LONESOME WOOD VEGETATION MANAGEMENT PROJECT

Decision Notice and Finding of No Significant Impact

Gallatin National Forest

Hebgen Lake Ranger District

Gallatin County, Montana

Date: April 18, 2008

Lead Agency: USDA Forest Service

Responsible Official: **William R. Queen**
District Ranger

For Further Information, Contact:

Teri Seth, Project Leader
Bozeman Ranger District
Gallatin National Forest
3710 Fallon St., Ste. C
Bozeman, MT 59718
(406) 522-2520

LONESOME WOOD VEGETATION MANAGEMENT PROJECT
Decision Notice & FONSI

Table of Contents

		PAGE
I.	Introduction	4
II.	Background	6
III.	Purpose and Need for Action	8
IV.	Proposed Action	11
V.	Decision and Reasons for the Decision	12
A.	Decision Criteria	12
B.	Decision	13
C.	Reasons for the Decision	27
D.	Alternatives Studied in Detail	34
E.	Alternatives Considered but Not Studied in Detail	34
VI.	Public Involvement	37
A.	Overview of the Public Involvement Process	37
B.	Consideration of Public and Other Agency Comments	39
VII.	Finding of No Significant Impact (FONSI)	41
VIII.	Findings Required by Other Laws, Regulations and Policy	47
IX	Implementation	54
X.	Administrative Review and Appeal Opportunities	54
XI.	Contact Person	56
XII.	Literature Cited	57
	Appendix A – Response to Comments on the EA	A-1
	Appendix B – Implementation Information	B-1
	Appendix C – Amended Reports for Moose winter habitat, Grizzly bear & the Biodiversity Report	C-1

Amended Grizzly Bear Report **C-1**
Amended Moose Winter Habitat Report **C-7**
Biodiversity Report **C-16**

List of Figures & Tables

DN-1: Vicinity map **5**
DN-2: Selected Alternative Map 1 of 2 **17**
DN-3: Selected Alternative Map 2 of 2 **18**
Figure A: Cumulative Effects Analysis Area Map for moose winter habitat. **C-14**

Table DN-1: Selected Alternative - Primary Treatment Summary **14**

Table B-1 Operating Period by Treatment Unit **B-4**

Table 1: Motorized Access in the Henry's Lake BMS by Alternative **C-7**

Table A: Acres of Suitable moose winter habitat to be treated by 3 methods under the alternatives. **C-12**

I. Introduction

This Decision Notice documents my decision and "finding of no significant impact" for the proposed Lonesome Wood vegetation Management Project.

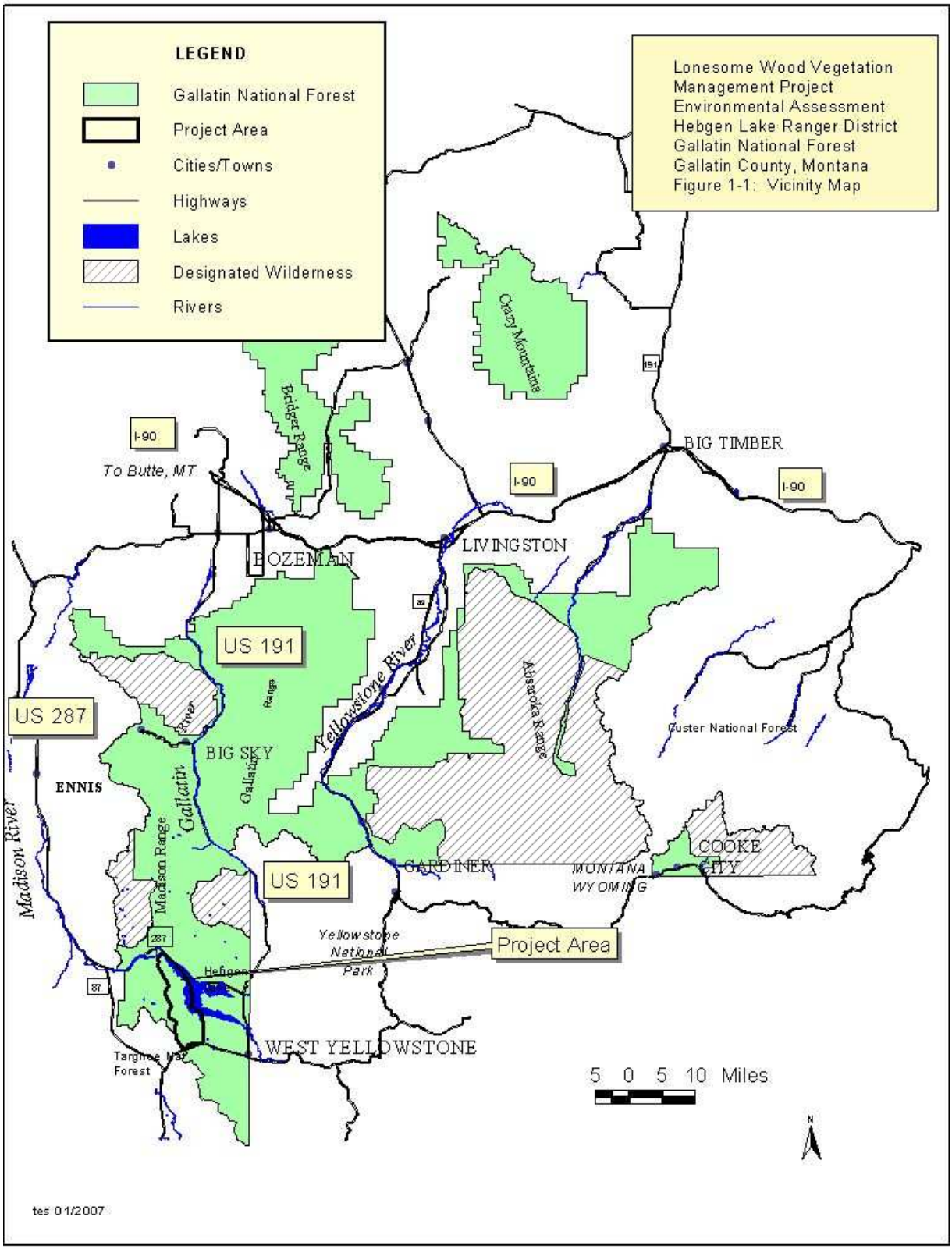
After careful consideration of the impacts of the alternatives disclosed in the Lonesome Wood Vegetation Management Environmental Assessment (12/2007), I have selected Alternative 3 with minor modification for implementation. In summary, this alternative will reduce the wildfire risk to life and property in the wildland urban interface (WUI) /evacuation route in the Lonesome Wood Vegetation Management Project area and will enhance aspen forest in and adjacent to the WUI. Overall impacts to moose winter habitat and inventoried roadless lands are reduced in this alternative versus Alternative 2.

The following land management activities are the primary treatments included in my decision. There will be approximately 1572 acres of commercial thinning, 745 acres of small tree thin, and 320 acres of slashing. Aspen sprouting will be monitored and broadcast burning performed if needed. Approximately 3.7 miles of temporary road will be constructed to support implementation and 1.4 miles of road will be reconstructed. These roads will be rehabilitated upon completion of the project including recontouring, erosion control, scarification and seeding as needed. A detailed description of my decision is in section V. B. along with associated activities, mitigation and design features.

The project area is located in Gallatin County, Montana approximately 12 miles west and north of West Yellowstone, Montana along the Hebgen Lake Road (FSR #167) and the west shore of Hebgen Lake. The Hebgen Lake Ranger District, Gallatin National Forest, West Yellowstone, Montana administer the lands within the project area.

The proposed treatments are focused in the wildland urban interface on National Forest System (NFS) land including the evacuation route along the west shore of Hebgen Lake. See the Vicinity Map Figure 1-1, in this Chapter. Management activity is proposed in portions of T. 11S., R. 3E., sections 26, 35, 36, T. 12S., R. 3E., sections 1, 12, 13, T. 12S., R. 4E., sections 17-20, 29-33 and T. 13S., R. 4E., sections 4, 8, 9, 16, 17, 20. Figure DN-1 is a vicinity map for the Project Area.

Figure DN-1: Vicinity Map of the Lonesome Wood Vegetation Management Project Area



II. Background

Nationally there has been an increased emphasis to reduce the risk of wildfire causing damage to life and property. The National Fire Plan (NFP) of 2000 provided the impetus to prioritize treatment around wildland urban interface (WUI) areas. The 10 year Comprehensive Strategy (August 2001) melded the National Fire Plan concepts into a broader collaborative effort, also promoting hazardous fuel reduction in the WUI. Since the National Fire Plan was approved, the Healthy Forest Initiative (2002) and the Healthy Forest Restoration Act (2003) have reinforced the need for fuel hazard reduction projects that focus on protection of life, property and firefighter safety, especially in the wildland urban interface. The Cohesive Strategy (October 2000) responded to government studies, which recommended a need for a strategy to reduce fuel build up in the west. In response to severe fires in 1994, the 1995 Federal Wildland Fire Management Policy (Updated 2001) set the stage for an interagency effort to improve our collective ability to be better wildland fire risk managers.

Each national level effort has a slightly different emphasis, but there is a common thread overtone. Public land managers need to reduce the risk to firefighters, the public and property. Fuels reduction in the wildland urban interface is consistently a high priority.

The Lonesome Wood Vegetation Management proposal is an outcome of the Hebgen Watershed Risk Assessment, which was completed in November 2005. The Risk Assessment was a landscape level assessment of the risk of wildfire to a variety of resources if no management actions were taken in this area. Generally speaking, the main concern for this area is wildland fuel buildup in the area, which has a high degree of recreational and urban development. Wildland fuel is live and dead vegetation on the ground and in the tree canopy that in turn can pose a high fire risk. There are also opportunities to restore aspen habitats. Upon completion of the watershed assessment, a core team of resource specialists spent the summer of 2006 identifying a site specific proposed action, referred to as the Lonesome Wood Vegetation Management Proposal or Lonesome Wood. (EA pp. 1)

Wildland Urban Interface in the Project Area.

Wildland Urban Interface (EA, pp. 1-3)

The project area includes many private residences and 34 recreation residences located along the Denny Creek Road which becomes Forest Service Road (FSR) #167, also called the Hebgen Lake Road. The road is an 18 mile dead-end road that is two-lane from Hwy 20 to just beyond Watkins Creek (about 14 miles) then tapers down to a very narrow, single lane road from Cozy Corners to its terminus (about 4 miles). The project area includes 34 recreation residences, private homes three heavily used developed campgrounds and several dispersed campsites. This area has been identified by the Forest Service as a wildland urban interface (WUI) at risk of wildfire because of poor access and heavy wildland fuel loadings near structures. (Hebgen Risk Assessment 2005)

Hebgen Lake is a summer and winter recreation destination. The project area is less than 10 miles to the west of West Yellowstone, Montana the western gateway community to

Yellowstone National Park. Two million of the three million annual visitors to the Park enter through the West Yellowstone Gate. In combination, the predominately forested environment, high degree of human development, and tourism has resulted in a very complex fire management situation.

In association with the National Fire Plan and associated appropriations, the Federal Register (January 2001) lists the West Yellowstone area, including this project area, as a community in the vicinity of Federal Lands that is at risk of wildfire. The Gallatin County Community Wildfire Protection Plan (GC-CWPP) identified the Hebgen Basin, which includes the Lonesome Wood project area, as a WUI. Community Wildfire Protection Plans were encouraged through the Healthy Forest Restoration Act to allow local governments an opportunity to identify their WUI and develop a plan to protect the lands. (USDA2/2004)(GC-CWPP 2007)

Education and Ongoing Efforts on Private Property (EA, pp. 2-3)

While the GC-CWPP is new, the education effort with property owners in the Lonesome Wood project area has been ongoing for many years. Over the last 10 years approximately 65 percent of the private land and home owners have made an attempt to remove hazardous fuels and create defensible space on their leased lots and/or private land.(Anderson 2007) During the public involvement process, these property owners expressed strong support for wildland fuel reduction on NFS lands. While the support was not unanimous, during public meetings and through scoping comment letters a large majority of property owners expressed support for fuel reduction on National Forest land to enhance the effectiveness of their own treatments.(EA, pp. 23-24)

Fire History and Weather Trends (EA pp, 3)

In the past 10 years, the Gallatin National Forest has experienced an increase in wildland fires that escape initial attack. There has been an increase in size, rate of spread and intensity making wildland fires less likely to be kept small or even controlled. Twice as many fires have started in the last decade on the Hebgen Lake District as compared to the 1980's and 90's. (Anderson 2007) (EA pp. 3) The Hebgen Lake District's 10-year (1998-2007) record shows 103 wildland fire starts with six large fires. These large fires are very costly. For example, suppression efforts for the Madison Arm Fire cost approximately 3 million dollars.(Madison Arm Fire Report, 2007)

In addition to drier climate, other contributing factors include bark beetle activity that continues to add more dead trees and fuel loading.(Novak 2007) The database that tracks local weather and fire history shows a decadal increase in temperature of +2 degrees Fahrenheit since the 1980's and 90's, while the precipitation trends show a decadal average decrease of 2" during fire season. This trend is paralleled with decreasing snow pack in the winter months and warmer temperatures. This rise in temperature and decrease in precipitation has had an influence in increased fire activity earlier in the season. (Anderson 2007)

III. Purpose and Need for Action

What is the Purpose for implementing this project? (EA pp. 5-6)

This integrated vegetation treatment project isdesigned to achieve the goals of increased firefighter and public safety, reduced wildland fire risks to adjacent property and Forest Service infrastructure, in lands that have been identified as WUI. The goal will be achieved with stand density thinning of crown and ladder fuels, surface fuel reduction and prescribed burning. Aspen enhancement will maintain low fire risk conditions. The treatments will reduce fire behavior, including flame length, fire intensity, rate of spread, spotting potential, and potential for active crown fire in the WUI and evacuation route while converting conditions to lower risk fuel models. In the EA, Figure 1-3 shows the desired outcome of treatments. In addition, treatment of areas in and adjacent to the WUI, are designed to enhance and maintain aspen communities, which in turn will benefit wildlife species and maintain low fire risk areas.

