

CHAPTER 2 ALTERNATIVES

2.1 What is in this Chapter?

This chapter is the "heart" of the environmental analysis (40 CFR 1502.14). It describes the alternatives considered to achieve the purpose and need discussed in Chapter 1. The National Environmental Policy Act (NEPA) requires federal agencies to "identify and assess reasonable alternatives to proposed actions that would avoid or minimize adverse effects of these actions upon the quality of the human environment" (40 CFR 1500.2(e)). Alternatives were developed in response to the issues identified during scoping and determined to be truly significant to the decision. The alternatives serve to define the effects and trade-offs of the proposed actions. This chapter discusses the following information:

- Public involvement and the scoping process;
- Issues;
- Alternatives;
- Alternatives considered but not carried forward;
- A comparison of alternatives.

2.2 Public Involvement and the Scoping Process

The first step in environmental analysis is to determine what needs to be analyzed. To do this, NEPA outlines a process termed "scoping" (refer to 40 CFR 1501.7). This is an open process designed to determine the potential issues associated with a proposed action and then, from this list further identify

those issues that are significant to the decision. First, comments are obtained from interested and affected parties, both within and outside the agency, to develop potential issues that should be considered. Second, these "potential issues" are reviewed by the interdisciplinary team to determine: a) the significant issues to be analyzed in depth, and b) issues which are not significant or which have been covered by prior environmental review and therefore should be eliminated from detailed analysis.

Summary of Opportunities for Involvement

A Public Involvement Strategy was developed at project initiation and has been updated through the NEPA process. An effort was made to identify key stakeholders such as forest permittees, interested agencies and adjacent property owners.

The project was identified on the Gallatin National Forest Schedule of Proposed Actions (SOPA) beginning July 2006 to present. The SOPA is published quarterly. Approximately 200 people are on the mailing list for the SOPA.

During July 2006 team members met with Homeowner groups for Clark Springs, Rumbaugh, Romsett and Lonesomehurst Summer Home groups. The proposal was discussed and cabin owners expressed support and concerns for the project. This information was used to further refine the proposed action. Forty three owners/neighbors in attendance signed up for the project mailing list.

During the year, individual contacts were made with Kirkwood Homeowners across the Lake, PPL (Hebgen Dam

Administrators), Northside Fire Department, Watkins Allotment permittee, homeowners in Cozy Corners Subdivision and at Firehole Ranch, and the West Yellowstone City Council. During Wildfire Awareness Days near West Yellowstone information on the project was made available. Peer contact was made with Montana Fish Wildlife and Parks and Trout Unlimited.

The scoping mailing list (Project file) included all identified stakeholders, as well as groups and individuals that have shown an interest in projects in the area in the past. The mailing list was extensive and every effort was made to include all groups and individuals that might be interested in the project. Approximately 335 scoping letters were mailed out on February 6, 2007, along with a form requesting that recipients confirm their interest in remaining on the project mailing list

The West Yellowstone News and the Bozeman Chronicle published short articles on the proposal and the request for comment during the scoping period. An open house was held February 26, 2007. Ten people signed in. Two individuals met with agency representatives shortly after the open house since they were unable to attend the public event. Twenty-nine people submitted verbal or written comments on the proposal. Approximately 105 interested persons and agencies and governing bodies remain on the mailing list (Project file).

Content analysis was completed on all comments received during scoping. The Scoping Content Analysis (GNF 2007a) is in the Project Record. The comments were used to help interdisciplinary team members identify issues for this project.

As work continued on the project an update letter was mailed to the 105 interested parties in May 2006 to discuss progress, provide a synopsis of comments received and the expected publish date of the Environmental Assessment (EA). In the letter an offer was made to meet with organizations or individuals in the field.

In response to this offer the District received requests for field trips or briefings by three adjacent landowners and one homeowner group. Team members met with these folks to provide information on the alternative and mitigation being developed and to further understand specific concerns.

Notice of availability of the EA will be sent to the mailing list of 105 interested parties. All persons that provided comment will receive a copy of the EA. A legal notice will be published in the Bozeman Chronicle. As in scoping, a news release will be sent to all local and regional news outlets including newspaper, radio and television stations.

2.3 Identification of Issues

The purpose of scoping is not only to identify a list of issues and concerns regarding a proposal, but also to determine the significant issues to be analyzed in depth. It is the significant issues that become the focus of interdisciplinary interaction and alternative development. The NEPA provides for the identification and elimination from detailed study those issues which are not significant or have been covered by prior environmental review, thus narrowing the discussion of those issues to a brief statement as to why they would not have a significant effect on the human environment or by

providing reference to their coverage elsewhere (40 CFR 1501.7(3)).

Comments identified during scoping were evaluated against the following criteria to determine whether or not the concern would be a major factor in the analysis process:

Has the concern been addressed in a previous site-specific analysis, such as in a previous analysis or through legislative action?

Is the concern relevant to and within the scope of the decision being made and does it pertain directly to the proposed action?

Can the concern be resolved through mitigation in all alternatives?

Can the issue be resolved through project design in all of the alternatives?

Four issues were determined to be primary factors in the decision or of strong interest, referred to as significant issues. These issues are discussed in detail in Chapter 3.

There were several other issues of interest that were mitigated effectively or not affected by this proposal. Appendix A provides a summary of consideration given to issues determined to not be significant factors to the decision.

2.3.1 Significant Issues

Issue 1. Fuels/Fire (Anderson 2007)

Fuel treatments are proposed to enhance the safety of wildland firefighters, the public, and property in and adjacent to the Wildland Urban Interface (WUI) by reducing fire behavior. How effectively do the treatments reduce fire behavior and meet the purpose and need?

Indicator

The change in vegetative fuel conditions will be assessed in terms of change to fire behavior. The parameters include flame lengths (feet); rates of spread (chains per hour), fire intensity (BTU's), and expected fire type either crown or surface fire and expected spotting distances. The treatment effectiveness was also be analyzed by any change in fuel models. Fuel models are a collection of fuel properties organized into four groups: grass, shrub, timber, and slash. The models help in prediction of fire behavior. (Hal E. Anderson 1982) Then the change in fire behavior was evaluated in terms of meeting purpose and need.

Issue 2: Moose Winter Habitat (Pils 2000e)

Moose on the east side of the Henry's Lake Mountains utilize a narrow band of habitat at the lower elevations along the shore of Hebgen Lake during the winter. Habitat important to moose within this area includes conifer stands with subalpine fir understories and high canopy closure. Fuels treatments in such stands may alter moose habitat to unsuitable condition by removing subalpine fir trees that are preferred browse, and/or by opening the canopy which would allow greater accumulation of snow.

Indicator: The estimated percentage of winter moose habitat converted to unsuitable condition through the proposed treatments was used to measure effects of the alternatives

Issue 3. Inventoried Roadless(Schlenker 2007)

Proposed fuel treatments in units 1, 2, 13, 14 and 15 may affect roadless

character. Proposed fuel treatments are being considered both within “Inventoried Roadless” areas (IRA) that currently retain their roadless character, and in portions of an IRA which have been roaded and harvested since the Forest Plan was published. These proposed fuel reduction activities are within the Lionhead 1-193 Inventoried Roadless Area (IRA).

