	Yes	Yes	Yes
Activities Comply with Visual Quality Objectives Standards?	Yes	Yes	No
Activities Comply with TMDL?	Yes	Yes	Yes
Activities Comply with Detrimental Disturbance Standard?	Yes	Yes	Yes
Activities Comply with BO Reasonable and Prudent Measures?	Yes	Yes	Yes
Threatened, Endangered, and Proposed Species	Alt. A	Alt. B	Alt. C
Wildlife Species	NE	MA	MA
Plant Species	NE	MA	MA
Fish Species	NE	MA	MA
Sensitive Species	Alt. A	Alt. B	Alt. C
Wildlife Species	NI	NI/MI	NI/MI
Plant Species	NI	MI	MI
Fish Species	NI	MI	MI
Management Indicator Species	Alt. A	Alt. B	Alt. C
Pileated Woodpecker Population Trend	Maintained	Maintained	Maintained
Bull Trout Population Trend	Maintained	Maintained	Maintained

NE = No Effect; MA = May affect, but not likely to adversely affect.

NI = No Impact; MI = May impact individuals or habitat but would not likely contribute to a trend towards Federal listing.

Reference discussions below and in Chapter 3 for detailed information.

2.5.1 Project Objective Indicators

2.5.1.1 Reduce the hazard that fire-killed and imminently dead trees pose to users of open authorized roads.

Implementation of Alternative A would have no effect on the number of fire-killed and imminently dead trees adjacent to open authorized roads. Although unquantifiable, falling snags will pose a threat to users of an estimated 60 miles of open authorized roads within the analysis area for the next 25 years (Section 3.4).

Alternatives B and C would fall fire-killed and imminently dead trees greater than or equal to 8 inches dbh on an estimated 1,671 acres. Although impossible to quantify, felling of these fire-killed and imminently dead trees would reduce the hazard that these trees pose to users of an estimated 60 miles of open authorized roads (Section 3.4).

2.5.1.2 Reduce the recurring maintenance need that fire-killed and imminently dead trees pose.

Alternative A would have no effect on the number of fire-killed and imminently dead trees adjacent to open authorized roads. These falling snags will present a recurring maintenance need for the next 25 years along an estimated 60 miles of open authorized roads within the analysis area (Section 3.4).

Alternatives B and C would fall fire-killed and imminently dead trees greater than or equal to 8 inches dbh on an estimated 1,671 acres. Although impossible to quantify, felling of these trees would reduce the projected maintenance needs along an estimated 60 miles of open authorized roads within the analysis area (Section 3.4).

2.5.1.3 Capture the value of fire-killed and imminently dead trees before they deteriorate.

Alternative A would not harvest any timber. By late summer of 2008, fire-killed and imminently dead trees will have lost much of their value as sawlogs (Section 3.9).

Alternative B would capture the value of an estimated 4.5 MMBf of timber before it loses its value and generate an estimated appraised value of \$676,000. Alternative C would capture the value of an estimated 3.3 MMBf of timber before it loses its value and generate an estimated appraised value of \$488,000 (Section 3.9).

2.5.2 Forest Plan Consistency/Other Key Items

The Forest Plan Consistency Checklist, contained in the project's planning record, lists all applicable standards and guidelines in the 2003 Forest Plan and discloses how the various alternatives comply or fail to comply with those standards and guidelines. In addition, the Interdisciplinary Team identified other items considered important in making an informed decision. The following discussions summarize the effects of the alternatives relative to those standards and/or guidelines and other items identified by the Interdisciplinary Team as key in this assessment.

2.5.2.1 Inventoried Roadless Areas (IRAs)

Alternative A does not propose any new activities and therefore would have no direct or indirect effects on any wilderness attribute (Section 3.3.1).

Alternatives B and C do not propose any new activities within the boundaries of any IRA. Noise associated with implementation of either alternative would reduce or diminish feelings of solitude and remoteness in those portions of the IRAs immediately adjacent to proposed activities. However, given that proposed activities would occur only within 200 feet of open authorized roads, this impact on solitude and remoteness would be considered inconsequential. Further, proposed activities along any one road would not be expected to last more than a couple of weeks and therefore would be of a temporary nature (Section 3.3.1).

2.5.2.2 Wild and Scenic River

Alternative A does not propose any changes to the current management of the area and therefore would have no effect on the free-flowing nature or potential classification of the South Fork Salmon River (Section 3.5).