Previous studies on fuel treatment efficacy use Rothermel's surface fire model and Van Wagner's crown fire model to determine fuel treatment effects on potential fire behavior (Stevens 1998; Scott 1998; Fule' et al. 2001; Brose and Wade 2002). These studies have shown that thinning treatments can reduce crown fire hazard by reducing ladder and canopy fuels. Key findings from An Assessment of Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition on the Angora Fire (Murphy, Sexton. August 2007 p. 11 - 17) demonstrate the effectiveness of fuel reduction treatments in achieving firefighter and public safety and property protection goals. The Angora fire burned through areas of similar fuels and fuel reduction treatments that are being proposed in the Lonesome Wood project. (EA, pp. 6)

What is the need for action? (EA pp. 6-11)

Large crown fires with high fire intensity, elevated flame lengths, rapid rates of fire spread and long spotting distances for firebrands are expected under the existing conditions. Proposed stand density thinning and associated activities target the removal of excessive surface, ladder and crown fuel. This begins to address the fire behavior concerns that conflict with the purpose of this project.

Expected Fire Behavior

Flame length has direct influence on firefighter safety, effectiveness of suppression efforts, and the ability to use evacuation routes safely. Modeling of the vegetative conditions in the project area indicates a wide range of flame lengths from 4-28 feet. These flame lengths would limit safe use of the Hebgen Lake Road (FSR #167) for egress or ingress and would likely result in crown fire initiation. (Anderson 2007)

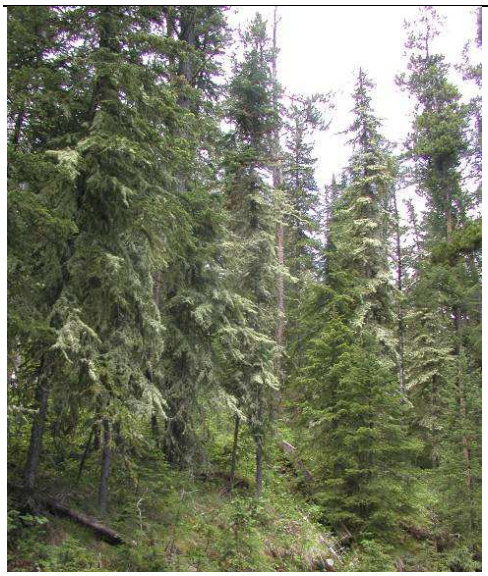
Another fire behavior indicator that influences suppression tactics as well as the potential for sustained crown fire is rate of spread (ROS). Fires traveling at rates in excess of 20[1] chains per hour threaten firefighter safety and effective suppression and increase the risk of sustained crown fire. The fuel conditions in the project area would support rates of spread ranging from 24-72 chains/hour. (Anderson 2007)

[1] Chains is a measurement unit equal to 66 feet.

Fireline intensity and flame length are related to the radiant heat felt by a person standing next to the flames. Due to the vegetative fuel conditions the projected fire intensity within the project area ranges 200-1800 BTU's. These intensities pose a threat to fire fighter and public safety, property and resource protection as well as safe evacuation routes. These fire intensities would easily sustain a crown fire and have a high potential for resource damage. (Anderson 2007)

Fuel models help to define fire behavior. Fire behavior depends on forest vegetation density, composition, and amount of surface fuel, its arrangement, moisture content, prevailing weather and physical setting. There are 13 fuel model (FM) types. These models in combination with dead and live fuel moisture content, slope and wind speed provide a basis for prediction both fire spread rate (chains per hour), intensity (flame length) and possibility of crown fire spread for this project. (Anderson 1982) EA, Section 3.2.1 discusses fuel models in more detail.

Fuel Model 10 conditions in Unit 2.



Fire Behavior Fuel Models (FM) 10, 8, 5 and 2 are represented within and adjacent to the project area. Fuel Model 10 conditions dominate the project area. Based on fuel models, crown fire is the expected fire type in the proposed units.(Anderson 2007) Fuel model 8 areas support a slow-burning, lower intensity ground fire with low flame lengths, which are less likely to move into the crowns of the trees. These lower risk conditions pose less risk than FM 10 areas, however, the conditions need to be maintained so they do not move into FM 10 conditions.

Active crown fire is a fire in which the entire fuel complex becomes involved, but the crowning phase remains dependent on heat released from surface fuels. ***Passive crown fires*** are fires in which individual or small groups of trees torch out, but solid flaming in the canopy cannot be maintained except for short periods. Crown fire is more difficult and less safe than surface fire to control because of the higher flame lengths, intense heat and faster rates of spread. Crown fires typically burn more acres; are costly because they require expensive suppression tactics such as air tankers and helicopters; result in more damage to the resources such as soil and water due to fire intensity; and are very hazardous to the public and firefighters again due to fire behavior and riskier suppression tactics.

Crown fire burning through the Madison Arm area in 2007.

Fire behavior modeling in the proposed treatment units indicate that fuel conditions and expected fire intensity would result in active crown fire spread into or out of private land and summer home or recreation areas.(Anderson 2007) The risk of sustained crown fire is high in and adjacent to much

of the WUI in this area.

An indicator of fire spread into or out of the WUI is tied to spotting distance. Spotting distance is a distance that one can expect potential spot fires resulting from firebrands created by torching trees, burning fuels or wind driven surface fire. Estimates for FM 10 areas supporting crown fire show spotting distances of 0.7-1.2 miles in most of the project area. The ideal spotting distance is 0. When the distance reaches up to .5 miles, direct suppression actions become unsafe.

Fuel Model 2 is primarily made up of cured or dead fine herbaceous fuels. FM 2 conditions generally are low risk, however, they need to be maintained so the conditions do not move into a FM8 or FM10 conditions. Portions of units 13, 18 and 30 have conditions in this fuel model. (Anderson 2007)

Hazards for Firefighters

With the overall increased wildland fire activity, there is an increased demand for suppressing wildland fires near structures and the hazards that come with private land and homes (gas lines, propane tanks, fences, power lines, septic tanks). Wildland fires with increased fire behavior (crown fire activity) make defensible spaces, safety zones and evacuation routes less safe and more difficult for firefighters. The proposed treatments would help to provide defensible areas where fire fighter can suppress fire with fewer hazards and safer evacuation routes and safety zones.

Evacuation

The proposed treatments along the evacuation routes are important to ensure access for emergency personal and equipment response. Evacuation route treatments are equally as important for possible evacuation of private homeowners, landowners and forest users.

The Hebgen Lake Road (FSR #167) provides the only road access to the west shore of Hebgen Lake and is the primary evacuation route. The route is narrow, with heavy forest fuel accumulations immediately adjacent to the road. Expected flame length and fire intensity is high along the route.

The Hebgen Lake Road – the primary evacuation route.

Thinning and burning or biomass removal in the evacuation route reduces potential fire behavior such as fire intensity, rate of spread and flame length. The effective size of safety zones serving as evacuation routes is tied to flame length less than 4 feet, combined with fire intensity below 100 BTU's.

To improve the effectiveness of fuel treatment in the WUI and the evacuation route, fuel breaks would be created. Thinning would improve the effectiveness of the adjacent units, while potentially providing some revenue to offset the cost of hand treatments.

In the selected alternative limited portions of units 7, 11, 17, 21 and 26 address this need. Twenty five percent or less of these units were added to the evacuation routes. The changed condition would lower fire spread rates and result in a change to expected fire type from crown fire to surface fire.

While these unit extensions are beyond the 400 feet evacuation route design, they are within the WUI identified in the GC-CWPP (2007).

Prescribed burn units are fairly open with non-continuous fuels. Over time these open areas are slowly being encroached by conifer trees. The encroachment reduces the effectiveness of the area as a natural fuel break.

Typical low risk area to be maintained by slashing and prescribed burning.

The units designed for prescribed fire are open with timber and grassy meadows, and patches of quaking aspen. Generally, there is less risk of severe fire in this type of naturally open area. In a cured state, these fuels produce very active fire (rapid rates of spread, high intensity, and long flame lengths). When open flames encounter dense patches of low-limbed trees, firebrands may travel long distances. Torching and the risk of firebrand development would be lowered if small trees are slashed and mature trees are limbed.

Removal of conifer trees while they are small is very low impact with minimal soil disturbance. Deferring maintenance increases the likelihood that more aggressive management may be needed in the future.

Aspen enhancement and maintenance of low fire risk –

The Hebgen Basin Watershed Risk Assessment (HBWRA) (2006) identified aspen communities as a valuable habitat component that should be maintained or increased within the Risk Assessment area, which includes the Lonesome Wood project area. The HBWRA states: "Encourage quaking aspen regeneration throughout the analysis area. Aspen stands generally have low fire severity and provide a good fuel break within a lodgepole pine forest." (HBWRA 2006. pp. 23) "Successfully regenerating existing aspen stands within the analysis area (Hebgen Watershed Risk Assessment Area) would be beneficial, whether through fire-use, prescribed fire, or mechanical treatments."(HBWRA pp. 38) In this Project Area, aspen stands are being encroached by conifers of various age classes.

IV. Proposed Action

As disclosed in Chapter 1 of the Environmental Assessment (EA) I had proposed to reduce forest stand density through thinning, to remove excessive dead and down trees, branches and activity related slash, and to implement slashing and prescribed burning. The proposal included a combination of treatments on approximately 3,100 acres along the Hebgen Lake Road (FSR #167) on the west side of Hebgen Lake.

Proposed treatments include:

Reduce stand density by thinning. Generally treatment would remove about 50% to 60% of the existing trees per acre in all diameter classes. For larger trees over 10 inches diameter at breast height (dbh), spacing between trees varies. Generally, in lodgepole pine stands the

spacing would be 20 to 25 feet between trees. Larger Douglas-fir stands would be spaced 30-40 feet between trees. Thinning treatments in the younger sapling to pole size (up to 10" dbh) would thin from below about half of the present biomass, leaving around 15 to 17 feet spacing between boles for trees less than 10" in diameter.

Units identified for commercial thin (1735 acres) would have all size classes of trees removed to meet desired stand density with a majority of biomass removal occurring in the size classes at or above six inches in diameter. Trees over six inches in diameter to be removed would be skidded to landings and hauled offsite for use as a commercial product such as sawlogs. A ground based logging system would be the primary method of tree removal with skidding limited to slopes less than or equal to 35%. Trees less than 6 inches in diameter may also need to be removed as described in the next paragraph or in conjunction with commercial logging.

Units identified for small tree removal (835 ac.) either have mixed ages or primarily small trees. The majority of trees to be removed are smaller than 6 inches in diameter. The treatment may be implemented by hand or with tracked equipment that would facilitate removal of the biomass from the landscape. Biomass could be disposed of or utilized as commercial product such as chips, posts or poles. Generally, the equipment impact is expected to be less than 6 pounds per square inch (psi) on the surface. About ½ of the proposed units in this treatment type are on slopes less than 35%, on which equipment would be permitted to allow mechanized removal of biomass. On slopes greater than 35%, the thinning and associated treatments are expected to be implemented by hand since there is no known technology at this time that would be suitable. If technology becomes available, those options would be acceptable.

Aspen enhancement – slashing, burning. Units with Aspen enhancement objectives (1400-1500 acres) would be designed to meet aspen related objectives as well as fuel reduction objectives, if they are in the WUI or evacuation routes. Conifers would be removed within clones and about 1 ½ tree lengths out from the clone to help reduce competition for sunlight and water, and to stimulate sprouting. These areas will be monitored for aspen sprouting response, and if needed prescribed burns would be applied to stimulate sprouting. In areas with excessive fuel accumulation but adequate sprouting, piles would be burned as needed. These treatments are integrated with other treatment objectives.

Prescribed burning. Areas with conditions that are low risk of severe fire would be maintained with broadcast burning (440 ac.), which reduces conifer in-growth and surface fuels. Fall and spring burning would be considered. Broadcast and pile burning would also be used to treat activity related slash.

V. Decision and Reasons for the Decision

A. Decision Criteria

In making my decision regarding proposed vegetation management in the Lonesome Wood Project Area, I focused on the following criteria:

1. The effectiveness of the alternative toward meeting the purpose and need for action, which emphasizes reducing wildland fire risk to life and property in the wildland urban interface (WUI) and the evacuation route on the west shore of Hebgen Lake along the Hebgen Lake Road (FSR #167). The purpose and need also includes effectiveness of the treatments toward maintenance of or enhancement of aspen forest in and near the WUI.
2. Responsiveness to public comments (Decision Notice, Appendix A) and the environmental issues (EA, pp. 24-26) identified in association with this project.
3. Whether the alternative is reasonable to implement given the extensive timing restriction and cost associated with implementation and restoration measures.
4. Consistency with laws, regulations, and policy as described in detail in Section VII of this Decision Notice.