Indicator

The project proposal and its alternatives are reviewed to determine if implementation significantly affects roadless characteristics and meets other criteria established in the 2001 Roadless Area Conservation - Final Rule, 36 CFR 294.

The portions of the Lionhead IRA that are within the Lonesome Wood Project were evaluated for wilderness character in the 1987 Gallatin Forest Plan and were not recommended for inclusion in the Recommended Lionhead Wilderness. In addition, the portions of the IRA in the Lonesome Wood project area have not been included in subsequent wilderness legislation for the Recommended Lionhead Wilderness. Consequently, the primary concern related to this issue is adherence to the 2001 Roadless Final Rule.

Issue 4. Canada Lynx (Pils 2007a)

Issue: Vegetation treatments in lynx habitat can alter the preferred habitat of their primary prey species, snowshoe hare (*Lepus americanus*). The availability of snowshoe hares is a primary limiting factor for lynx, and therefore proposed vegetation management activities may adversely affect lynx.

Discussion: On March 24, 2000 the

U.S. Fish and Wildlife Service (USFWS) published its determination on the status for the contiguous U.S. distinct population segment of the Canada lynx (*Lynx canadensis*). The lynx has since been listed as a “threatened” species in the contiguous United States.

The Alternatives were considered against the guidance in Northern Rockies Lynx Forest Plan Amendment. (USDA Forest Service 2007a) The project adheres to the guidance for Canada Lynx, but there is a strong interest in threatened and endangered species so this issue is discussed in Chapter 3.

2.3.2 Other Issues

Several issues/concerns were found to be non-significant and were given less detailed disclosure. While these concerns are important, they were either unaffected or mildly affected by the proposed fuel treatment, or the effect would be adequately mitigated.

The effect from proposed primary treatments and associated treatment activity to the following resources was considered. For a summary from the reports for these issues/concerns, refer to Appendix A.

- Aesthetics/Scenery (Ruchman 2007)
- Air Quality (Story 2007)
- Amphibians (Roberts 2007)
- Aquatic Resource (Roberts 2007a)
- Economic Analysis (Lamont 2007b)
- Heritage Resources (Allen 2007)
- Invasive Weeds (Lamont 2007)
- Livestock/Range Allotments (Lamont 2007a)
- Public Safety (Fusselman 2007 & Kempff 2001)

- Recreation/Special Uses (Fusselman 2007)
- Sensitive Plants (Pils 2007h)
- Soils (Shovic 2007)
- Transportation/Roads Analysis Process (Kempff 2007, Queen 2007)
- Vegetation – Old Growth, Structural Diversity, Huckleberries and other vegetation concerns (Novak 2007)
- Water Quality (Story 2007a)

Wildlife (Terrestrial)

- Elk (Pils 2007b)
- Migratory Birds (Pils 2007d)
- Northern Goshawk (Pils 2007f)
- Pine Marten (Pils 2007g)
- Biological Evaluation for Sensitive Terrestrial Wildlife Species (Pils 2007)
- Wolf (Pils 2007j)

2.4 Alternatives

This section is divided into four subsections: 1) Development of Alternatives; 2) Alternatives Studied in Detail; 3) Features Common in the Action Alternative, Including Mitigation and Monitoring and 4) Alternatives Considered but Not Carried Forward. A Comparison of Alternatives that were fully analyzed is provided in section 2.5.

2.4.1 Development of Alternatives

Based on public comment received, and environmental analysis, the interdisciplinary team and District Ranger determined that two action alternatives and the No Action Alternative would be studied in detail.

Alternative 1 – The No Action

Alternative, in which the project area would have no fuels reduction at this time, and would be subject to natural or ongoing changes only.

Alternative 2 - The Proposed Action is designed to meet the purpose and need for action for the Lonesome Wood Vegetation Management Project, and the project-specific desired future conditions. Figure 2-1 and 2-2 Proposed Action Maps 1 and 2 display the proposed units. The maps are at the end of this Chapter.

Alternative 3 - The Alternative with resource mitigation was designed to meet the stated purpose and need for the Lonesome Wood Vegetation Management Project, and the project-specific desired future conditions while reducing impacts to moose winter habitat and elimination of logging in inventoried roadless lands that retain roadless character. Figure 2-3 and Figure 2-4 Alternative 3 maps 1 and 2 display the proposed units. The maps are at the end of this Chapter.

Five additional alternatives were considered but not carried forward for detailed study in this EA 2.5. These alternatives respond to scoping requests for an alternative that considers prescribed burning as the only treatment method, an alternative that does not allow any temporary roads, an alternative that does not include any fuel breaks, and two alternatives that consider larger and smaller evacuation route areas. These alternatives are discussed in section 2.4.4.

2.4.2 Alternatives Studied in Detail

2.4.2.1 Alternative 1 - No Action Alternative

No fuels reduction activity would occur

at this time under this Alternative. The no action alternative provides a baseline for estimating the effects of other alternatives. This alternative represents the existing and foreseeable future condition, to which the other alternatives are compared.

In this No Action alternative, no thinning would occur on national forest lands adjacent to private lands and structures. The areas that are currently low fire risk would continue to fill in with conifers increasing the fire risk in those stands. Fuel continuity and density in the stand canopy would continue to increase. Excess understory trees that provide ladder fuel would continue to grow. The continuity between large trees in the overstory canopy would support crown fire spread. Heavy concentrations of surface fuels would remain on site. Fuel Model 10 conditions would remain in virtually all of the forested areas. The existing and foreseeable conditions support crown fire initiation; high rates of spread for crown fires and severe and intense fires. Aspen forests in the project area would continue to decline. Outbreaks of insect and disease activity would likely continue at the current rate within the areas being considered for fuel reduction and aspen regeneration. (Novak 2007)

2.4.2.2 Alternative 2 - Proposed Action Alternative

Overall Goals:

- Reduce the wildland fire risk to life and property in the wildland urban interface and evacuation routes for this WUI.
- Enhance aspen regeneration.

Proposed treatments are in the wildland urban interface, which includes

evacuation routes. Fuel breaks consist of a portion of six units, generally less than 25% of the unit acreages. The aspen regeneration units are combined with WUI units but may extend beyond the ½ mile distance used for WUI protection boundaries.

Primary methods proposed to achieve goals include mechanical and hand thinning, piling, prescribed burning, removal of biomass and slashing of conifers in aspen stands.

In order to meet the purpose, fuel continuity and density in the three fuel strata, including surface, ladder and crown levels in the stand canopy would be reduced. Excess dense understory trees that provide ladder fuel would be thinned; larger trees in the overstory canopy would be thinned to provide effective spacing to slow crown fire spread; heavy fuel concentrations of surface fuels would be removed. These fuels contribute to severe fires that support the initiation and spread of crown fires.