Alternative B would maintain the South Fork Salmon River's eligibility as a potential addition to the National Wild and Scenic Rivers System. Its recommendation in the Forest Plan's Record of Decision as suitable for inclusion in the National Wild and Scenic Rivers System would not be affected. The free-flowing characteristic of the river would not be altered, nor would the Recreational classification of this river segment be affected. The outstandingly remarkable values (ORVs) would be maintained (Section 3.5).

Alternative C would maintain the South Fork Salmon River's eligibility as a potential addition to the National Wild and Scenic Rivers System. Its recommendation in the Forest Plan's Record of Decision as suitable for inclusion in the National Wild and Scenic Rivers System would not be affected. The free-flowing characteristic of the river would not be altered, nor would the Recreational classification of this river segment be affected. While there would be a one mile

section where the scenic outstandingly remarkable values (ORVs) would be diminished, overall, the ORVs would be maintained along the 77 mile stretch of Segment 1 of the South Fork Salmon River (Section 3.5).

2.5.2.3 Visual Quality Objectives/Scenic Environment

Alternative A does not propose any new management activities therefore no management-induced changes to the scenic resources would occur. The effects of the 2007 wildfire would continue to dominate the landscape appearance (Section 3.6).

Implementation of Alternative B would result in visible changes in most of the viewsheds. The falling and removal of fire-killed and imminently dead trees and ground-based skidding in the foreground would result in visual alterations in the form of tree stumps, slash, and disturbed soil. Although the visual effects in the foreground would be noticeable over the next few years, it is expected that the wildfire effects would continue to dominate the viewsheds. As allowed in the Forest Plan (SCST02, Forest Plan, pg. III-67), in order to pursue this project's objective of reducing the hazard that fire-killed and imminently dead trees pose to users of open authorized roads, some visual quality objectives (VQOs) would be reduced to the next highest objective under Alternative B. After reduction of these VQOs, Alternative B would be consistent with Forest Plan direction related to visual quality (Section 3.6).

Similarly, the falling and removal of fire-killed and imminently dead trees and ground-based skidding in the foreground would result in visual alterations in the form of tree stumps, slash, and disturbed soil under Alternative C. After reduction of Forest Plan VQOs to the next highest level, harvest activities associated with Alternative C would be consistent with Forest Plan direction related to visual quality. However, falling and retention of trees on site that are greater than or equal to 8 inches dbh would likely dominate the viewshed along roughly one mile of Warm Lake Highway and another one mile common to both the #474.2 road and the South Fork Salmon River corridor. Under this alternative, this prescription would be employed on an estimated 422 acres with affected areas extending 200 feet upslope of roads, and in some locations running parallel to the road for distances of close to one mile. While the appearance on these affected acres would eventually emulate untreated acres that burned at a similar intensity, the fall rate on untreated acres would be gradual, with an estimated 75 to 85 percent of the fire-killed trees falling over a period of 15 years. In comparison, falling and retention on site of an estimated 50 trees/acre under Alternative C would occur over a period of a few weeks and would result in a noticeable visual contrast with untreated acres and harvested acres. The reduced VQO of foreground partial retention for Warm Lake Highway and the South Fork Salmon River would likely not be met along roughly two miles of these routes. The reduced VQO of foreground modification for the #474.2 road to Rice Creek would be met. The Responsible Official has determined that implementation of Alternative C would require a non-significant amendment of the Forest Plan. Should this alternative be selected, a non-significant Forest Plan amendment would be prepared and attached to the decision document for this project (Section 3.6).

2.5.2.4 Total Maximum Daily Load (TMDL)

Alternatives B and C would not contribute additional sediment, the pollutant of concern, to water quality limited waterbodies in amounts that would prevent the attainment and maintenance of the instream objectives, nor would these alternatives have a measurable effect on the identified beneficial uses of domestic and agricultural water supply, cold water biota, salmonid spawning, primary and secondary contact recreation, and special resource waters (Sections 3.11.1 and 3.12).

In addition, felling of fire-killed trees in the 3 to 7 inch dbh range, post-harvest, across an estimated 100 acres; felling and retention on site of fire-killed and imminently dead trees greater than or equal to 8 inches dbh on another 10 acres; adding effective ground cover; placement of log obstructions below six existing drainage structures, and; breaking up the hydrophobic soils via ground-based

skidding under Alternative B would be consistent with the intent of the TMDL of reducing sediment, the pollutant of concern (Section 3.11.1).