B. Decision

Based on a comparison of alternatives with the criteria described above I have decided to implement Alternative 3 – (Alternative with Resource Mitigation for Moose Winter Range and Inventoried Roadless lands) with some minor changes, herein after referred to as the Selected Alternative. The Lonesome Wood Environmental Assessment and information generated from the Response to Comments (DN, Appendix A) from the 30 day comment period provided the basis for my selection.

Overall Goal: While meeting the purpose and need for action, this alternative was designed to reduce impacts to moose winter habitat, eliminate logging in inventoried roadless lands that retain their roadless character and eliminate logging in old growth stands in compartment 709. The proposed treatments are in the wildland urban interface, which includes evacuation routes. Aspen treatments are generally combined with WUI units but may extend beyond the ½ mile distance used for WUI protection boundaries.

My decision incorporates the following changes from Alternative 3 in the EA. I reduced the amount of temporary road construction by 3/10 of a mile and project road reconstruction by 9/10 of a mile. I eliminated 46 acres of treatments in units 6 and 10 (small tree thin) and 33 acres of commercial thin in unit 31 and 14. These changes to Alternative 3 further reduce the number of acres of moose winter range to be affected. I removed an old growth stand from within the boundary of unit 31. The presentation of design features and mitigation is reorganized in response to public comments that indicated people did not understand the extent of mitigation and design features that resulted from the interdisciplinary process for this project.

The treatments and methods are the same as those described in the previous section and for the proposed action in the Environmental Assessment (pp. 11-14). Additional detail related to treatment can be found in Appendix B of this Decision Notice. Table DN-1 and Figures DN-2 and DN-3 display the units in the selected Alternative.

Table DN-1: Selected Alternative - Primary Treatment Summary

Proposed Unit	Purpose For Treatment	Acres of Commer-cial 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	WUI & Evacuation	65	150 feet of temporary rd		
2	WUI & Evacuation			220	
5	WUI & Evacuation	25	630 feet temporary rd		
6	WUI & Evacuation			52*	
7	Evacuation Route & Fuel Break	25	530 feet of temporary rd		
9	Evacuation Route	15	150 feet of temporary road		
10	Evacuation Route & WUI			122*	
11	Evacuation Route & Fuel Break	40	300 feet of temporary road		
13	WUI & Evacuation				45
14	WUI, Aspen, Evacuation Route	205	1750 feet temporary road or .33 miles. 2640 feet of existing project road to be reconstructed or .5 miles.		
15	WUI, Aspen, Evacuation Route			75	
16	Evacuation Route, WUI			25*	
17	WUI, Aspen, Evacuation	120	.35 miles of temporary road or 1850 feet.		

Proposed Unit	Purpose For Treatment	Acres of Commer-cial 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
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	4	400 feet temporary road	26	
24	Evacuation Route, WUI, Aspen		0	15*	
25	WUI, Aspen Evacuation			80*	
26	WUI, Fuel Break, Evacuation	375	3430 feet of temporary road and 650 feet of project road to be reconstructed or .8 total miles.		
27	Evacuation			45*	
29	WUI, Aspen Evacuation	105	530 feet of temporary road.		
30a	Aspen, WUI	120	.6 miles (3168ft) of temporary road.		
30b	WUI, Aspen				250
31	WUI, Aspen	111	.25 (1320 feet) miles of temporary road.		

Proposed Unit	Purpose For Treatment	Acres of Commer-cial 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
32	WUI, Aspen	190	.5 miles of temporary road and .6 miles of project road to be reconstructed. 1.1 miles total.		
Estimated Totals		**1572 acres**	**3.7 miles of temporary road and 1.4 miles of existing project road to be reconstructed.** **5.1 total**	**745 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.

Activities associated with the primary treatments: 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.

The project is designed to have landings away from the Hebgen Lake Road (FSR #167) to minimize impacts to scenery and public safety conflicts. The temporary roads will maintain average skid distances of ¼ mile or less generally. Temporary roads will be used for implementation of the project, then closed. Rehabilitation of temporary roads includes recontouring, erosion control, scarification and seeding. If needed, closure devices will be installed to eliminate future use. Use of old project and user built roads will minimize new disturbance and ensure restoration of those old roads.

The portion of the Hebgen Lake Road (FSR #167) beyond the Clark Springs 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 will 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 will be a turn-around constructed just past the last summer home turnoff for emergency vehicles. Turn-arounds may be constructed near the Romset homes as well, dependinding upon funding.

The Hebgen Lake Road (FSR #167) will be closed the last two weeks of November to allow landing of logs and slash on the road near unit 26 from mile 4.6 to 5.4. All material associated with the logging operation will 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.

Figure DN-2: Selected Alternative Map 1 of 2

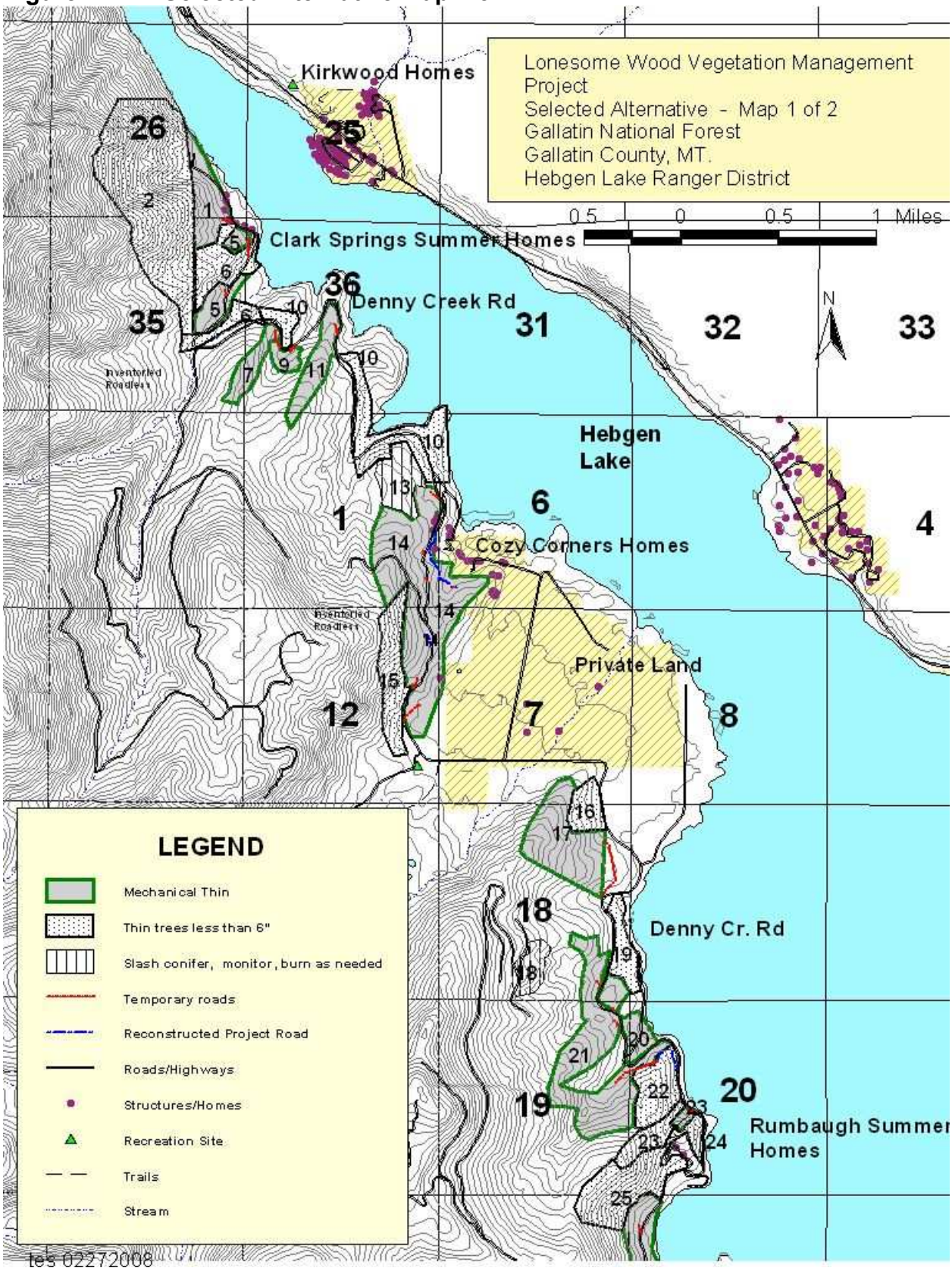
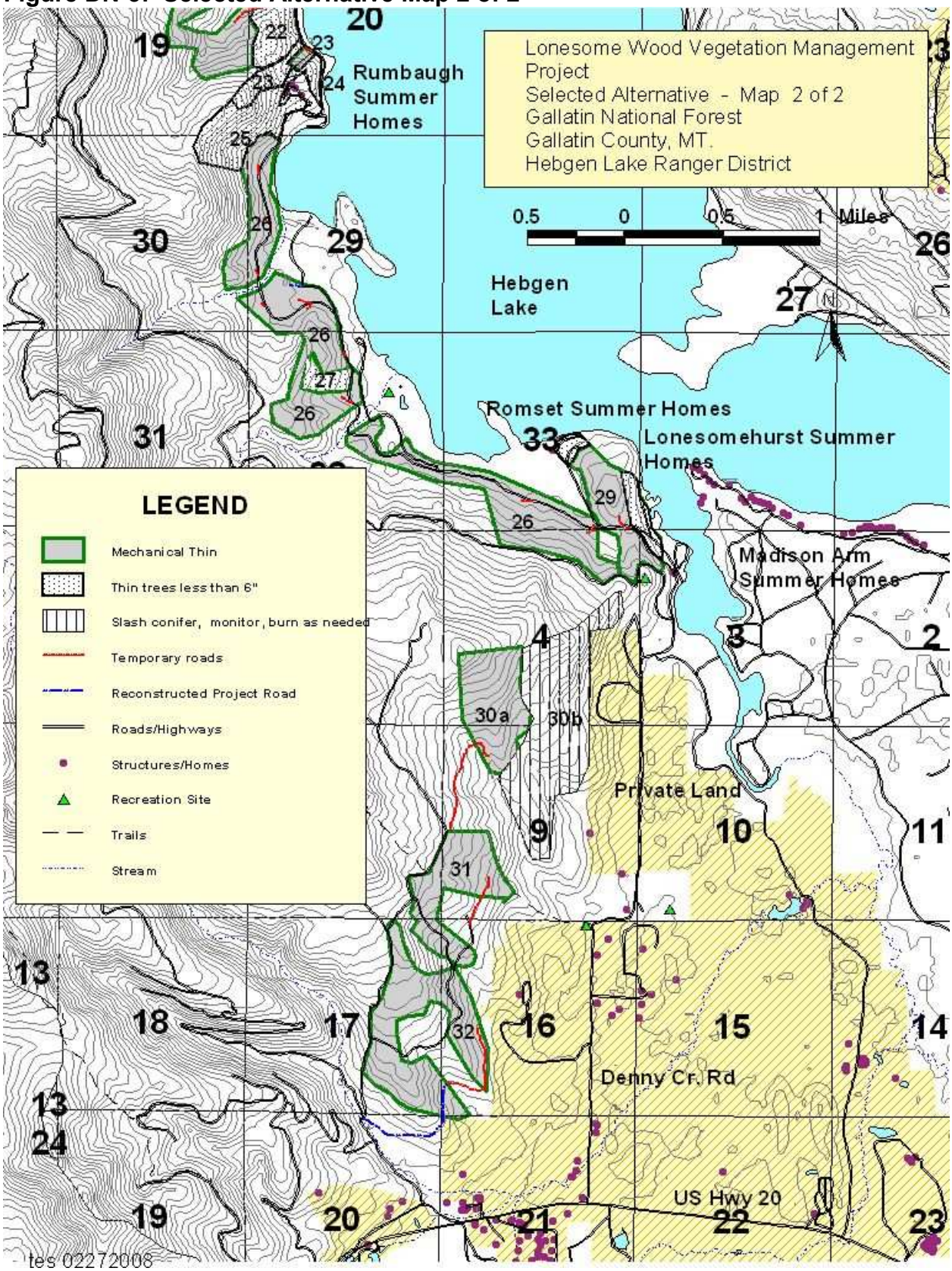


Figure DN-3: Selected Alternative Map 2 of 2



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

The activities proposed could be implemented with Forest Service crews, service contracts, timber sale contracts and/or stewardship contracting. Value from the wood products removed and sold will be re-invested into the project area through stewardship contracting or other means. All primary treatments, associated activities, mitigation and other restoration projects such as travel plan implementation opportunities and fish barrier installation will be considered for implementation with stewardship funding subject to satisfactory compliance with NEPA procedures.

Mitigation and Design Features for this Project.

The following mitigation and design features were developed specifically for the Lonesome Wood project unless otherwise noted. Some practices apply to all projects because they may be a state law or standard or they may be a Forest Plan standard. There are extensive timing restrictions incorporated in my decision. Table B-1: Operating Period by Treatment Unit is included in Appendix B that shows when units are open to operations.

Air Quality

1. All Lonesome Wood project burns will 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 will be done in coordination with the Montana/Idaho Airshed group on days of good-excellent stability. *This practice applies to all prescribed burning operations.*

2. Broadcast burning will be attempted springtime (May/June) or fall (late September/November) when north slopes are moist and wildfire potential is very low.