The treatments are planned in order to change the fire behavior and expected fire type; to convert Fuel Model (FM) 10 sites to FM 8 and to maintain natural fuel breaks through reduction of conifer encroachment and aspen enhancement.

Design features unique to Alternative 2:

1. Secure habitat temporarily reduced by project activities would be restored within one year of completion of those activities. This applies to temporary roads in units 7, 11 and 21.
2. Implementation of project activities temporarily reducing secure habitat would last no longer than 3 years. This applies to temporary roads in

units 7, 11 and 21.

3. Ensure that cows are not grazing in unit 18 for two years following the underburn, since this project would thin trees in unit 17 and allow the cows access to unit 18.
4. Minimize the number of skid trails in the portion of unit 1 that is in the IRA.

A detailed description of the vegetative

treatments and methods associated with this alternative is in Chapter 1. Table 2-1 provides a primary treatment summary. Figure 2-1: Alternative 2 - Proposed Action Map 1 of 2 and Figure 2-2 – Proposed Action Map 2 of 2 displays the proposed treatment units. The maps are in at the end of this Chapter. Other activity associated with this alternative is described in the Design Features Common to the Action Alternatives in section 2.4.3 of this EA.

Table 2-1: Alternative 2 (Proposed Action) Primary Treatment Summary

Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd 5280 feet = 1 mile	Acres of Small Tree Thin * All or part of these units may be suitable for mechanized biomass removal.	Acres of Slashing, monitoring and burning if needed
1	WUI & Evacuation	55	0		
2	WUI & Evacuation			220	
3	WUI & Evacuation			20*	
4	WUI & Evacuation	25	150 feet of temporary road		
5	WUI & Evacuation	35	630 feet temporary rd and 1680 feet existing project rd to be reconstructed or .45 miles total		
6	WUI & Evacuation			120*	
7	Evacuation Route & Fuel Break	45	1 mile of temporary rd		
8	Evacuation Route			5	

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Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd 5280 feet = 1 mile	Acres of Small Tree Thin * All or part of these units may be suitable for mechanized biomass removal.	Acres of Slashing, monitoring and burning if needed
9	Evacuation Route	15	150 feet of temporary road		
10	WUI & Evacuation			150*	
11	Evacuation Route & Fuel Break	60	700 feet of temporary rd.		
12	Evacuation Route & Fuel Break	65	.25 miles of temporary rd.		
13	Evacuation & WUI				45
14	WUI, Aspen, Evacuation	210	.5 miles of temporary road and .75 miles of existing project road to be reconstructed.		
15	WUI, Aspen, Evacuation			75	
16	WUI & Evacuation			25*	
17	Evacuation, WUI & Fuel Break	195	.7 miles of temporary road.		
18	Aspen				25
19	Evacuation Route			35*	
20	Evacuation Route	35	0		
21	Evacuation Route, WUI, Fuel Break	140	1584 feet of temporary rd. and 1050 feet of project road to be reconstructed or .5 miles total.		

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Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd 5280 feet = 1 mile	Acres of Small Tree Thin * All or part of these units may be suitable for mechanized biomass removal.	Acres of Slashing, monitoring and burning if needed
22	WUI, Aspen Evacuation			45*	
23	WUI, Aspen Evacuation	30	900 feet temporary road and 900 feet of project road to be reconstructed or .3 miles total		
24	WUI, Aspen Evacuation			15*	
25	WUI, Aspen Evacuation			80*	
26	Evacuation , WUI, Fuel Break	425	3430 feet of temporary road and 1480 feet of project road to be reconstructed or .9 miles total.		
27	Evacuation			45*	
29	WUI, Evacuation, Aspen	105	.1 miles of temporary road.		
30	WUI, Aspen, Forest Health		0		370
31	WUI, Aspen, Forest Health	140	1580 feet of temporary road or .25 miles.		
32	WUI, Aspen, Forest Health	190	2850 feet of temporary road and 3326 feet of project road to be reconstructed or .1.1 miles total.		

Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd 5280 feet = 1 mile	Acres of Small Tree Thin * All or part of these units may be suitable for mechanized biomass removal.	Acres of Slashing, monitoring and burning if needed
Estimated Totals		1770 acres	3.9 miles new temporary road construction and 2.4 miles of reconstruction of project roads. Total of 6.3 miles.	835 acres	440

2.4.2.3 Alternative 3 - Alternative with Resource Mitigation for Moose Winter Range and Inventoried Roadless lands

Overall Goal: While meeting the purpose and need for action, reduce impacts to moose winter habitat and eliminate logging in inventoried roadless lands that retain their roadless character.

Similar to Alternative 2, the proposed treatments are in the wildland urban interface, which includes evacuation routes. Fuel breaks consist of a portion of four units, generally less than 25% of the unit acreage. The aspen regeneration units are combined with WUI units but may extend beyond the ½ mile distance used for WUI protection boundaries.

The treatments and methods are the same as those described for Alternative 2. Mitigation designed to address moose winter habitat and inventoried roadless land considerations is reflected in changes in unit boundaries for this Alternative (Table 2-2). Figures 2-3 and 2-4 display the proposed units in Alternative 3. The maps are at the end

of this Chapter.

Mitigation unique to this Alternative includes:

Moose

Portions of units 6, 7, 10, 11, 17, 19, 20, 26 and all of unit 12 (approximately 263 acres) were dropped from treatment units. These areas are critical moose winter habitat within evacuation routes. Due to unit reconfiguration, this acreage difference is not apparent in Table 2-2, see Figure 2-3 for units 1, 6 and 10.

Roadless

The boundary for unit 1 was modified so that no logging is proposed in inventoried roadless lands. The acres were incorporated into the treatment proposal for unit 2, which is limited to non-mechanized methods. Due to unit reconfiguration, this acreage difference is not apparent in Table 2-2, see Figure 2-3.

Design Feature unique to Alternative 3:

To eliminate disturbance of non-hibernating toads avoid using heavy

equipment within treatment units 16 and 17 between April 1 and October 15th or to whenever permanent snow cover or sustained frost is observed, whichever occurs first.

Incorporate the following design considerations within one mile of known western toad breeding sites (all or part of treatment units 10, 13, 14, 15, 16, 17, 19, 21, 23, 24, 26 and 27):

- a. Keep the slash piles small where possible, preferably less than 15x15x15 feet.
- b. When burning in the spring, ignite larger slash piles after mid-April after which time western toads have most likely left their winter hibernacula.
- c. Ignite the slash piles slowly from one side so western toads can flee from oncoming heat if they still within their hibernacula.
- d. In the evening/dusk hours from April 1-September 15, no motor vehicle use would be allowed on roads that are currently bermed or gated and temporary roads. When nightly temperatures drop and insect flights subside evening road use could be resumed.