Falling and retaining on site fire-killed and imminently dead trees greater than or equal to 8 inches dbh across an estimated 422 acres; adding effective ground cover, and; breaking up the hydrophobic soils via ground-based skidding under Alternative C would be consistent with the intent of the TMDL of reducing sediment, the pollutant of concern (Section 3.11.1).

2.5.2.5 Detrimental Disturbance

Alternative A would have no effect on detrimental soil disturbance. Existing levels of fire-induced detrimental disturbance would continue in the temporary and short term. Severely burned soils would recover over a period of 1 to 3 years as hydrophobic conditions break down through natural processes and ground cover and vegetation returns to these soils (Section 3.11.4).

Detrimental disturbance currently exceeds 15 percent in many of the proposed units because of high severity burns in the activity areas. Given the narrow (i.e. 200 feet) linear nature of proposed units, numerous trips on the same skid trail would not be necessary or expected. Therefore Alternatives B and C would not be expected to increase detrimental disturbance within any activity area. Post-implementation monitoring in 2007 of similarly shaped units on the Airline Timber Sale concluded that skidding practices resulted in little or no detrimental disturbance (Terry Hardy, Forest Soil Scientist, Boise National Forest, personal communication March 17, 2008). Nevertheless, in order to avoid increasing detrimental disturbance (i.e. compaction) and comply with direction in the Forest Plan, an additional design feature (Section 2.4.2.7) would be applied to all proposed units. Specifically, to prevent undesirable levels of soil compaction, use of ground-based equipment off of designated skid trails would be limited to a maximum of three roundtrips on any undesignated skid trail. Incorporation of this design feature would result in maintenance of the existing levels of detrimental disturbance within proposed units under both Alternative B and C (Section 3.11.4).

Given the direction in the Forest Plan to move these units back toward 15 percent, the question to be asked is what actions can be taken to mitigate the effects of high severity burns (i.e. soil humus loss, structural changes, hydrophobic characteristics, and/or sterilization, loss of effective ground cover, obstructions). Although research is limited, ground disturbance associated with logging has been observed to disrupt water-repellent layers (hydrophobic conditions), which may increase water infiltration and thereby decrease overland flow and erosion from burned sites (personal communication with Walt Megahan, IN: USDA 2000). Ice (1999) states that where water-repellent soils are created by condensation of volatilized organics in the soil, ripping and breaking-up of this layer is essential to rapidly restore infiltration. In addition, Poff (1988) argues that "...salvage logging can improve watershed condition by increasing ground cover, by removing a source of large, high energy water drops, and by breaking up hydrophobic soil layers." The majority of the harvest-created slash would be removed from the units via whole-tree-yarding and accumulated at landings. Nevertheless, incidental amounts of material in the form of limbs and tops of harvested trees would break off during operations, be retained on site, and provide an immediate contribution of organic material under Alternatives B and C. Ground based skidding associated with both alternatives would break up hydrophobic soils on affected acres. In addition, within harvested units along the #470 and #472 roads, some fire-killed trees in the 3 to 7 inch dbh range would be felled and retained on site across an estimated 100 acres under Alternative B. Fire-killed and imminently dead trees greater than or equal to 8 inches dbh would be felled and retained on site on another 10 acres under Alternative B. Under Alternative C, fire-killed and imminently dead trees greater than or equal to 8 inches dbh would be felled and retained on site across an estimated 422 acres. The combination of these activities would speed the rate of recovery on areas that burned at a high severity and move detrimental disturbance in the units of concern toward the 15 percent threshold identified in the Forest Plan (Section 3.11.4).

2.5.2.6 Biological Opinion's (BO) Reasonable and Prudent Measures

In addition to Forest Plan direction, the June 2003 Biological Opinion issued by NOAA Fisheries for the Agency's Forest Plan included "Reasonable and Prudent Measures" (RPMs) important to the design of this proposal. Though all relevant RPMs were incorporated, only those key to project design are discussed below.

2.5.2.6.1 RPM #1(C) Definitions -

1. When applying the SWIE Matrix in project level consultation for ESA-listed anadromous fish species, identify any measurable change in WCIs (including reductions within the functioning appropriately category, which the LRMPs classify as "maintain"), evaluate the potential for adverse effects on listed fish species and their habitat, and design projects to avoid or minimize adverse effects, such as incremental reduction of high quality habitats.