3. Within the minimum ambient distances of residences, the public will be warned about high smoke concentrations and advised not to travel outside of a vehicle or be outside of residences. Pile burn units will be burned one unit at a time to avoid cumulative smoke effects between units. These constraints will keep smoke emissions within the National Air Quality Standard (NAAQS) for particulate matter $PM_{2.5}$ 24 hour average concentration of 35 ug/$m^{3.}$ Minimum ambient distance range from of 0.1 to 0.2 miles.

Amphibian Protections

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 are still within their hibernacula.

d. In the evening/dusk hours from April 1-September 15, no motor vehicle use will be allowed on roads that are currently bermed and/or gated and temporary roads. Toads congregate on roads in the evening hours because they retain heat. When nightly temperatures drop and insect flights subside evening road use could be resumed.

In my decision I did not include the timing restriction for mechanized equipment in unit 16 and 17 between 4/1 and 10/15 that was proposed for Alternative 3. The determination in the biological evaluation for Amphibian Species (Roberts 2007) recognizes that individuals may be impacted with this project. Project implementation will not lead toward federal listing for the population with or without the timing restriction mitigation.

Heritage Resource Protections

1. Avoid impacts to the 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. The Archeologist will work with the Sale Administrator to ensure the site is avoided.

Invasive Weed Protections

The weed specialist will 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 are generally along roads.
2. Avoid treatment activities within the orange hawkweed patch in unit 29 during flowering / seed spread (June 15 to the end of August). Equipment will be washed when leaving areas infected with orange hawkweed (unit 29), and oxeye daisy near unit 6 adjacent to Trapper Creek.
3. 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 will be incorporated into the District annual program of work for weed spraying.
4. 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.
5. Power wash and inspect all off-road vehicles before entering the project area. This will help to prevent introducing new invasive weeds into the area.
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.

Livestock Grazing

1. To reduce conflict between cattle and thinning operations notify the range allotment permittee when thinning trees in units 16, 17 and 19. The Range permit administrator will 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 will need to be repaired.
3. The old gravel pit near the corral will not be used for log decking or slash disposal. This gravel pit is located just south of the Hebgen Lake 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.

Public Safety Protections

1. No operations will 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.
2. Landings will be set back from the main road. This will keep logging vehicles, slash disposal, log yards, etc. off the main road, other than for transport to and from the treatment site. This will result in short temporary spur roads.
3. Speed limits for log trucks and logging related traffic will 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 Hebgen Lake Road.
4. The project area offers opportunities for public motorized travel and off-road hiking and horseback riding use. Contracts will contain provisions for public safety requiring the development of a traffic control plan that will be agreed upon prior to commencement of activities.
5. Warning signs will be installed at key entrances and exits during the time of the activity and removed or covered during times of inactivity.

Recreation Outfitting

1. No mechanical treatment will occur in units 14 and 15 from June 14th to Labor Day. This time period is the prime operating season for the Firehole Ranch. (Fusselman 2007)
2. If outfitted guests are staying at the Firehole Ranch, mechanical treatment operations will be limited to the hours of day after 9 a.m. in units 14 and 15 from Labor Day through the end of the third full week of September. The Forest Service will coordinate with the Outfitter to determine if guests are present.
3. In coordination with contractors, the Forest Service will notify the Firehole Ranch 7 days in advance of thinning operations when working in units 10, 11, 13, 31 and 32. The outfitter is authorized to operate on trails within these units. No reported use has occurred in these units in the last 5 years.

Roadless Protection (applicable to unit 2)

The intent of the following mitigation is to leave a natural appearance in the roadless area. Within unit 2, treatment is limited to generally small diameter trees generally less than 6 inches in diameter by prescription. These practices need only be applied to the extent needed to maintain a natural appearance.

1. Select trees to cut where possible growing in shrubby areas to hide cut stumps.
2. In the lower 1/3 of the roadless portions of unit 2, flush cut small diameter understory trees and place dirt, debris or slash on cut stumps when possible to minimize highly visible management alterations.
3. Minimize stump heights elsewhere (1 foot or less where practical). Angle cut faces away from likely travel corridors. These practices apply to trees over 7 inches in diameter. In unit 2, cutting of these larger trees will be incidental.
4. After hand piles are burned, ensure that unburned material will be 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 will be achieved through tree marking guidelines and timely restoration of temporary roads, landings and skid trails. The landscape architect will 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 will be maintained.(Ruchman 2007)

1. <u>Leave trees</u>: In all areas, selected trees with the largest and healthiest crowns will 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 will be left in shapes that also vary. When possible, use irregular spacing for leave trees and grouping.
2. <u>Forest Cover Transitions</u> - 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 will help avoid 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 <u>unit is surrounded by denser forest</u>, the percent of thinning will be progressively <u>reduced</u> 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 to 2 , 7, 9, 10, 11, 12 and 14 to 15 where there are critical observation areas along Highway 287 within one mile across the lake.
- Where <u>the unit is next to an already-open area</u> (either natural meadow or an already-logged area), the percent of thinning should be progressively <u>increased</u> 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, will aim to break up that straight-appearing edge by removing trees to create some holes of varying sizes and spacing. These actions will mitigate the already harvested area to the east of 17 and bring it up to meeting its assigned Forest Plan visual quality objective (VQO) of Partial Retention.

- In units 31 and 32, the lower portion of the units will be designed to appear somewhat similar to the thinning on private land downhill of the unit.
- In proposed units where there are tall, spindly lodgepole surrounded or adjacent to younger, fuller 20 foot tall or so lodgepole, the older lodgepole will be removed where possible to visually convert as much of the entire stand to the younger age. This will remove the visual contrast due to previous logging, such as in units 19, 20, 26, 27,

Where older spindly lodgepole pine remain onsite, younger lower trees will be left around the older lodgepole pine trunks to create a visual transition between forest size classes.

3. Aspen Treatment Transition - Where openings of approximately 100 feet will be created around aspen clones to stimulate and encourage their growth, those openings will 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 Hebgen Lake Road (FSR #167) 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 will meet with property owners to address concerns related to tree marking and their immediate view, if property owners request a consultation.
5. Road and Trail design and restoration should appear natural for drag corridors, temporary roads or staging areas (landings): **within 100 feet of the Hebgen Lake Road (FSR #167)** and other recreation site roads. Adherence to the Soil Restoration and Invasive Weed design features will restore these areas. Additional requirements for scenery include:

- Any access road or corridor will be designed or created to not run in visibly straight lines to avoid creating straight openings, when possible.
- Topsoil will be stockpiled when constructing temporary roads or landing/staging areas. Stockpiled topsoil will be used during restoration to facilitate revegetation.
- Within one year of completing mechanical thinning, those driving and parking surfaces will be restored.

6. Thinning between recreation residences and the lake will be designed to avoid making structures significantly more visible from the lake or Highway 287.

7. Thinning of conifers between the Denny Creek Road and the lake, will 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.

8. After completion of the project, the landscape architect will monitor visually conspicuous stumps and take action to make them less visible within 50 feet of either side of the Hebgen Lake Road (FSR #167) Cherry Creek and Spring Creek Campgrounds, recreation residences and associated roads and Trail #217.

For more information see the Scenery Report. (Ruchman 2007).

Sensitive Plants

1. 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 to eliminate the chances for disturbing Jove's buttercup populations.

2. 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 will be followed for mechanical harvest units to keep soil disturbance below unacceptable (15%) levels. The practices are listed in the 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 will consist of re-contouring all temporary roads and scarifying skid trails according to the Restoration plan.(Shovic 2007) Re-contouring will 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. Skid trail scarification can be accomplished with a tractor to a depth of 4 or more inches deep across the entire width of the skid trail. Skid trail restoration also applies if mechanized equipment is used in small tree thin units 9, 10, 16, 19, 21, 22 and 24. A majority of these units are prescribed for understory thin treatments, in which there is only a possibility of mechanized biomass removal. Otherwise non-mechanized methods will be used to thin the understory trees.

Water Quality, Riparian and Aquatic Habitat Protections

1. Standard timber sale protection clauses will be applied to the commercial harvest activities to protect against soil erosion and sedimentation.

3. Standard Best Management Practices or BMP's (DNRC 2002) including Montana SMZ compliance rules (DNRC 2006) will be applied during design and implementation of all commercial and non-commerical activities. Of particular importance is drainage and slashing of skids trails upon unit completion. The State of Montana requires that BMP's be applied to all activities to comply with State Water Quality standards. Those sections are hereby incorporated by reference into this decision, as well as State of Montana Forestry

BMP's (Appendix B).

4. The District fisheries biologist will be present when crews are laying out treatment units and marking trees in commercial or non-commercial treatments within riparian areas along streams. The fisheries biologist will be allowed the discretion to widen the 15 foot no cut zone to insure stream bank stability in a rare situation where 15 feet was deemed inadequate.
5. No trees will be cut within 15 feet of the Ordinary High Water Mark along any fish bearing Class 1 or Class 2 stream segment within commercial and non-commercial treatment units. Removal of lower branches (or ladder fuels) of larger trees within this 15 foot no cut zone will be allowed if removal will not result in mortality to that tree. This mitigation measure is designed to protect streambanks, provide thermal regulation overhead cover, augment debris recruitment, and reduce or prevent sediment delivery.
6. Retain all bank-edge trees maintaining stable stream banks and trees leaning toward streams that can provide large woody debris within commercial and non-commercial treatment units.
7. Seeps and springs are perennially saturated, while most of the streamside areas are only seasonally saturated (usually during snowmelt runoff). Seeps and springs will 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 will be avoided in any ground disturbing activities (skidding or harvesting) to protect these domestic water supply source areas. In addition no surface disturbance will be allowed within 25' of pipelines and water distributions systems.
8. Additional spring sources used by wildlife in the Rumbaugh, Cozy Corners, and Romsett areas, and the area within 50' of these springs will 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 amended 3/2008).

1. No project activities (commercial logging, understory thinning, etc) will occur <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 shall occur 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 will be allowed within 330 feet of any bald eagle nest.
4. If the Moonlight nest is not active, this territory will be surveyed annually to locate potential alternate nest sites. If those identified nests are in the project area the above protecions (1-3) would be applied, as appropriate.

Moose

1. No project activities will 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 a portion of 30b and

all of 30a, 31 and 32. A map of moose winter habiat is in the moose report in Appendix C.

2. Osprey

1. No commercial thinning, understory thinning, or prescribed burning shall occur within 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 2007d).

2. Osprey nest trees will 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 most current habitat guidelines recognized by the Region will be applied. At this time the following standards are applicable.

1. A minimum 40 acre no treatment buffer will be placed around the nest 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) will be maintained within the territory.

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

Grizzly Bear

1. No public motorized use of temporary roads constructed for this project will be allowed.
2. Secure habitat temporarily reduced by project activities will be restored within one year of completion of those activities. This applies to temporary roads and harvest activities in Units 11 and 21.
3. Implementation of project activities temporarily reducing secure habitat will last no longer than 3 years. This will apply to temporary roads and harvest activities in Units 11 and 21.
4. Project implementation will be coordinated with the Caribou-Targhee National Forest so that there will be only one project temporarily affecting secure habitat at a time within the Henry's Lake #2 Bear Management Subunit (BMS).

General Wildlife

1. No public motorized use of temporary roads constructed for this project will be allowed. During project implementation barricades will be used to prevent public use. If needed an area closure could be implemented to facilitate enforcement.

2. All temporary roads constructed for the project will be closed upon completion of the project.

C. Reasons for the Decision

1. The effectiveness of the alternative toward meeting the purpose and need for action, which emphasizes reducing wildland fire risk to life and property in the wildland urban interface (WUI) and the evacuation route on the west shore of Hebgen Lake along the Denny Creek / Hebgen Lake Road. The purpose and need also includes effectiveness of the treatments toward maintenance of or enhancement of aspen forest in and near the WUI.

After reviewing the Comparison of Alternatives section of the EA (EA, pp. 47-52, the Fire and Fuels Discussion (EA, pp. 58-74) I've concluded that Alternatives 2, 3 and the Selected Alternative meet the purpose and need for action. The No Action Alternative does not address the purpose and need for action. Alternative 2 is most effective, then Alternative 3 and the Selected Alternative. All three of these alternatives notably reduce the risk to life and property in the WUI and along the evacuation route by reducing expected fire behavior. Additionally, all three alternatives enhance or maintain aspen forest in the project area.

Alternative 2 reduces fire behavior on 3,045 acres in the WUI and along evacuation routes. The treatments are very effective in reducing fire behavior to a level that will enable safer evacuation capability along the entire 18 NFS miles of the Hebgen Lake Road (#167). Alternative 3 reduces fire behavior on 2,732 acres in the WUI and along evacuation routes. The treatments are very effective in improving the evacuation capability on 16-1/2 NFS miles of the Hebgen Lake Road (FSR #167), and provide some improvement on the remaining 1-1/2 miles of the Road. The Selected Alternative reduces fire behavior on 2,652 acres and is similar to Alternative 3 in effectiveness of improving the evacuation capability of the Hebgen Lake Road (FSR #167), however it leaves about ¼ - 1/2 mile of the route untreated.