These features specific to amphibians provide additional protection for individual toads but are not required to protect the population. (EA 3.11.2 and Appendix A-Amphibian Discussion)

The IDT altered the prescription for unit 30 in this Alternative due to comments

received regarding aspen treatment. The treatment prescription described in this Alternative would more effectively treat the aspen in the unit. Unit 30a is the up slope portion of unit 30 in Alternative 2 and 30b is the lower slope portion. Unit 30a is composed of moderately dense mature forest. Removal of large conifers is needed to release the existing aspen clones from shade competition. Approximately 50-60% of the overstory would be mechanically thinned. The prescription would be tailored to reduce the risk of Douglas-fir beetle mortality due to recent beetle activity in the immediate area.

In unit 30b the area is generally open and much of the existing aspen is above browse height. The proposed treatment is intended to focus on the areas with little aspen sprouting and areas with conifer encroachment. Small conifers would be slashed. If there are high concentrations of cut trees from slashing, trees would be piled and burned. All of 30b and part of 30a is in the WUI.

Associated activities described in Alternative 2 are the same in Alternative 3, including Features Common to Action Alternatives detailed in the next section.

Temporary road needs vary slightly from Alternative 3. The changes are reflected in Table 2-2. Unit 30a would require .6 miles of temporary road for access, while other units would require .6 miles less temporary road.

Table 2-2: Alternative 3 (Mitigated Alternative) Primary Treatment Summary

Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd. 5280 feet = 1 mile	Acres of Small Tree Thin	Acres of Slashing, monitoring and burning if needed
1 (Combine s 1, 3, 4 from Alt. 2	WUI & Evacuation	65	150 feet of temporary rd		
2	WUI & Evacuation			220	
5	WUI & Evacuation	25	630 feet temporary rd and 1680 feet existing project rd to be reconstructed or .45 miles total.		
6	WUI & Evacuation		0	70*	
7	Evacuation Route & Fuel Break	25	.1 miles of temporary rd		
9 Combines units 8 and 9 from Alternative 2.	Evacuation Route	15	150 feet of temporary road		
10	Evacuation Route & WUI			150*	
11	Evacuation Route & Fuel Break	40	300 feet of temporary road		
13	WUI & Evacuation				45

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Proposed Unit	Purpose For Treatment	Acres of Commercial Thin	Estimated Temporary Road needed to maintain average skid distances to ¼ mile or less and offset landings from the Denny Creek Rd. 5280 feet = 1 mile	Acres of Small Tree Thin	Acres of Slashing, monitoring and burning if needed
14	WUI, Aspen, Evacuation Route	210	2900 feet temporary road or .5 miles. 3960 feet of existing project road to be reconstructed or .75 miles.		
15	WUI, Aspen, Evacuation Route			75	
16	Evacuation Route, WUI			25*	
17	WUI, Aspen, Evacuation	120	.35 miles of temporary road.		
18	Aspen				25
19	Evacuation			35*	
20	Evacuation, WUI	32			
21	Evacuation, WUI, Fuel Break	140	1584 feet of temporary road and 1050 feet of project road to be reconstructed or .5 total miles.		
22	WUI, Aspen Evacuation Route			45*	
23	WUI, Aspen Evacuation Route	30	900 feet temporary road and 900 feet of project road to be reconstructed or .3 total miles.		
24	Evacuation Route, WUI, Aspen		0	15*	
25	WUI, Aspen Evacuation			80*	

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26	WUI, Fuel Break, Evacuation	375	3430 feet of temporary road and 1480 feet of project road to be reconstructed or .9 total miles.		
27	Evacuation			45*	
29	WUI, Aspen Evacuation	105	.1 miles of temporary road.		
30a	Aspen	120	.6 miles of temporary road.		
30b	WUI, Aspen				250
31	WUI, Aspen, Forest Health	140	.25 miles of temporary road.		
32	WUI, Aspen, Forest Health	190	.5 miles of temporary road and .6 miles of project road to be reconstructed. 1.1 miles total.		
Estimated Totals		1632 acres	3.9 miles of temporary road and 2.4 miles of existing project road to be reconstructed. 6.3 total	760 acres	320

Unit 12 was dropped from this Alternative. There is no unit 28.

* All or part of these units may be suitable for mechanized biomass removal.

2.4.3 Features Common to the Action Alternatives.

2.4.3.1 Associated activities common to action alternatives:

Activities may include, but are not limited to thinning through logging, yarding unmerchantable material, piling, hauling of commercial material, slashing small trees, firewood removal, biomass reduction such as chipping, pile burning, broadcast burning, erosion control, rehabilitation of skid trails, landings and temporary roads.

An estimated 6.3 miles of temporary road would be needed to facilitate logging in mechanical thin units, of which 2.4 miles are old project roads to be reopened. The project is designed to have landings away from the Denny Creek Road to minimize impacts to scenery and public safety conflicts. The temporary roads would maintain average skid distances of ¼ mile or less generally. Temporary roads would be used for implementation of the project, then closed. Rehabilitation of temporary roads includes recontouring, erosion control, scarification and seeding. If needed, closure devices would be installed to eliminate future use. Use of old roads would minimize new disturbance and ensure restoration of those old roads.

The portion of the Denny Creek Road beyond the Clark Spring summer home group could be used as a landing and slash depository and then closed. This avoids landings and temporary roads in the unit. The road would be closed to public use when the operation is in progress, which is expected to be after Labor Day. The closure is expected to be less than two weeks.

There would be a turn around constructed just past the last summer home turnoff for emergency vehicles. Turn arounds may be constructed near Romsett homes as well.

The Denny Creek road would be closed the last two weeks of November to allow landing of logs and slash on the road near unit 26 between mile 4.6 to 5.4. All material associated with the logging operation would be removed from the road during the operation.

Fuel conditions within the individual units vary, and as a result, inclusions of multiple treatment methods could be incorporated. For instance, in a “commercial thin unit”, a portion could be treated by hand to remove small trees on areas too steep to use mechanized equipment.

In all units, natural and activity related fuels, including boles, branches and tops would be reduced to 10-15 tons/acres of woody material less than 3 inch diameter. Large woody material would be left in quantities needed to meet the Forest Plan requirements for snags and downed woody material. (GNF Plan, 1987, Amendment 15)

2.4.3.2 Design Features Common to Action Alternatives.

Air Quality (Story 2007)

1. Broadcast burning would be attempted springtime (May/June) or fall (late September/November) when north slopes are moist and wildfire potential is very low.
2. Within the minimum ambient distances of residences, the public would be warned about high smoke concentrations and advised not to

travel outside of a vehicle or be outside of residences. Pile burn units would be burned one unit at a time to avoid cumulative smoke effects between units. These constraints would keep smoke emissions within the National Air Quality Standard (NAAQS) for particulate matter PM_{2.5} 24 hour average concentration of 35 ug/m³. Minimum ambient distance range from of 0.1 to 0.2 miles.