Alternatives B and C would maintain or have no influence on the existing post-fire functionality ratings in the seven 6th field subwatersheds (Section 3.12). The Biological Assessment completed for this project and used for project-level consultation provides additional detail.

2. When completing the SWIE Matrix Table B-3 in project-level consultation, specifically define the anticipated duration (e.g. days, weeks, months, etc.) of potential effects on WCIs for each of the temporal scales (temporary, short and long-term) as appropriate to address effects on listed anadromous fish species and their habitat.

Section 3.12 of this document addresses all watershed condition indicators (WCIs) and describes the duration of effects resulting from Alternatives B and C where pertinent. The Biological Assessment completed for this project and used for project-level consultation provides additional detail.

2.5.2.6.2 RPM #2 (B) - In the Upper Salmon, South Fork Salmon, and Little Salmon River subbasins, do not allow likely to adversely affect actions with adverse effects lasting 3 years or longer on ESA-listed anadromous fish species or their habitat prior to completion of the appropriate consultation framework document, unless informed or driven by recommendations from existing or new subbasin assessments or watershed analyses.

Alternative B or C may affect but is not likely to adversely affect Chinook salmon or their designated critical habitat, steelhead trout or their designated critical habitat, or bull trout (Section 3.12). The project planning record contains copies of the *South Fork Salmon River Subbasin Assessment* (IDEQ 2002) and the *Upper South Fork Salmon River/Johnson Creek Ecosystem Analysis at the Watershed Scale* (USDA 2002).

2.5.2.6.3 RPM 3 (A) - In the Upper Salmon River subbasin, do not increase ECA values above 15 percent in watersheds with ESA-listed anadromous fish species unless supported by hydrologic analysis. Analyses will be evaluated by NOAA Fisheries for projects that require ESA-consultation.

Section 3.11.2 of this document discloses that as a result of the 2007 wildfire, increased water yield would be expected in the spring of 2008. However, Alternatives B and C would not result in a measurable change in the existing ECA values or water yield. Since only fire-killed and imminently dead trees would be felled, these alternatives would have little impact on the ability of affected acres to intercept precipitation and transpire soil moisture. As disclosed in Section 3.2.1 of this chapter, although some exceptions could occur, given the level of damage seen in those trees identified as fire-killed, there is little chance that implementation of these alternatives would result in the cutting of trees that could potentially survive the fire-induced damage. The

cutting of such an insignificant number of trees scattered across the 1,671 acres of proposed units would have a negligible impact on water yield or ECA (Section 3.11.2).

A similar scenario would be true for imminently dead trees (e.g. windthrown or successfully attacked by bark beetles). The removal of windthrown trees would have no effect on evapotranspiration since these trees would no longer have their root systems in the ground. Trees successfully attacked by bark beetles during the summer months could potentially continue to transpire moisture for several months, however any evapotranspiration will have ceased by the following spring. Similarly to fire-killed trees, there is a possibility that a few bark beetle infested trees would be felled that could actually survive the beetle infestation. Although the total number of trees falling under this scenario would be expected to be minor, the exact number is unquantifiable. Nevertheless, cutting of these trees would reduce evapotranspiration at site-specific locations. In contrast, retention of these trees on site would facilitate beetle infestations of additional live trees in future years which could also reduce evapotranspiration. Given the few trees expected to fall under this scenario, the cutting of imminently dead trees would have a negligible impact on water yield or ECA (Section 3.11.2).

2.5.2.6.4 RPM 3 (B)(3) - In the South Fork Salmon River, for projects that require ESA-consultation, ensure that each project (with the exception of activities outside Forest Service discretion, or projects that directly repair salmon or steelhead habitat) that has more than a negligible likelihood of adverse effects (i.e., likely to adversely affect) on ESA-listed fish or their habitat meets the applicable criteria:

The analysis completed for this project concluded that Alternative B or C may affect but is not likely to adversely affect Chinook salmon or their designated critical habitat, steelhead trout or their designated critical habitat, or bull trout (Section 3.12). Therefore the following criteria do not apply. Nevertheless, Alternatives B and C do not include any road construction, opening of closed roads, or harvest activities on field-identified landslide prone areas. The planning record contains discussions of post-salvage monitoring that has occurred on the Forest.