The decision responds to national, regional and Forest priorities to reduce risk to life and property in the WUI. The Selected Alternative reduces the risk to life and property within ½ mile of all home clusters within the area. The treatments near Lonesomehurst summer homes, Romsett summer homes, Cozy Corners and the Fire Hole ranch area are most effective. Near Clark Springs treatment options are limited. The risk to property and life is reduced in this area but not as effectively as in the vicinity of other homes. I considered other more aggressive treatments but the steep ground, variable vegetative conditions, extensive dead material and the Roadless Rule (2001) limit my management options. The Selected Alternative meets the purpose and need related to the WUI while protecting other valuable resources. Even though the selected alternative is slightly less effective in protecting the WUI than Alternatives 2 or 3, the integrity of the inventoried roadless area near Clark Springs is maintained more effectively with lower intensity treatment.

The effectiveness of treatments along the evacuation route from Trapper Creek to about Cozy Corners is less effective in the Selected Alternative because of the need to maintain moose winter range. I recognize the need for a safe evacuation route for the entire road length but acknowledge that considerably fewer forest users are at risk on this remote stretch of the Hebgen Lake Road. Under the selected alternative, treatments along 16-1/2 miles of the evacuation route are expected to meet the desired fire behavior conditions while the desired fire behavior

conditions are partially achieved on another mile of road, leaving ¼-1/2 mile of the evacuation route untreated. I chose the Selected Alternative because the treatments meet the purpose and need for action while the negative consequences associated with impacts to moose and inventoried roadless are minimized.

2. Responsiveness to public comments (Decision Notice, Appendix A) and the environmental issues (EA, pp. 24-26) identified in association with this project.

In coming to my decision, I considered internally generated and public issues submitted during the project design and scoping phase of this analysis (GNF 2007a, Scoping Content Analysis), and those comments submitted during the EA comment period (Appendix A and GNF 2008 EA Comment Period -Content Analysis). The Interdisciplinary Team thoroughly studied the various issues and developed a range of alternatives and mitigation measures that addressed the most critical issues (EA, Chapter 2). I reviewed the significant environmental issues listed below and evaluated the implications of each alternative.

Fire and Fuels. This issue was identified in the purpose and need for action. I discussed this issue in decision criteria C.1.

Moose Winter Habitat. This issue was identified as a concern by the District Wildlife Biologist and during public scoping. Moose on the east side of the Henry's Lake Mountains utilize a narrow band of habitat at the lower elevations along the shoreline of Hebgen Lake during the winter. Moose are considered highly charismatic by many people, and the opportunity to view this species is very important to recreationists (including summer home owners and permittees) within the project area. Data from harvest surveys and general observations indicate a declining population trend over the past 15-20 years. As a result, moose viewing opportunities have declined and moose hunting permits for this area have been cut substantially over this period with only 3 permits for bullmoose allocated annually in recent years. (EA, pp. 75)

Moose are not expected to be at risk of extirpation at either the local or larger scale under any Alternative. (EA, pp. 75-80, DN A-22-23, C-12 to C-19) At the local scale, approximately 1,300-1,600 acres of late winter moose habitat would remain under Alternatives 2, Alternative 3 and the Selected Alternative. This will be adequate to maintain a viable population in the project area. Montana Fish, Wildlife, & Parks continues to administer a hunting season on moose in this area in which 3 permits for bull moose are allocated annually. Moose permits would no longer be allocated for this area if the viability of the population were a concern. At larger scales, moose have a large distribution throughout western Montana and the Greater Yellowstone Area, and are hunted throughout this area (with the exception of National Parks). Moose in the Greater Yellowstone Area and across North America are not considered at risk of extirpation. The wildlife biologist spent considerable time consulting with peers on the Montana Department of Fish Wildlife and Parks and Gallatin Forest Biologists. The moose analysis for this project was peer reviewed with a unanimous conclusion regarding the potential effects to this moose population, given the available information.

There would be no immediate change to the moose winter habitat under Alternative 1, providing 1760 acres of suitable moose winter range. With no treatment, these stands would continue to provide suitable habitat until a disturbance event eventually occurred.

After implementation, Alternative 3 would retain 1,530 acres of the available moose habitat. This equates to about a 13% reduction (EA, pp. 75-80) as compared to Alternative 2 which would reduce moose winter range by 23%. In my decision I modified Alternative 3 to drop treatment acres in units 6 and 10 along the evacuation route because areas of moose winter habitat in the evacuation route were supposed to be removed in Alternative 3 according to the interdisciplinary alternative design plan. A portion of unit 14 in the WUI was dropped because the skid distance was over ¾ mile with the selected temporary roads. These modifications, coupled with some mapping errors[2] that were discovered, reduced the acres of moose winter range to be treated by 80 acres. Under my decision, approximately 9% of the total estimated winter moose habitat will be treated, leaving approximately 1,610 acres of suitable habitat. I've also included mitigation that restricts logging activities from December 1-May1 so disturbance to wintering moose from project activities is not expected. (EA pp. 80)

The Gallatin Forest Plan contains management direction for big game winter range. There is a Forest-wide standard specifying that "big game winter range will be managed to meet the forage and cover needs of deer, elk, moose, and other big game species in coordination with other uses (USDA Forest Service 1987, page II-18)." Additionally, much of the project area is within Management Area 13 which contains a standard that vegetative management practices will be used to maintain and improve the quality and quantity of big game forage and provide for a diversity of habitat for other wildlife species (USDA Forest Service 1987, page III-41). The Forest Plan management area (MA) 13 (USDA Forest Service 1987, page III-41) standard and Forest-wide standard for big game habitat (USDA Forest Service 1987, page II-18)" will both be met under all alternatives (Pils, 2007e amended 3/2008 and DN pages A-16 to A-22, C7 to C13. All habitat alterations, whether natural or anthropogenic, result in positive effects to some species and negative effects to others. For this project, while there will be adverse effects to late winter moose habitat, the aspen restoration component of the project will improve habitat quality for deer, elk, and many other wildlife species as well as moose outside of the late winter period. Since publication of the EA the moose winter habitat report was amended in response to some inquiries about effects to moose winter habitat and compliance with the Forest Plan standards discussed above. The amended report is included in Appendix C of this Decision Notice.

I reviewed the moose winter habitat analysis (EA, pp. 75-80). I participated in discussions with Forest Service and Montana Fish Wildlife and Parks biologists discussing the concerns related to this population and the expected effects from the alternatives. I concluded that all alternatives would be acceptable relative to moose winter habitat. However, the Selected Alternative minimizes the number of acres of moose winter habitat to be treated and will have the least impact to moose winter habitat and the population of the action alternatives.

Inventoried Roadless Area (IRA)

Alternatives 1, 2, 3 and the Selected Alternative comply with the Roadless Final Rule (2001) by focusing on generally small diameter timber within the units that retain their roadless character. The treatments are intended to mitigate the potential effects to ecosystem structure and threats to human health and safety from uncharacteristically intense wildfire events. (EA, p. 80-92) While

[2] The mapping errors were tied to GIS analysis where overlapping shape files were not exact and led to an overestimate of area impacted.

the treatments are not likely to stop a catastrophic fire, the resulting change in fire behavior is predicted to allow more time for safe ingress and egress for the public and emergency responders. The treatments will also reduce the risk of property damage to homes immediately adjacent to the IRA. Alternative 3 and the Selected Alternative have the least impact on roadless characteristics due to the low impact nature of the treatments in the IRA.

While a portion of units 13, 14 and all of 15 are within the IRA boundary, they do not retain their roadless characteristics. These lands have been substantially altered due to construction of a classified road and subsequent timber harvest. Exception Category 4 of the Roadless Rule (2001) recognizes that there are areas that no longer retain their roadless characteristics but have been included in the published IRA boundaries. Category 4 specifically allows management activities such as tree cutting and removal. (EA, pp. 91 and DN A-11 to A-12.) These units are treated the same in the action alternatives. Tree cutting in these units complies with exception category 4 and is therefore in complianxce with the Roadless Rule.

Canada Lynx

I reviewed the Canada Lynx Analysis in the EA (pp. 92-95), the amended specialist report (Pils 2007 amended 3/2008) and the Biological Assessment (Pils 2008) The Biological Assessment provides the complete analysis for the Selected Alternative, which has the least impacts to Canada Lynx habitat of the action alternatives. The United States Fish and Wildlife Service rendered a Biological Opinion for the Selected Alternative. "It is the Services biological opinion that the direct and indirect effects of the Lonesome Wood Vegetation Management Project, as proposed (Selected Alt.), fall within the range of effects analyzed in the Tier 1 (programmatic) Biological Opinion and therefore are not likely to jeopardize the continued existence of Canada Lynx." (USFWS 3/17/08)

I concluded that all of the alternatives comply with applicable guidance from the Northern Rockies Lynx Amendment, therefore selection of any Alternative is acceptable in regards to Canada Lynx. My Selected Alternative is preferable because it has the least impact on Canada Lynx habitat and it addresses other environmental issues and public comments more effectively.

Other Issues

I considered several other issues that were either unaffected, mildly affected, or the effects could be adequately mitigated for all of the alternatives. An assessment of each of these issues is provided in the EA (Appendix A). The Appendix includes discussion of the following resources:

- Aesthetics/Scenery
- Air Quality
- Aquatics/ Fish and Amphibian Species including Sensitive and MIS Species
- Economics
- Heritage Resources
- Invasive Weeds
- Livestock/Range Allotments
- Recreation/Special uses/Outfitting
- Sensitive Plants
- Soils (this information was amended. (Shovic 2007 amended 2/2008)

- Transportation/Roads Analysis Process
- Water Quality – analysis was amended in response to comments. (Story 2007a amended 3/2008)
- Vegetation – old growth, insects and diseases, structural diversity, huckleberry and wind thrown trees - this information was amended in response to comments.(Novak 2007 amended 3/2008)
- Terrestrial Wildlife Species
- Biological Evaluation for Sensitive Wildlife Species – this information was amended in response to comments. (Pils 2007 amended 3/2008)
- Elk
- Gray Wolf – updated due to delisting (3/2008)
- Migratory Birds
- Northern goshawk – amended in response to comments. (Pils 2007f amended 3/2008)
- Pine Marten

Effects analysis that was amended in response to comments incorporates discussion that is disclosed in the response to comments (Appendix A of the DN) and Appendix C (DN).

My decision includes a reduction of 46 acres of small tree thin, 38 acres of commercial thin in units 14, 31 and a reduction of 1.2 mile of temporary road construction or reconstruction. Because of this reduction in ground disturbing activity, the extent of expected effects for the issues that were either unaffected, mildly affected or the effects will be adequately mitigated are proportionally less than discussed in Appendix A of the EA for Alternative 3.

In response to comments, some additional analysis was completed for old growth. As a result the vegetation specialist report was amended. (Novak 2007 amended 2/2008) The updated analysis estimated that the amount of old growth that will remain in Compartment 710 after thinning is complete in Alternative 3 was changed from 5,422 acres to 5,232 acres, which also meant a change in the percent of forested lands in old growth after thinning from 41% to 40%. This change occurred because a more accurate method of determining old growth acres affected after thinning was used.(Novak 2007 amended 2/2008). However, my decision removed 46 acres of old growth forest from treatment in compartment 710, as a results an estimated 5,344 acres remain or 40-41% of the compartment. The old growth stand that was removed from within the boundary of unit 31 would not have been harvested since we excluded harvest in old growth forest in compartment 709 by mitigation. The change simply improves the map and estimate of effects for other resources.

In response to comments concerning species dependent on aspen, snags and old growth habitats a report was prepared on Biodiversity (Pils 2008a). For the readers convenience this report is included in Appendix C of this Decision Notice. The three important components of biodiversity analyzed in this report would be maintained in the project area under all alternatives. Additionally, aspen would be enhanced by the proposed treatments under Alternatives 2, 3 and the Selected Alternative. The project would have discountable effects on biodiversity for all action alternatives. (Pils 2008a, DN Appendix C Biodiversity)

In general, property owners support fuel reduction on NFS lands and an enhanced evacuation route but they expressed concerns specific to conflicts during project implementation. See Section VI. B. Consideration of Public and Other Agency Comments for more discussion. My decision and Alternative 3 more fully address the concerns of adjacent property owners associated with implementation. The No Action Alternative addressees some conflicts associated with implementation but does not achieve the purpose and need. My decision incorporates design features that address the issues raised during public involvement leading up to the EA. Stakeholders include summer-home owners and adjacent property owners among others. I did not receive comments to the EA related to implementation conflicts, rather the comments were more general, such as concern over a wildlife species or opposition to logging. For this reason, I believe the mitigation and alternative design address stakeholder concerns.

> *A-3. Whether the alternative is reasonable to implement given the extensive timing restriction and cost associated with implementation and restoration measures.*

The project includes extensive acres to treat and restore and is severely restricted due to timing constraints related to protection of moose winter habitat, bald eagle and osprey nest sites, public safety near summer homes and outfitter operations. (EA, pp. 32, 39, 40, 43-44) The Selected Alternative provides the most feasible project both from a cost stand point (EA, Appendix A pp. 15) and because there are slightly fewer timing restrictions providing a longer season of operation.

The cost estimates in the EA, Appendix A, pp. 15 for Alternative 3 show that there will be more receipts available for restoration work and project specific opportunities such as construction of emergency vehicle turn-arounds. The modifications I made in my decision, (i.e. the Selected Alternative) are projected to reduce costs from Alternative 3 since most of the acres removed are 'small tree thin' acres which are expensive to implement and are not expected to provide receipts or income.