3. All Lonesome Wood project burns would be coordinated with the Montana/Idaho State Airshed Group (<http://www.smoke.org>). The operations of the Montana/Idaho State Airshed Group are critical to minimize cumulative smoke/PM_{2.5} air quality impacts. The State Airshed Group, Monitoring Unit in Missoula evaluates forecast meteorology and existing air quality statewide by individual airshed and specifies restrictions when smoke accumulation is probable due to inadequate dispersion. Burning would be done in coordination with the Montana/Idaho Airshed group on days of good-excellent stability.

Aquatics Protection (Roberts 2007)

1. Retain all bank-edge trees maintaining stable stream banks and trees leaning toward perennial fish bearing streams that can provide large woody debris. This is true for both commercial and non-commercial treatments.
2. The District fisheries biologist would be present when crews are laying out commercial or non-commercial treatments within riparian areas along streams.

Heritage Resources (Allen 2007)

1. Avoid impacts to identified cultural site adjacent to units 1-3 by flagging the site and avoidance of mechanized activity in the site which is outside the units. Archeologist would work with Sale Administrator to ensure the site is avoided.

Livestock Grazing (Lamont 2007a)

1. To reduce conflict, notify the range allotment permittee when thinning trees in units 16, 17 and 19. The Range permit administrator would coordinate with the permittee.
2. Retain the effectiveness of the cattle guard and fence line along Forest Road 167 near units 17 and 19. Any damage to these structures would need to be repaired.
3. Do not use the old gravel pit near the corral for log decking or slash disposal. This gravel pit is located just south of the West Denny Creek Road and east of Watkins Creek. Use of this area would reduce the productivity of the pasture and would contribute to the spread of existing weeds in the area.

Invasive Weeds (Lamont 2007b)

The weed specialist would coordinate with field crews to implement these practices. Maps showing known weed patches are in the Project Record.

1. Leave 100 foot no treatment buffer adjacent to existing weeds. The known patches area generally along roads.
2. Avoid driving equipment through weed patches. The soil contains both seeds and roots that would produce viable plants. Additionally, avoid decking logs or piling slash within

weed infestation areas.

3. Power wash and inspect all off-road vehicles before entering the project area. This would help to prevent introducing new invasive weeds into the area. Wash equipment when leaving areas infested with orange hawkweed (unit 29), and oxeye daisy near unit 6 adjacent to Trapper Creek.
4. Spray weeds adjacent to roads within the treatment area prior to treatment activities to help prevent the spread of weeds along the road system. This would be incorporated into the program of work for weed spraying.
5. Avoid treatment activities within the orange hawkweed patch in unit 29 during flowering / seed spread (June 15 to the end of August).
6. Seed disturbed soil with native grasses that are free of invasive weed seeds (including all species on the regional noxious weeds list and other plants of concern – such as cheat grass). Prior to purchasing the seed, review the list of species present in the seed lot (as determined by the seed testing lab) to confirm that undesirable plants are not present.

Old Growth

Old growth stands (Green et.al) in Compartment 709, which is south of Watkins Creek, would not be treated. There are portions of four units in Alternative 2 that would be excluded, units 17, 20, 26 and 31. Stands are identified in the Vegetation Report. (Novak 2007)

Public Safety (Fusselman 2007, Kempff 2007)

1. The project area offers opportunities

for public motorized travel and off-road hiking and horseback riding use. Contracts would contain provisions for public safety requiring the development of a traffic control plan that would be agreed upon prior to commencement of activities.

2. Warning signs would be installed at key entrances and exits during the time of the activity and removed or covered during times of inactivity.
3. No operations would take place within ¼ mile of residences for safety, access, and disturbance reasons during the prime cabin visitation season during the Memorial Day week, and July 4th week through Labor Day.
4. Landings would be set back from the main road. This would keep logging vehicles, slash disposal, log yards, etc. off the main road, for all operations other than transport to and from the treatment site. This would result in short temporary spur roads.
5. Speed limits for log trucks and logging related traffic should be 25 mph from the end of the County Road (Milepost 3) to Spring Creek Campground (Milepost 8.8) and 15 mph from Spring Creek to the end of the road.

Recreation & Outfitting

Outfitting

1. No mechanical treatment would occur in units units 14, 15, and the Watkins Creek drainage side of unit 17(less than 10 acres) from June 14 to Labor Day. This time period is the prime operating season for the Firehole Ranch. (Fusselman 2007)
2. Mechanical treatment operations

would be limited to the hours of day after 9 a.m. in units 14, 15 and the Watkins Cr. Side of unit 17 from Labor Day through the end of the third full week of September. This restriction would apply when outfitting guests are staying at the Firehole Ranch. The Forest Service would coordinate with the Outfitter to determine if guests are present.

3. When operating in units 10, 11, 13, 31 and 32, mitigation includes notifying the Firehole Ranch 7 days in advance of operations, due to the outfitter's authorized operating trails passing through these units. No reported use has occurred in these units in the last 5 years. Forest Service would coordinate this notification.

Roadless Protection (applicable to units 2 and the roadless portion of unit 1 in Alternative 2.

The intent of mitigation is to leave a natural appearance in the roadless area.

1. Select trees to cut where possible growing in shrubby areas to hide cut stumps. Minimize the total number of trees cut larger than 8" dbh.
2. In the lower 1/3 of the roadless portions of units 1 and 2, flush cut all small diameter understory trees and place dirt, debris or slash on cut stumps when possible.
3. Minimize stump heights elsewhere (1' or less where practicable). Angle cut faces away from likely travel corridors. After hand piles are burned, ensure that unburned material is scattered, not left in a "pick up sticks" pile.

Scenery

The intent of scenery mitigation is to create natural appearing transitions, from a distance and along the roads, and to leave natural appearing vegetative patterns. For the most part this would be achieved through tree marking guidelines and timely restoration of temporary roads, landings and skid trails. The landscape architect would work closely with the silviculturist and presale foreman to ensure the objectives are met. As long as the end result of the project meets these goals the quality of the scenery would be maintained.(Ruchman 2007)

1. Leave trees: In all areas, selected trees with the largest and healthiest crowns would remain, so they more resemble areas with open-grown trees. Where there are no large crowned trees, such as in areas of small diameter dense lodgepole pine, small tree clumps of sizes varying from 5 trees to more would be left in shapes that also vary. In all areas, use irregular spacing for leave trees and grouping.

In proposed units where there are tall, spindly lodgepole surrounded or adjacent to younger, fuller 20 foot tall or so lodgepole, the older lodgepole should be removed where possible to remove the contrast due to previous logging, such as in units 19, 20, 26, 27, to visually convert as much of the entire stand to the younger age.

Where older spindly lodgepole pine would remain, leave some younger lower trees around the older lodgepole pine trunks to create a visual transition between forest size classes.

2. Forest Cover Transitions - Create visual transitions when needed between treated areas if the prescription or existing condition results in an abrupt visual difference from Critical Observation Areas (COA). Critical Observation Areas are identified in the Scenery Report (Ruchman 2007). This would help avoid creating abrupt visual differences that could make the unit discernible to the degree of becoming visually dominant. This could be accomplished when marking trees for removal or leave, by applying the following techniques.