i. For projects proposed in upper portions of the subbasin, upstream of main spawning areas (Stolle Meadows, Dollar, Poverty Flats, Secesh Meadows, Lake Creek, etc.), or that involve road construction, opening closed roads, or activities on high or moderate risk landslide-prone areas, Forest Service must demonstrate (e.g., from monitoring results of projects below main spawning areas) during planning or consultation that similar projects have been implemented and sediment delivery to streams was avoided or minimized.

ii. Other projects will provide rationale, incorporating the best available existing information including sediment monitoring data, that sediment delivery will likely be avoided or minimized.

iii. For projects where sediment delivery is a contributing factor to the “Likely to Adversely Affect” determination, monitor and evaluate the effectiveness of mitigating measures used to avoid or minimize sediment delivery. The need for additional sediment monitoring related to “Not likely to adversely Affect” project will be determined in project-level Section 7 consultation with NOAA Fisheries, on a case-by-case basis.

2.5.3 Threatened, Endangered, and Proposed Species

Determinations disclosed in Chapter 3 for threatened, endangered, proposed, and candidate species concluded that:

Alternative A would have no effect on any threatened, endangered, or proposed species.

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Alternative B or C may affect but is not likely to adversely affect *Spiranthes diluvialis* (Section 3.2.11); may affect but is not likely to adversely affect Canada lynx and northern Idaho ground squirrel (Section 3.10.1), and; may affect but is not likely to adversely affect Chinook salmon or their designated critical habitat, steelhead trout or their designated critical habitat, or bull trout (Section 3.12).

2.5.4 Sensitive Species

Determinations disclosed in Chapter 3 for sensitive species have concluded that:

Alternative A would have no impacts on any sensitive species or any Forest watch plants.

Alternative B or C may impact individuals or habitat but would not likely contribute to a trend towards Federal Listing or cause a loss of viability to the population or species for *Botrychium lineare*, *Botrychium simplex*, *Botrychium crenulatum*, *Botrychium multifidum*, *Botrychium virginianum*, *Douglasia idahoensis*, *Lewisia sacajawean*, *Epipactis gigantean*, or *Allotropia virgata* (Section 3.2.11).

Alternative B or C would have no impact on boreal owl, peregrine falcon, mountain quail, greater sage grouse, western big-eared bat, spotted bat, and spotted frog, and; may impact individuals but would not likely contribute to a trend towards federal listing or loss of viability to the population or species of gray wolf, great gray owl, flammulated owl, bald eagle, northern goshawk, white-headed woodpecker, northern three-toed woodpecker, fisher, and wolverine (Section 3.10.2).

Alternative B or C may impact individuals but would not likely contribute to a trend towards federal listing or loss of viability to the population or species of westslope cutthroat trout (Section 3.12).

2.5.5 Management Indicator Species

As explained above, Alternative B or C may affect but is not likely to adversely affect bull trout. Alternative B or C would maintain the current population trend of bull trout at the Forest and Ecogroup scale (Section 3.12).

All of the 157 acres of proposed units that contain vegetative characteristics of pileated woodpecker nesting and forage habitat are located next to open roads and would not likely be used by pileated woodpeckers for nesting activities. Therefore no impacts to suitable nesting habitat would be expected as a result of Alternative B or C. Of the 157 acres of suitable forage habitat scattered among the proposed units, roughly 112 acres were unaffected by the 2007 wildfire. No cutting or removal of fire-killed or imminently dead trees would be expected on these 112 acres and the suitability of the existing forage habitat would be maintained. Since no nesting habitat would be modified and a maximum of 45 acres of forage habitat affected, any impacts from these alternatives on suitable habitat would be considered inconsequential. Given the large size of pileated woodpecker home ranges (typically 1,000 acres) and the narrow linear shape of proposed units, disturbance would occur in a small portion of a single home range, could easily be avoided by pileated woodpeckers, and would not be expected to exceed two weeks within any given unit. Any disturbance of foraging individuals would likely result in no more than causing that bird to relocate to another portion of its home range. Further, over 98 percent of the analysis area would be unaffected by these alternatives and would provide an abundance of snags and forage habitat into the future. Alternative B or C would maintain the current population trend of pileated woodpecker at the Forest and Ecogroup scale (Section 3.10.3).

2.6 Identification of the Preferred Alternative

Alternative B, Proposed Action, is the Forest Service preferred alternative.