The various timing restrictions curtail operations during the summer for most of the project area, leaving the time period from August 15 to October 1 as the primary period available for operations. (pp. 20-27) As a result, there will be approximately 44 - 88 days in a given year to complete logging and hand thinning work for many units. (Appendix B) In some years the weather may be mild enough to enable operations prior to July 1 and after October 1, but the elevation in the Hebgen Basin generally leads to a limited season of operation. An initial estimate indicated that about 285 days for commercial thin operations and 370 days for small tree thin operations will be needed to complete the primary work associated with my decision, or 5-10 years. Due to the restricted window of operations, the duration or length of time the project will take to complete is longer than I would prefer and may have undesirable implications for potential contract bids.

I evaluated all proposed timing restrictions to find opportunity for additional days to operate throughout the year. As a result, I did not select the mitigation that required timing restrictions in unit 16 and 17 related to western toads which is a sensitive species (EA, pp. 32). Though individual toads may be impacted by the project, the population will be maintained with or without the timing restriction. (EA p. 105 and EA Appendix A pp. 15). I would prefer to

provide maximum protection to individual toads, however the population will be protected and the project (with or without timing restrictions) was found to be is not likely to lead to a trend toward federal listing. Other amphibian protections remain in place in the Selected Alternative. (pp. 19)

Appendix B includes a table that shows the available operating period for units. The elimination of the timing restriction for western toads will provide an additional 45 days of possible operation in a given season for units 16 and 17. Many of the units are restricted to operations after Labor Day. Any flexibility to allow operations prior to Labor Day and early in the summer will offer flexibility that is likely to reduce the needed implementation timeframe from 8-12 years to 7-11 years.

The Selected Alternative minimizes summer-time disturbance to property owners and businesses on Forest and private property which is when most forest users are present. The number of years required to complete the work was a concern for property owners but they did not want to be disturbed in the summer either. There is a trade-off with these timing restrictions however, the short operating season approximately doubles the potential duration of the contracts needed to complete the work. The Selected Alternative provides the most flexibility to implement the project in the shortest time possible while protecting the varied and valuable natural resources in the Lonesome Wood project area.

The long duration of the contract is a real economic consideration and possible deterrent to potential contractors. Also, the expected benefit of wildland fuel reduction will not be fully realized until the primary treatments and restoration work are complete. For these reasons, any opportunity to lengthen the season of operation in order to reduce the duration of time required to complete the work is important to consider. The timing restrictions that remain in my decision are in my judgement, essential to meet habitat requirements and address social conflicts.

On balance I believe my decision is feasible to implement in a reasonable timeframe while satisfying social conflicts with neighbors and forest users. The timing restrictions also protect bald eagle and osprey nests, minimize the potential for weed spread in unit 29 and minimize disturbance to moose in the winter. (EA, pp. Appendix A, pp. 19-24, 47-50, 56-59)

A.4. Does the Alternative comply with applicable laws, policy and direction?

I've discussed compliance with applicable laws, policy and direction in Section IX of this Decision Notice and in the EA (Chapters 1, 3 and Appendix A). A comparison of compliance between the alternatives is summarized below:

Based on review of the analysis and disclosures in the sections referenced in the previous paragraph, I concluded that Alternative 1 (No Action Alternative) is consistent with laws, regulations, and guidelines. No vegetative treatments would occur in the Lonesome Wood Project Area with selection of Alternative 1 and opportunities to improve vegetative diversity and forest health would be foregone in the immediate future. Federal Fire Policy and direction that emphasizes reduction of risk to lives and property in the WUI would not be implemented.

I also conclude that Alternative 2 (Proposed Action Alternative), Alternative 3 and the Selected Alternative would be consistent with applicable laws, regulations, and guidelines. Implementation will reduce the wildland fire risk to life and property in the WUI in accordance with Federal Fire Policy and direction and in support of the Gallatin County Wildfire Protection Plan. This WUI benefit includes the improvement of evacuation routes for the public and emergency responders. These Alternatives would maintain and enhance aspen forest. Implementation will help create a mosaic of non-forested and forested structural stages and will improve wildlife habitat for those species dependent on non-forested habitat types such as grasslands, willows, aspen, and wet meadows in compliance with Forest Plan direction. Compliance with all other laws, regulations, and guidelines will be ensured by applying effective mitigation as outlined on pp.19-26 of the Decision and discussed in the EA on pp. 37-44, Chapter 3, pp. 58-95 and Appendix A.

D. Alternatives Studied In Detail

Alternative 1 – The No Action Alternative, in which the project area would have no fuels reduction at this time, no aspen maintenance and would be subject to natural or ongoing changes only. This Alternative does not achieve the purpose and need for action.

Alternative 2 - The Proposed Action was designed to meet the purpose and need for action for the Lonesome Wood Vegetation Management Project, and the project-specific desired future conditions. EA, Figure 2-1 and 2-2 Proposed Action Maps 1 and 2 display the proposed units. A complete description of the Alternative is in the EA on pages 28-31, 37-44. Alternative 2 meets the purpose and need most effectively but the potential impacts to moose habitat and inventoried roadless lands is less desirable.

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. The treatment proposed in unit 30 is modified in Alternative 3 to respond to public concerns and better meet the purpose and need for action. EA Figure 2-3 and Figure 2-4 displays the proposed units. A detailed description of this Alternative is in the EA, pages 32-44. This Alternative is the 'Selected Alternative'. My decision includes a few changes that are described on pp. 13-14. The implications of the changes are discussed on pages 26-33. The main change between Alternative 3 and my decision is a reduction in 80 acres of treatment mostly in units 6 and 10 in the Selected Alternative and a 1.2 mile reduction in temporary road construction or reconstruction.

E. Alternatives Not Given Detailed Study. (EA pp. 44-47)

Alternative 4. Prescribed burn only

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. For more discussion see page 44-45 of the EA.

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 that were 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. Bases 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.

Alternative 9: Build a road across Hebgen Dam for better access. During the comment period for the EA, I received a request to consider an alternative that would construct a road across Hebgen Dam to the end of the Hebgen Lake Road to improve access to the area. A more complete discussion of this Alternative is in Appendix A, Response to Comments under the 'General' category.

Construction would be expensive and difficult and would likely require the top of the dam to be widened. The public is presently restricted from accessing the dam by PPL-Montana to provide security to their facilities and to reduce liability. If constructed, the road would pass through Forest Plan Management Area 15 (MA 15). In MA 15 "Roads will not be constructed for surface management except to provide public access. Allow roads for private access, special use mineral activity, and for access to other management areas." In this case, additional public access was not identified as a need in either the Forest Plan (GNF 1987), or the recently approved Travel Plan (GNF 2006). If constructed, the road would also pass through Inventoried Roadless lands (ref. FP EIS, pg C-103). Current Roadless direction precludes constructing roads within Roadless Areas without significant need and approval by the Regional Forester. In this case, no significant need can be identified.

A road in this location would have some value as a secondary fire escape, but at a high economic and resource cost. Hebgen Lake is in close proximity to most of the uses and homes in this area and can serve as an emergency fire escape route. For these reasons the Alternative was not studied in detail.

VI. Public Involvement

A. Overview of the Public Involvement 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 both 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 License Holder), 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. These comments were also used to refine the design features to be included in the action alternatives. (EA pp. 33, 37-44)

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 during the summer. (GNF 2007b)

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. (Seth, Public Comment Log)

Notice of availability of the EA was sent to 105 interested parties. All persons that provided scoping comments received a copy of the EA. These mailings were sent on 12/21/07. The individuals and groups that worked with the Team during project development and analysis received letters that explained specifically how their concerns were addressed in the EA.

In deference to the holidays the comment period did not begin until January 3, 2008. The legal notice was published in the Bozeman Daily Chronicle on 1/2/08. As in scoping, a news release

was sent to all local and regional news outlets including newspaper, radio and television stations. Copies of public involvement related documents are in the project file. A reference to the Project was included in an article published in the Bozeman Chronicle (12/22/07). Twenty four commenters represented the views of six organizations and 19 individuals associated with homes or property in the area. Content analysis (GNF 2008) was completed for the comments received during the 30-day EA comment period. Copies of letters, mailing lists, news release and the content analysis are on file with the Project Record.

B. Consideration of Public and Other Agency Comments

As described in the previous section, my staff and I met with many summer home owners and private land holders. These people expressed strong support for fuel reduction work on NFS land. In fact, many property owners were spurred to action to improve or create defensible space near their home because of the awareness raised in our outreach efforts related to this project. (EA, pp. 2-3). In general, people encouraged implementation of fuels reduction on NFS land as soon as possible.

I made every effort to address project related concerns during alternative development. It is my belief that I satisfied a majority of the concerns because the comments I received on the EA tended to be more general. I included mitigation and design features that respond directly to concerns voiced during project development and analysis. Specific concerns were raised regarding road safety with log traffic and woods operations near home. In response, public safety protections 1-3 were developed. An Outfitter with operations in the project vicinity was concerned with disruption to business. In response, recreation & outfitting mitigation 1-3 were incorporated. Concern for domestic water sources was raised. In response, water quality mitigation 6-7 were included to protect springs and infrastructure associated with domestic water supply. Other more generic concerns related to amphibian protections, invasive weeds, scenery and water quality and riparian protections. These protections are lengthy and can be reviewed in the description of my decision Section V. B. along with all project related protections. These protections were incorporated in Design Features Common to Action Alternatives. (EA pp. 37-44)

Adjacent landowners near unit 30 were very concerned with prescribed burning next to their homes and the visual effects of burning. The treatment was proposed to stimulate aspen forest and to maintain low risk areas in the WUI. Upon closer review, we learned that the aspen forest adjacent to private land was generally vigorous and would not benefit from burning so the treatment prescription was modified. The Selected Alternative includes the modified treatment prescription for units 30a and 30b that eliminates prescribed burning adjacent to these homes. Based on conversation and comment letters I received, their concerns were satisfied in this Alternative and the treatment will more effectively stimulate aspen growth.

While a majority of people strongly supported fuel reduction a few opposed any management. Very few individuals with property at risk opposed fuel reduction although a few preferred to see no logging. Those people hoped that treatments would be limited to small tree thinning and prescribed burning. I reviewed the purpose and need which described the existing condition and expected fire behavior and the Fire and Fuels effects analysis in Chapter 3. I spent considerable time in the field with the interdisciplinary team and interested members of the public. I believe

that the desired change in fire behavior is not possible without removal of large trees in most of the treatment units. The selected treatments in each unit are a reflection of the on the ground fuel conditions or fuel strata that needs to be treated.

The issues raised during the 30 day comment period were addressed adequately in the Appendix A – Response to Comments but a few warrant some additional discussion. They include roads, Roadless, grizzly bear direction, old growth and snag dependent species and coordination with the Madison Gallatin Chapter of Trout Unlimited.

I provided additional clarification related to the activities proposed in the Inventoried Roadless Area and the expected effects in the Response to Comments. (Appendix A pp.14) I discussed my rationale relative to the treatments within the IRA on page 29. All treatments in the IRA comply with the roadless rule.(EA p. 80-92) (Appendix A – Response to Comments)

There was concern about the amount of temporary road construction and reconstruction. The EA (pp. 30) explains the reasoning for having numerous short spur roads to landings. After the comment period I looked more closely at the proposed temporary road construction and reconstruction. I was able to eliminate 1.2 miles of proposed temporary road construction and reconstruction in my decision. The reductions are mostly in units 5, 14 and 23. The skid distance is longer in unit 14 as a result but the skidding is still less than ¼ mile for most of the unit. I added restrictions associated with roads in units 11 and 21 to my decision for the protection of grizzly bear habitat (pp. 26). I also provided some discussion on how temporary road use is restricted during project implementation.(pages A-15 to A-16) The design features in Alternative 3 (EA pp. 37, 38, 41-44) reduced the potential effects of the roads and the elimination of 1.2 miles of needed road further reduces potential effect and costs associated with road construction and restoration.

We received some comments related to wildlife that led to additional analysis and clarification. This project is one of the first to be implemented on the Gallatin Forest in the Primary Conservation Area under the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (2006). As a result, there was some confusion over current direction. The clarification is discussed in the response to comments but was substantive enough that I appended the amended grizzly bear report to this decision in Appendix C so the public has the benefit of a more complete discussion about how the Grizzly Bear Forest Plan Amendment (2006) melds with the language in the Gallatin Forest Plan (1987). The temporary road reduction incorporated in my decision has no impact on the grizzly bear analysis or conclusion.

In response to concerns related to old growth and snag dependent species additional analysis was completed in the Biodiversity Report (DN, pp. C-16-19), which is included in Appendix C. There is some discussion in Appendix A, Response to Comments (pp. 23-29) as well.

I met with members of the Madison Gallatin Chapter of Trout Unlimited to discuss the project as it relates to the 1990 Forest Plan Trout Unlimited Settlement Agreement. In the 1990 Settlement Agreement with the MGTU, "The Gallatin National Forest agreed that vegetative manipulation within riparian areas will occur for the purpose of meeting riparian dependent resource

objectives such as watershed, wildlife, or fisheries." Fuels reduction projects are a new emphasis since this agreement was signed. As a result, the GNF and MGTU have been coordinating with regard to treatment of fuels within riparian areas to ensure that the intent of the 'Settlement Agreement' is met. I revised the Water Quality and Riparian protections in my decision (pp. 23) to better meet the intent of the Settlement Agreement. Other questions expressed by the group are addressed in Appendix A - Response to Comments, pp. 11, 29-35.