- Where the unit is surrounded by denser forest, the percent of thinning should be progressively reduced towards the outside edge of the unit in a transition zone band of varying width. This is important in all units and especially between units 1/2 , 7, 9, 10, 11, 12 and 14/15 where there are critical observation areas along Highway 287 within one mile across the lake.
- Where the unit is next to an already-open area (either natural meadow or an already-logged area), the percent of thinning should be progressively increased toward the open area in a transition zone band of varying widths. In areas next to open areas, trees with large full crown should be selected to leave in order to appear more open grown. This is of particular concern where unit 17 meets unit 16.

The eastern edge of unit 17, near where the “Willows” dispersed camping road heads northeast, abuts an old harvested area, with a section of very visible straight edge. The

commercial thinning in Unit 17, for both alternatives, would aim to break up that straight-appearing edge by removing trees to create some holes of varying sizes and spacing. These actions would mitigate the already harvested area to the east of 17 and bring it up to meeting its assigned Forest Plan VQO of Partial Retention.

- In units 31 and 32, the lower portion of the units should be designed to appear somewhat similar to the thinning on private land downhill of the unit.
3. Aspen Treatment Transition - Where openings of approximately 100 feet would be created around aspen clones to stimulate and encourage their growth, those openings should feather and grade out into the thinned areas in the rest of the unit and should be irregularly shaped. This means that trees with full crowns should be left along the edges of the opening and the percent of thinning should progressively decrease outside the opening. In addition, where those areas are within easy sight distance of the Denny Creek Road or any other recreation sites or roads, when possible they should be under burned where possible, to help reduce the visibility of the cut stumps and encourage herbaceous vegetation and aspen shoots.
4. During sale preparation/tree marking of units adjacent to homes, Forest Service would meet with property owners to address concerns related to tree marking and their immediate view if property owners request a consultation.
- Road and Trail design and

restoration should appear natural for drag corridors, temporary roads or staging areas (landings): **within 100 feet of the Denny Creek** and other recreation site roads. Adherence to the Soil Restoration and Invasive Weed design features would restore these areas. Additional requirements for scenery include:

- Any access road or corridor would be designed or created to not run in visibly straight lines so as to not create straight openings.
 - Topsoil would be stockpiled when constructing temporary roads or landing/staging areas. Stockpiled topsoil would be used during restoration to facilitate revegetation.
 - Within one year of completing mechanical thinning, those driving and parking surfaces would be restored.
5. Thinning between recreation residences and the lake would be designed to avoid making structures significantly more visible from the lake or Highway 287.
 6. Thinning of conifers between the Denny Creek Road and the lake, would be designed to not make the road prism significantly more visible to viewers on the lake or on Highway 287. This is the case where only a narrow band of conifers currently exists between the road and the lake, such as in unit 26.
 7. After completion of the project, the landscape architect would monitor visually conspicuous stumps and determine appropriate action within 50 feet of either side of the Denny Creek Road, Cherry Creek and Spring Creek Campgrounds,

recreation residences and associated roads and Trail #217.

Additional detail on how to achieve these end results are in the Scenery Report (Ruchman 2007).

Sensitive Plants

Avoiding slashing, skidding or burning piles in any areas with open meadows and sparse or rocky vegetation, especially in or near Units 29 and 30 would eliminate the chances for disturbing Jove's buttercup populations.

Underburning open meadows in the spring should not occur. Areas with light vegetation should not be augmented with fuel to carry a flame.

Soil Protection –

1. The Gallatin National Forest soil protection guidelines would be followed for mechanical harvest units to keep soil disturbance below unacceptable (15%) levels. The practices are listed in EA, Appendix B. The Gallatin Soil Protection Guidelines specify concentrating skidding on trails averaging 100 foot spacing. It specifies feller/bunchers can leave trails when necessary to access timber. Finally, soils must be dry when harvest occurs.
2. Restoration practices would consist of re-contouring all temporary roads and ripping skid trails according to the Restoration plan. (Shovic 2007) Re-contouring would help to restore the soil profile, increase infiltration, and reduce erosion. Re-contouring means pulling up the fill slope to approximate the pre-existing contour of the landscape. Where possible, existing topsoil shall be spread on the surface. Ripping skid trails can be accomplished with a tractor.

Ripping should be more than 4 inches deep across the entire width of the skid trail.

Water Quality & Riparian

1. Standard timber sale protection clauses would be applied to the commercial harvest activities to protect against soil erosion and sedimentation.
2. Standard Best Management Practices or BMP's (DNRC 2002) including Montana SMZ compliance rules (DNRC 2006) would be applied during design and implementation of all commercial and non-commercial activities with the following addition: No trees will be cut within 15 feet of any Class 1 or 2 stream segment. Limbing lower branches of larger trees would be allowed. This is more restrictive than the Montana SMZ rules. This "no cut" mitigation is designed to protect streambanks along all stream segments, provide, thermal regulation and overhead cover, and augment debris recruitment along fish bearing stream segments. Of particular importance is drainage and slashing of skids trails upon unit completion. The State of Montana requires that BMP's be used on all activities to comply with State Water Quality standards. Those sections are hereby incorporated by reference into this EA, as well as State of Montana Forestry BMP's (Appendix B).
3. Seeps and springs are perennially saturated, while most of the streamside areas are only seasonally saturated (usually during snowmelt runoff). These areas would be avoided in any ground disturbing activities in the Lonesome Wood

project. Spring sources in some of the treatment units serve private and Recreation Residences in Clarks Springs, Rumbaugh, Cozy Corners, and Lonesomehurst. The area within 100' of the spring source areas would be avoided in any ground disturbing activities (skidding or harvesting) to protect these domestic water supply source areas. In addition no surface disturbance would be allowed within 25' of pipelines and water distributions systems.

4. Additional spring sources used by wildlife in the Rumbaugh, Cozy Corners, and Romsett areas, and the area within 50' of these springs would be avoided in ground disturbing activities.

Wildlife

Bald Eagle: There is one eagle territory in the project area. A map with the bald eagle nest location is in the Biological Evaluation Report (Pils 2007).

1. No project activities (commercial logging, understory thinning, etc) <400 meters of an active bald eagle nest from February 1-August 15. Vehicle activity on the Hebgen Lake Road (Forest Road # 167) is exempted.
2. No commercial harvest or understory thinning activities within 400-800 meters of an active bald eagle nest from February 1-August 15. Light activities not involving use of equipment such as sale prep, and vehicle activity on the Hebgen Lake Road (Forest Road # 167) are exempted.
3. No harvest of overstory trees would be allowed within 330 feet of any

bald eagle nest.

4. If the Moonlight nest is not active, this territory would be surveyed annually to locate potential alternate nest sites.

Moose

1. No project activities would be conducted in moose winter range from December 1-May 1. Activities with low disturbance potential such as broadcast and slash burning, and inspections are exempted. Moose winter range includes all units except portions of 30a, and all of 30b,31, 32.

Osprey

1. No commercial thinning, understory thinning, or prescribed burning <400 meters of an active osprey nest (see map for nest locations) from April 15-August 15. Vehicle activity on the Hebgen Lake Road (Forest Road # 167) is exempted. Units within 400 meters of nest sites include parts of units 4-13, 16-17, 20-22. A map with Osprey nest locations is part of the Migratory Bird Report (Pils 2007 d).
2. Osprey nest trees would be identified and protected from harvest.

Goshawk Although no nesting territories have been identified in surveys, if a goshawk nesting territory is located in the project area the following standards would be applied.

1. A minimum 40 acre no treatment buffer would be placed to maintain existing conditions in all or a portion of the nest area.
2. At least 240 acres of suitable nesting habitat (using most current regional guidelines) would be maintained

within the territory.

3. An approximate 300 acre buffer would be defined around active nests where no activity would be allowed from 4/15-8/15.

General Wildlife

1. No public motorized use of temporary roads constructed for this project would be allowed.
2. All temporary roads constructed for the project would be closed upon completion of the project.

2.4.4 Alternatives Considered but not Carried Forward.

Alternative 4. Prescribed burn only

An Alternative that considered only prescribed burning was requested during scoping. The existing forest condition for the project area is generally not suitable for prescribed burning as a primary treatment. The potential areas suitable for prescribed burning have been identified in treatment units in Alternative 2 and 3, unit 13 and 18 totaling 70 acres. Limiting treatment to only those acres would not effectively reduce the wildland fire risk in the wildland urban interface or much of the evacuation route.

The reason prescribed burn only is not appropriate in the other proposed treatment areas is related to the continuous forest cover over much of the area and the forest types present. About 89% of the stands within the area that are on forested lands are moderately to well stocked, meaning the canopy density ranges from 40-90% closure. (Novak 2007) Prescribed burning in these types of forest would very likely lead to stand replacement fire or the burn

would need to be conducted so early in the year that the area would not burn. The risk associated with stand replacement burning would present the same hazards to property and life that the project is designed to minimize.

Approximately 74% of the vegetation analysis area is lodgepole pine, Douglas-fir, subalpine fir, engelmann spruce and trace amounts of whitebark pine. (Novak 2007) About 5% of that forest area is Douglas-fir forest. Generally, underburning is successful in Douglas-fir habitat but would lead to excessive mortality in lodgepole pine, subalpine fir and engelmann spruce. Those species are not adapted to underburns

Relatively few acres in the project area are suitable for prescribed burning/underburning or broadcast burning as a primary treatment so the acres available for treatment is too low to effectively meet the purpose and need for action. For these reasons, this alternative was considered but not carried forward.

Alternative 5. No temporary roads

An Alternative that required no temporary roads was requested during scoping. The merits of this Alternative were considered in an interdisciplinary team meeting. (IDT, 4/10/07) The units proposed for logging could be treated with no temporary roads. All landings would need to be immediately adjacent to the existing access roads, which is primarily the Denny Creek Road. Skidding distances would be longer in this Alternative.

The immediate concern related to this Alternative is user conflicts on the Denny Creek Road. To ensure public safety, the Denny Creek Road would have to be closed when operations were

ongoing at the landings immediately adjacent to the road.

During scoping we received several comments related to conflicts on the road and traffic delays. Another result of landings along the road relates to scenery impacts. Landings tend to be visually dominant. Again during scoping we heard from people that they were concerned about scenery along the road and Lake.

Although this Alternative could be implemented, it conflicts with two important issues identified for this project both internally and with the public, road use/public safety and scenery. Design features were incorporated in Action Alternatives to mitigate the impact of temporary roads. The overriding concern for public safety and the desire to have the landings set back from the road to minimize scenery impacts was the primary reason this Alternative was eliminated from further consideration.

Alternative 6: No fuel breaks or Forest Health units

An Alternative that eliminated fuel breaks and units identified for Forest Health reasons was requested during scoping. No units were identified solely for forest health reasons in Alternatives 2 or 3. In the treatment units identified to benefit WUI/Evacuation Routes and Aspen, the treatment prescription would take into account insect and disease presence and implement treatment guidelines that reduce the likelihood that insects or disease would thrive in the stand.

The desire to eliminate acres of fuel break treatment was recommended in order to avoid impacts from roads, weeds, wildlife habitat degradation and

sedimentation. Fuel breaks were proposed in portions of six units 7, 11, 12, 17, 21, 26 in Alternative 2 to enhance the evacuation routes. After Alternative 3 was developed in response to Moose winter range concerns, most of the acres designed to add fuel breaks dropped out of Alternative 3 leaving portions of five units with less than approximately 75 acres designed to be fuel breaks.

The remaining acres are upslope of the evacuation route so temporary roads would be in place to facilitate logging in the units. Harvest of the “fuel break” acres would not require additional road. These acres were not identified as areas with weed (Lamont 2007a) or watershed concern (Story 2007a). By design, Alternative 3 eliminated treatment acres that are fuel breaks that might have potential impacts associated with wildlife. The concerns rationalizing elimination of the acres were either not supported by analysis or were mitigated.

The No Action Alternative does not consider fuel breaks. The analysis of the existing Alternatives provides a range of effects that allow a line officer to evaluate the trade off associated with fuel breaks, therefore a unique Alternative was not carried forward.

Alternative 7: Evacuation Routes limited to 200 feet. The interdisciplinary team considered an alternative that limited the size of the evacuation routes to 200 feet either side of the road. There was concern that the evacuation route should be as limited in size as possible both internally and by the public during scoping. Another concern was that other administrative units have used 200 foot as the appropriate distance for evacuation routes.

In consideration of the 200-foot recommendation, the Fuels specialist researched extensively to find the rationale for the 200-foot buffer for evacuation routes, and was unable to find any scientific basis for the 200-foot buffer.

The evacuation route is a safety zone where people could safely egress or stage in with or without vehicles for an area threatened by wildland fire. A safety zone is “a preplanned area of sufficient size and suitable to provide protection from known hazards”. The hazards to humans during wildland fire are heat, smoke, and lack of breathable air.

The calculation for determining a safety zone radius from radiant heat is four times the maximum flame length plus 50 square feet per person. If the potential for the fire to burn completely around the safety zone (both sides of the road) the diameter should be twice the values indicated above. Convective heat from wind and /or terrain influences increases this distance requirement.

The Fireline Hand book (March 2005 pg. 12-15), Behave plus computer model and a surface fuel model (Rothermel 1991) were used to establish the equation for developing the 400-foot radius. In order to develop an evacuation route as a safety zone for an average of 8 people, or 3 vehicles the radius was doubled. (Anderson 2007)

A safety zone is ideally free of any burnable matter. The planned evacuation route along Denny creek road would have vegetation on both sides. The proposed treatments would lower the fire behavior but not as much, as if the area was free of vegetation for the safety zone radius.