Conclusion:
I believe my decision provides the best balance in meeting conflicting needs and desires. My decision implements national, regional and Forest priorities established under the National Fire Plan (2000) and other applicable Fire Policy. (EA, pp. 20-21) The mitigation and design features incorporated in my decision minimize environmental effects to ensure compliance with laws, policy and direction. My decision also makes the Gallatin National Forest a good neighbor by reducing wildland fire risk on NFS land with minimal disruption to forest users in the summertime, which is the high use season. I included mitigation to address virtually every social and environmental concern. I did not address the minority concern which opposes logging on public lands, because that position directly conflicts with my ability to implement a project resulting in fire behavior changes needed to reduce the risk to life and property in the WUI. I have extensive direction that prioritizes the reduction of wildland fire risk to lives and property in the WUI on National Forest System lands (EA, pp. 20 and DN pp. 5) and this project begins to achieve that goal while mitigating virtually every concern related to natural resource and social conflict.

VII. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities and alternatives documented in the Environmental Assessment (EA) for the Lonesome Wood Vegetation Management Project and determined that these actions will not have significant impacts on the quality of the human environment. Thus, an environmental impact statement will not be prepared. The implementing regulations for NEPA at 40 CFR 1508.27 provide criteria for determining the significance of effects. This provision requires consideration of both the context and intensity of predicted effects in determining significance. I based my finding on the following:

(a) **Context.** I have determined that the appropriate context for weighing the significance of impacts is within the general vicinity of the project area including the lands generally upslope ½ -3/4 mile from the Hebgen Lake Road along the western shore of Hebgen Lake. Some other analysis areas extend to the divide and south to Highway 20 and north to Highway 287. The direct and indirect impacts generally become immeasurable within these geographic bounds. Consequently, the context for addressing significance for these Forest Service actions is limited to the locale rather than in the nation, state or Forest as a whole. I came to this conclusion because the spatial extent of cumulative effects analysis for various resources is limited to these approximate boundaries and in most cases is lesser in extent.

(b) **Intensity.** In accordance with 40 CFR 1508.27(b) my determination that the severity of impacts were not significant was based on consideration of the following 10 factors:

1. *Beneficial and Adverse Impacts.*

Based on the predicted impacts of the alternatives discussed in Chapters 2 and 3 of the Lonesome Wood EA and Appendix A of the EA (Other Issues), along with supplemental information in the Response to Public Comments in Appendix A and C of this Decision Notice, I have determined that both the beneficial and adverse impacts of the action will not be significant. As discussed earlier in this Decision Notice, I identified four issues to be significant to this decision and concluded that the scope and magnitude of effects associated with those issues was limited and acceptable.

The possibility of wildland fires due to human and natural starts will always be here. With the ongoing weather changes, drought and beetle activity, the vegetation may become more vulnerable to wildfire starts. My decision will create a safer environment, a more defensible space and an evacuation route for fire fighters, emergency response and the general public on private and/or public land in a wildland fire or emergency evacuation. The treatments will reduce wildland fire behavior, allowing faster and more efficient fire suppression (EA pp. 67-74) Aspen forest will be maintained or enhanced on 1285 acres. The treatment prescriptions will benefit forest health in resistance to Douglas-fir beetle, mountain pine beetle and dwarf mistletoe. (EA pp. 11, A-40 to A-42, DN pp. B-1)

The moose winter habitat effects analysis concluded that the viability of this moose population will not be threatened by any project alternative, and points out that moose are a relatively common species that are hunted throughout western Montana and the Greater Yellowstone Area (see EA, page 78 and DN, pp. A-21-23 C-8). This was the basis for the determination that the project's effects will not be significant and do not require the preparation of an EIS.

My decision complies with the Roadless Final Rule (2001) by focusing on removing generally small diameter timber within the truly roadless unit (unit 2), in an attempt to mitigate the potential effects to ecosystem function and structure and threats to human health and safety, from uncharacteristically intense wildfire events which may occur as a result of long term fire suppression. Adverse impacts are limited to short term negative effects (10+ years) to apparent naturalness and natural integrity due to effective mitigation and low intensity treatment. No logging is proposed in the IRA where roadless characteristics are intact. No road construction or reconstruction is planned in the IRA. (EA, pp. 85-92, DN, A-11) As a result, I believe the potential adverse impacts are not significant.

My decision would treat an estimated 175 acres of lynx habitat which currently provides showshoe hare habitat. The selected alternative complies with applicable guidance from the Northern Rockies Lynx Amendment but still required formal consulation with the United States Fish and Wildlife Service (USFWS) . The USFWS concluded that. "the direct and indirect effects of the Lonesome Wood Vegetation Management Project, in the selected alternative, falls within the range of effects analyzed in the Tier 1 (programmatic) biological opinion and therefore is not likely to jeopardize the continued existence of Canada Lynx. The Forest Service is implementing the reasonable and prudent measures provided in the Tier 2 biological opinion. No additional reasonable and prudent measures are necessary." (USFWS 3/2008) After

consultation for this project was completed, USFWS designated 'critical lynx habitat'. The project area contains no 'critical habitat'. (Pils, personal communication) Given that my Decision complies with the 'Northern Rockies Lynx Amendment" and USFWS concurs with the findings of the BA and determined that the decision is not likely to jeopardize the continued existence of Canada lynx, I conclude that the predicted effects are not significant

2. *The degree to which the proposed action affects public health or safety.*

Proposed activities will not have a significant negative affect on public health and safety. The purpose of the project is to reduce risks posed by forest fires to public and firefighter health and safety, especially as it relates to the wildland urban interface near the identified homes and evacuation route.

Mitigation is incorporated in my decision that will ensure public safety in thinning activity areas and along the Hebgen Lake Road. Thinning activities as proposed will be conducted in a safe manner to protect the public (DN pp. 19-26 and EA, section 2.4.3.2). Similar actions have not significantly affected public health and safety. A minor impact for a short period may occur to local air quality from the burning of logging slash. However, burning is planned in accordance to State air quality standards and within burning periods approved by the State of Montana (DN pp. 19-20)

Prescribed pile burning can present a risk of escaped fire. A burn plan that mitigates the risk of escaped fire will be completed and implemented. Extensive agency experience with similar local projects and conditions show these risks are low. This is due in part to the design of the project, including fire management expertise, the use of experienced crews, and presence of the necessary fire suppression resources. Warning signs and public announcements will be used to notify forest users of logging and burning activities.

The water resource analysis indicates no degradation of water quality that could constitute a public health threat. The proposal will comply with the Clean Water Act. (EA, section 3.11.2, DN, A-29-35)

3. *Unique characteristics of the geographic area.*

There are no adverse effects to historic places or loss of scientific, cultural, historical, or other unique resources (EA 3.11.2, Allen 2007). This project is in compliance with the Region 1 programmatic agreement (1995) between the State Historic Preservation Office and the Advisory Council on Historic Preservation. (Allen 2007, EA, section 3.11.2) and DN pp. 51.

There are no prime farmlands, wetlands, or wild and scenic rivers within the affected area. Wetlands will be protected by mitigation, EA 2.4.3 and DN pp.55.

A small portion of the project area is within an inventoried roadless area. However, no new road construction or reconstruction will occur as part of the alternatives. The alternatives will not result in significant impacts on inventoried roadless areas. The analysis concludes that the roadless characteristics will be maintained and the project complies with the Roadless Final Rule 2001. (EA, section 3.2.3, DN pp. 29)

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

This factor pertains to any disagreement between experts in a given field over the potential effects of this proposal. Although some may oppose the authorization of fuel treatments and associated activity, opposition does not constitute controversy over effect.

Chapter 2 of the EA discusses public involvement and EA, Chapter 4 lists the agencies, groups, and organizations contacted about this proposal. Section VI. B. in this document further discusses comments received during the 30 day public comment period. Written comments received can be found in the project file. Appendix A of this Decision Notice includes responses to public comments received on the EA.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Scoping did not identify highly uncertain, unique or unknown risks. The possible effects on the human environment are not highly uncertain nor do they involve unique or uncertain risks. The technical analyses conducted for determinations of the impacts to the resources are supportable with use of accepted techniques, reliable data, and professional judgment. Impacts are within the limits that are considered thresholds of concern. We have considerable experience implementing vegetation management and associated activities. The effects analysis shows that the effects are not uncertain, and do not involve unique or unknown risks. (EA, Chapter 3 and Appendix A, DN Appendix C)

There was some concern over lack of population data in determining potential effects to the moose population due to loss of winter habitat. However, no population objective has been developed. Moose are typically much more difficult to survey for than most other big game species in Montana because they spend considerable time in heavily forested areas where they are difficult to observe from the air. The lack of moose population data is not unusual given the difficulty in acquiring the information.

I reviewed the moose winter habitat analysis (EA, pp. 75-80). I participated in discussions with peer biologists discussing the concerns related to this population and expected effects from the alternatives. Moose are not expected to be at risk of extirpation at either the local or larger levels under any alternative. (EA, pp. 75-80, DN Appendix A pp. 21-23) At the local scale, approximately 1,600 acres of late winter moose habitat will remain under the Selected Alternative. This will be adequate to maintain a viable population in the project area. Montana Fish, Wildlife, & Parks continues to administer a hunting season on moose in this area in which 3 permits for bullmoose are allocated annually. Moose permits would no longer be allocated for this area if the viability of the population were a concern. At larger scales, moose have a large distribution throughout western Montana and the Greater Yellowstone Area, and are hunted throughout this area (with the exception of National Parks). Moose in the Greater Yellowstone Area and across North America are not considered at risk of extirpation. For these reasons I find that the risks to the moose population are known to the extent needed to be certain that this project will not have significant adverse effects.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

As stated in Chapter 1 of this EA, the objectives are to lower the risk of crown fire initiation, spread and fire severity by reducing the amount of dead and down fuel loadings and by reducing tight canopy closure in tree crowns and ladder fuels.

This project will not set a precedent for future actions with significant effects. Proposed management practices are compatible with the Forest Plan guidance, and with the capabilities of the land. This action does not represent a decision in principle about a future consideration. While it is possible that future maintenance of fuel conditions may be needed, the future condition, need for and management priorities are uncertain now.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

A discussion of cumulative effects analysis and past, present and reasonably foreseeable activities that may have an additive effect with the direct and indirect effect of the alternatives identified for the project area is in the EA pp. 97-99. A cumulative effects analysis checklist was completed for each resource in conjunction with effects analysis. The 'checklists' are in the project file with specialist reports.

Consistent with the Council for Environmental Quality (CEQ) guidance, the past, present, and reasonably foreseeable activities are considered in the cumulative effects analysis for each resource area relative to the specific potential future effects of the proposal. Because the project's direct and indirect effects vary in time and space, each resource issue has a defined specific cumulative effects analysis area and timeframe that is pertinent to the specific resource and the issue being considered. Each resource discussion evaluates the degree to which past, present, and future actions influenced or would influence the affected environment. No significant cumulative impacts are expected for any resource. (EA pp. 69, 80, 91, 97-99, EA Appendix A, Biological Assessment pp. 12-13, DN Appendix C)

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

The purpose of the proposal is to reduce the threat to life and property in the wildland urban interface by reducing the risk of crown fire initiation, spread and fire intensity. There is a potential benefit to private property from the proposal by meeting the purpose and need for action. See the comparison of alternatives in EA, Chapter 2 and 3 for more information.

There are no historical districts or sites located on National Forest System lands being considered for treatment. A cultural resource inventory has been completed in the area, and all known cultural resources will be protected by mitigation (EA, section 2.4.3.2). The potential for impacting undiscovered sites is mitigated by compliance with Forest Plan standards and guidelines and through the use of standard timber sale contract clauses. No adverse effects to

these resources are anticipated.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

The U.S. Fish and Wildlife Service has identified the Canada lynx as the threatened species that may be present in this portion of the Gallatin National Forest. (USFWS 2007) The Biological Assessment (Pils 2008) provides the complete analysis for the Selected Alternative, which has the least impacts to Canada Lynx habitat. The United States Fish and Wildlife Service rendered a Biological Opinion for the Selected Alternative. "It is the Service's biological opinion that the direct and indirect effects of the Lonesome Wood Vegetation Management Project, as proposed (Selected Alt.), fall within the range of effects analyzed in the Tier 1 biological opinion[3] and therefore are not likely to jeopardize the continued existence of Canada Lynx." (USFWS 3/17/08) Based on the analysis for Canada Lynx and the USFWS Biological Opinion (3/08) I determined that the potential impact to threatened and endangered species will not be significant. Since the consultation for this project occurred, the USFWS released a proposal for critical habitat. No critical habitat was proposed for the project area.

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The action will not violate Federal, State and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA, pages. 14-21, 75, 76, 82, 91-92, 93-95, 100-106, Appendix A, Appendix B, DN, pages 26-33, 44-53, Appendix A, C. The action is consistent with the Gallatin National Forest Land and Resource Management Plan, EA, pages 14-19, 76-77, 80, 94-95, 101, Appendix A and DN pp. 47, Appendix A, pp. 1, 16-32, Appendix C)

Laws, regulations, and policies that pertain to this project include the Gallatin National Forest Land and Resource Management Plan (1987), the Gallatin National Forest Travel Plan Decision (2006), National Fire Plan (2000), Cohesive Strategy (2000), Federal Wildland Fire Management Policy (2001), 2001 Roadless Area Conservation Rule, 36 CFR 294, Northern Rockies Lynx Forest Plan Amendment (2007), Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (USDA 2006), the Endangered Species Act of 1973, Executive Order 11988 (wetlands and floodplain), Executive Order 12898 (Environmental Justice), Federal Cave Resources Protection Act, FSM 2670 – Forest Service Sensitive Species Direction, Migratory Bird Treaty Act of 1918 (as amended), Greater Yellowstone Bald Eagle Management Plan, National Bald Eagle Management Guidelines (2007), National Environmental Policy Act of 1969 (NEPA) as amended; National Forest Management Act of 1976 (NFMA), National Historic Preservation Act of 1966 (amended 1992); American Indian Religious Freedom Act, Native American Graves and Repatriation Act, Clean Water Act of 1977 and Montana Water Quality Act, Clean Air Act of 1963, State of Montana Best Management Practices; Montana Streamside Protection Rules (2006), Executive Order 12962 (June 1995)

[3] Tier 1 biological opinion is the programmatic biological opinion.