According to the analysis, the 200 foot buffer would not be a sufficient area to reduce the hazards to humans according to the references used. Alternative 3 effectively reduced evacuation route size in response to the moose issue, which compromises the effectiveness. Since an evacuation route of 200' would not provide adequate protection it would not address the purpose for the project. For this reason Alternative 7 was not carried forward.

Alternative 8: Evacuation Routes of ½ mile. In the initial proposal the IDT considered evacuation routes that extended ½ mile either direction from the Denny Creek Road or to the nearest break in fuels, such as the Lake or a large clearing. Fuel reduction treatments extending ½ mile from the road provided a very effective evacuation route and improved the effectiveness of treatments closer to structures.

However, the public and some resource specialists expressed strong concern that this level of treatment was not needed to meet the purpose and need for action. Based on analysis described in Alternative 7, the IDT determined that the ½ mile distance was more than needed and the potential effects to moose winter habitat were excessive. For these reasons, Alternative 8 was not carried forward.

2.5 Comparison of Alternatives

In this section, a comparison is provided between the Alternatives that were considered in detail. The Alternatives are compared relative to how they achieve the purpose and need for action; and relative to the issues determined to be factors in the decision. Tables 2-3 and 2-4 display the comparison.

ASPEN

With no management action under Alternative 1, vigor of many aspen stands would be expected to decline. Encroaching conifers would eventually out-compete and replace many smaller, isolated aspen stands currently scattered throughout the project area. Natural disturbance processes such as fire could facilitate regeneration of aspen in the project area. It is speculative when and where this would occur, and how much aspen would be affected. Such events may not occur in time to regenerate many of the more decadent aspen stands.

Alternatives 2 and 3 would both promote regeneration and maintenance of aspen throughout the project area. Approximately 1,405 acres containing aspen stands would be treated under Alternative 2, while 1,285 acres would be treated under Alternative 3. Most treatments are designed to reduce encroachment of conifers into aspen stands by mechanical removal of conifers (approximately 1,130 acres in Alternative 2 and 890 acres in Alternative 3). The remaining acres of treatments would involve hand-slashing of conifers, and broadcast burning if monitoring failed to detect a sprouting response from aspen through conifer slashing alone (approximately 275 acres in Alternative 2 and 395 acres in Alternative 3). Mature aspen stems would be retained and some new stems would be recruited as a result of decreased shading from conifers. Browsing of aspen sprouts by ungulates is expected to occur as the project area is year round range for moose and spring, summer, and fall range for elk and deer. However, browse pressure from moose may have minimal effect on aspen regeneration in many treated stands as

moose numbers in the project area have been declining for years. It is expected that the majority of sprouts resulting from treatments will be successful in escaping beyond browse height due to

the relatively low number of deer, elk, and moose present in the project area during winter when aspen is most likely to be browsed. (Pils)

Table 2-3: How Well Do the Alternatives Meet the Purpose and Need for Action?

	Alternative 1 – No Action	Alternative 2- Proposed Action	Alternative 3 – Mitigated Alternative
<p>How well does this alternative meet the purpose and need for action?</p> <p>See Chapter 3.2.1 for more information on the fire /fuels analysis.</p>	<p>Alternative 1 – No Action Alternative</p> <p>0 acres of desired fire behavior reduction achieved in the wui and/or evacuation route. No maintenance of low risk conditions.</p>	<p>Alternative 2 – Proposed Action Alternative</p> <p>2755 acres of desired fire behavior achieved. In the WUI and evacuation route</p> <p>290 acres of reduced fire behavior but not to fully desired conditions.</p> <p>The wui and evacuation route meet fire behavior objectives.</p>	<p>Alternative 3 – Mitigated Alternative</p> <p>2477 acres of desired fire behavior achieved.</p> <p>235 acres of reduced fire behavior but not to fully desired conditions.</p> <p>1-1/2 to 2 miles of evacuation route partially but not fully maintained compared to Alternative 2 in units 7, 10 and 17.</p> <p>20 acres of wui not treated as effectively as possible compared to Alternative 2 in unit 1.</p> <p>120 acres fewer acres of aspen enhancement compared to Alt. 2.</p> <p>333 acres not treated as compared to Alternative 2. These acres would not meet fire behavior objectives.</p>
	Does not meet the purpose and need.	Meets the purpose and need most effectively.	Meets the purpose and need but not as effectively as Alternative 2.

	Alternative 1 – No Action	Alternative 2- Proposed Action	Alternative 3 – Mitigated Alternative
Aspen treatments	0 acres improved	1405 acres maintained or enhanced	1285 acres maintained or enhanced

Table 2-4: Comparison of Alternatives by Issue and Forest Plan Compliance

ISSUE	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action Alternative	Alternative 3 - Alternative with Mitigation for Amphibian Protection, Moose Winter Range, and Inventoried Roadless lands
<p>Inventoried Roadless Lands</p> <p>Acres impacted</p> <p>Does the Alternative comply with the Roadless Final Rule?.</p> <p>Findings from EA Chapter 3.</p>	<p>0 acres</p> <p>Complies with Rule.</p>	<p>25 acres prescribed burning and 295 acres of manual small tree thinning. These activities would have short term impacts to roadless character but would retain roadless characteristics.</p> <p>110 acres of commercial harvest that meet the exception categories that allow harvest in the IRA. Design criteria minimize impacts to roadless characteristics.</p> <p>Complies with Rule.</p>	<p>25 acres prescribed burning and 295 acres of manual small tree thinning. These activities would have short term impacts to roadless character but would retain roadless characteristics.</p> <p>75 acres of commercial harvest that meet the exception categories that allow harvest in the IRA. Design criteria minimize impacts to roadless characteristics.</p> <p>Complies with Rule.</p>

ISSUE	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action Alternative	Alternative 3 - Alternative with Mitigation for Amphibian Protection, Moose Winter Range, and Inventoried Roadless lands
<p>Moose Winter Range Habitat Altered (Acres)</p> <p>Remaining suitable habitat</p> <p>Complies with direction EA Chapter 3 (Pils 2007*).</p>	<p>0 acres</p> <p>1760 acres</p> <p>Yes</p>	<p>405 acres</p> <p>1355 acres</p> <p>Yes</p>	<p>230 acres</p> <p>1530 acres</p> <p>Yes</p>
<p>FOREST PLAN COMPLIANCE</p> <p>Is implementation of this alternative consistent with Gallatin Forest Plan and the Gallatin Travel Management Plan?</p>	<p>Yes</p> <p>(EA Chapter 1, 2, 3 Appendix A for more information)</p>	<p>Yes</p> <p>(EA Chapter 1, 2, 3 Appendix A for more information)</p>	<p>Yes</p> <p>(EA Chapter 1, 2, 3 Appendix A for more information)</p>

Lonesome Wood Vegetation Management Environmental Assessment