Aquatic Resource Protection, and the Region 1 Soil Standards (1999). More detailed descriptions can be found in Chapter 1, 3, Appendix A of the EA and the following section.

VIII. Findings Required by Other Laws, Regulations, and Policies

Several of the laws and executive orders require project-specific findings or other disclosures. They apply to all alternatives considered in detail in this EA.

Clean Water Act

The Lonesome Wood Vegetation Management Project area for Alternatives 2, 3 and the Selected Alternative will be in compliance with the Montana Water Quality Act and Administrative Rules of Montana, WQLS/TMDL constraints, and with Gallatin NF Forest Plan direction for water quality protection. Sediment modeling indicates that project sediment changes are low-moderate and well within the Gallatin NF sediment guidelines.(Story 2007a amended 3/2008, DN Appendix A pp. 33-34)

Clean Air Act

Residences particularly near units 1-4 Clark Springs Summer homes, unit 14 (Cozy Corners homes), 22, 24, and 29 (Rumbaugh Summer homes), and units 26 and 29 (Romset Summer homes and Lonesomehurst Summer homes) are within minimum ambient distance. These units are constrained to a minimum ambient distances of 0.1 to 0.2 miles to minimize $PM_{2.5}$ exceedences at the residences. These impacts are mitigated in the design features for action alternatives. My decision (pp. 19) incorporates recommended design features related to air quality. Burning will be completed during the spring or fall when there is a low likelihood those homeowners will be in the area.

Outside of the minimum ambient distances the smoke concentrations are expected to be within NAAQS and State of Montana air quality standards. The Lonesome Wood Vegetation Management Project burns will 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_{25} 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. (Story 2007)

National Forest Management Act of 1976 (NFMA)/Gallatin Forest Plan

The National Forest Management Act (NFMA) and implementing regulations require the following findings to be made when making project-level decisions involving timber harvest.

Forest Plan consistency:

The Act required all projects and activities be consistent with the Forest Plan.(16 USC 1604(i)) The Gallatin Forest Plan was approved in 1987. Implementation of the action alternatives complies with the Gallatin Forest Plan and the Regional Guide. This project incorporates all applicable Forest Plan forest-wide standards and guidelines and management area prescriptions

as they apply to the project area, and complies with Forest Plan goals and objectives. This includes additional direction contained in all amendments. All required interagency review and coordination has been accomplished; new or revised measures resulting from this review have been incorporated.

The Forest Plan complies with resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for the Lonesome Wood Vegetation Management project ensures compliance at the project level. Project design is responsive to guiding direction for natural resource management activities as discussed in EA, Chapters 1, 2 and 3, DN, Section V. and DN Appendices A, C.

We received comments concerning compliance with Management Area 13 in the Gallatin Forest Plan (1987) and how the Grizzly Bear Amendment direction integrates with other Forest Plan direction related to grizzly bear. The specialist reports for moose winter habitat and grizzly bear, which is part of the Biological Evaluation Report, were amended to further explain how the direction is met. DN Appendix C, contains the full discussion. DN Appendix A pp. 16-29 responds to these comments as well. A brief summary of potential effects for all other issues is in the EA, Appendix A. I determined there will be no significant impact from those issues. One factor in that determination was whether the decision complies with current laws, policy and direction. Compliance was achieved through thoughtful design and effective mitigation.

Other NFMA consistency requirements:

Suitability for Timber Production: No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604(k)).

***Findings**:* Within the proposed treatment units, MA 1 (Administrative site) and MA 15 (grizzly bear/dispersed recreation) are unsuitable and this amounts to approximately 5-10% of the treatment units. Timber harvest proposed in this project is designed for multiple use values (EA, section 1.3) including public safety and aspen enhancement. As a result, these activities are compliant with MA goals and standards. MA 1 goals are to maintain the administrative sites for the safety and enjoyment of users. MA 13 standards encourage big game habitat improvement that includes aspen enhancement. EA, Chapter 1 section 1.6 and Chapter 3.2, Appendix A and Decision Notice Appendix A pages 1, 16-32 and Appendix C all discuss MA direction and compliance.

Timber Harvest on National Forest Lands (16 USC 1604(g)(3)(E)): A Responsible Official may authorize site-specific projects and activities to harvest timber on National Forest System lands only where:

a. Soil, slope, or other watershed conditions will not be irreversibly damaged (16 USC 1604(g)(3)(E)(i)).

Finding: Soil, slope and watershed conditions will be adequately protected. (Story 2007a amended 3/2008, Shovic 2007 amended 2/2008, DN, Appendix A pp. 29-35)

b. There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii)).

Finding: The overall intent in the forested environments is to reduce stand densities by thinning.

There is no intent to create conditions for tree regeneration in these areas. (Novak 2007, EA Chapter 2 and Appendix A, DN Appendix B)

c. Protection is provided for streams, stream banks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat (16 USC 1604(g)(3)(E)(iii)).

Finding: Protection is provided for streams, stream banks, wetlands and other bodies of water from detrimental changes…. Stream, riparian and fish habitat protection will be assured through best management practices, streamside protection rules and project specific mitigation. (EA, Section 2.4.3.2, Story 2007a amended 3/2008, Roberts 2007, DN, pp 24-25, DN Appendix A, pp. 29-35)

d. The harvesting system to be used is not selected primarily because it will give the greatest dollar return or the greatest unit output of timber (16 USC 1604(g)(3)(E)(iv)).

Finding: The harvesting system proposed is the system determined to meet the fuel reduction purpose and need described in Chapter 1 most effectively. The economic feasibility of this project was not the reason for developing the alternatives. (Novak 2007, Lamont 2007)

Clearcutting and Even-aged Management (16 USC 1604(g)(3)(F)): Insure that clearcutting, seed tree cutting, shelterwood cutting, and other cuts designed to regenerate an even aged stand of timber will be used as a cutting method on National Forest System lands only where:

Finding: Not applicable, no clearcuts are proposed. The thinning proposed is an intermediate harvest. (EA, Chapter 1 and DN Appendix A pp. 3-4, and DN Appendix B)

Construction of temporary roadways in connection with timber contracts, and other permits or leases: Unless the necessity for a permanent road is set forth in the forest development road system plan, any road constructed on land of the National Forest System in connection with a timber contract or other permit or lease shall be designed with the goal of reestablishing vegetative cover on the roadway and areas where the vegetative cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease either through artificial or natural means. Such action shall be taken unless it is later determined that the road is needed for use as a part of the National Forest Transportation System (16 USC 1608(b)).

*Finding***:** The Gallatin National Forest Travel Plan analysis and decision has rigorously determined the management objectives of the entire road system throughout the Forest, including this area. This fulfills the Roads Analysis requirements for project level analysis. In the Travel Plan, disposition of "project roads" was left to the project level decision-making process. (Queen 2007) Project roads are those roads not open for motorized public use or those open for administrative use.

No additional system roads will be constructed as part of this project. Proposed temporary roads will be constructed and used for the life of the project and will be restored to surrounding area vegetation management objectives as part of the project closeout and not added to the Forest road system. (Queen 2007) The need for temporary roads and restoration plans are discussed in the EA, section 2.4.3.1.

Standards of roadway construction: Roads constructed on National Forest System lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land and resources (16 USC 1608(c)).

Finding: The Gallatin National Forest Travel Plan analysis and decision has rigorously determined the management objectives of the entire road system throughout the Forest, including this area. This fulfills the Roads Analysis requirements for project level analysis. In the Travel Plan, disposition of "project roads" was left to the project level decision-making process. (Queen 2007) Project roads are those roads not open for motorized public use or those open for administrative use.

No additional system roads will be constructed as part of this project. Proposed temporary roads will be constructed and used for the life of the project and will be restored to surrounding area vegetation management objectives as part of the project closeout and not added to the Forest road system. (Queen 2007) The need for temporary roads and restoration plans are discussed in the EA, section 2.4.3.1.

Consideration of Science: The effects analysis is based on a thorough review of relevant scientific information, consideration of responsible opposing views and the acknowledgement of incomplete or unavailable information, scientific uncertainty, and "risk". Specialists have cited relevant references and considerations when there was uncertainty that was disclosed and put in appropriate context. When appropriate, specialists discussed the use of science in their reports. (Shovic 2007, amended 2/2008, Story 2007a amended 3/2008, Anderson 2007 amended 4/08, Pils 2008b, Novak 2007 amended 3/2008)

The interdisciplinary team spent considerable time in the field becoming knowledgeable about resource conditions and conflicts. Where needed, field surveys were conducted to develop conclusions, for example, timber stand exams, archeological surveys, sensitive plant surveys and goshawk surveys. Much work has been done at the Regional level to develop habitat guidelines for numerous wildlife species such as Northern Goshawk (Brewer et. Al. 2007) and Black-backed Woodpecker (USDA Forest Service 2007). At a larger scale involving multiple regions, the Grizzly Bear - Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (USDA 2006) and Canada Lynx (USDA FS 2007a, 2007b) guidance was developed. The guidance was developed after exhaustive literature searches, data assessments at various scales and peer review to develop recommendations. During scoping for this project seven articles were presented by the public for consideration relative to this project. The literature was incorporated in the black-backed woodpecker and biodiversity reports for wildlife and in the Fire/Fuels analysis. A review of References cited in scoping letters was completed for the record. (GNF 2008a) No other science was presented as opposing or supplemental viewpoints during public involvement. The specific science used to support the various resource related conclusions varied considerably but the science that supported the conclusions in the EA was not challenged. Therefore, I conclude that my decision is based on the best science available.

National Environmental Policy Act (NEPA) of 1969 (as amended)

The NEPA has been followed as required under 40 CFR 1500 in the development of this project. According to 40 CFR 1508.9 "Environmental assessment: (a) Means a concise public document for which a federal Agency is responsible that serves to: (1) Briefly provide sufficient evidence

and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact." (b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102 (2) (E), alternatives, and a listing of agencies and persons consulted.

"(a) As part of the scoping process the lead agency shall (3) Identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review, narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere." (40 CFR 1501.7) Further, 40 CFR 1502.2 (b) "Impacts shall be discussed in proportion to their significance. There shall be only brief discussion of other than significant issues. As in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted."

The EA analyzed a reasonable and acceptable range of alternatives: the proposed action alternative, Alternative 3 with Resource Mitigation and the no action alternative. Five other alternatives were considered but not carried forward (EA, Section 2.4.4) and one additional alternative was discussed in the Response to Comments (DN, pp. 37 and A-6). The analysis (EA, Chapter 2, 3) and Appendix A discloses the expected impacts of each alternative and various issues and concerns raised by interdisciplinary team members, the public and other agencies.

The NEPA requires public involvement and consideration of potential environmental effects. The entirety of documentation for this analysis supports compliance with this Act.

Endangered Species Act of 1973

Under Section 7 of the Endangered Species Act, each Federal agency must ensure that any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any threatened or endangered species.

If a threatened or endangered species, or species proposed for listing occurs in an area where a project is proposed, a Biological Assessment (BA) must be prepared. If the action would result in a "may affect, likely to adversely affect" determination for the species, formal consultation with the U.S. Fish and Wildlife Service (USFWS) must occur and they would issue a Biological Opinion. If the action results in a "may affect, not likely to adversely affect" or "beneficial effect" conclusion, formal consultation is not necessary but informal consultation and a letter of concurrence must be obtained from the U.S. Fish and Wildlife Service. If a "no effect" results, no consultation is necessary. To reduce effects of an action to an acceptable level, mitigation (coordination measures) may be necessary.

The USFWS identified the Canada Lynx as threatened or endangered species that may be present in this portion of the Gallatin National Forest (USFWS 2007). In addition to the individual species report for Canada Lynx (Pils 2007a amended 3/2008), a Biological Assessment (Pils 2008) was prepared and consultation with the U.S. Fish & Wildlife Service was completed for the Selected Alternative prior to my decision.

Finding: My decision is consistent with management direction for the Canada lynx and is in compliance with Endangered Species Act requirements. This project falls under some of the exemptions allowed for fuels treatment in lynx habitat (see BA), therefore, the Forest Service

consulted formally with the US Fish and Wildlife Service. The United States Fish and Wildlife Service rendered a Biological Opinion for the Selected Alternative. "It is the Service's biological opinion that the direct and indirect effects of the Lonesome Wood Vegetation Management Project, as proposed (Selected Alternative), falls within the range of effects analyzed in the Tier 1 Biological Opinion and therefore are not likely to jeopardize the continued existence of Canada Lynx." (USFWS, 3/2008)

Federal Cave Resources Protection Act

This Act is to secure, protect, preserve and maintain significant caves to the extent practical. Site features and field review substantiate that no caves are in the area. No known cave resources will be affected by this proposal. (Pils 2007 amended 3/2008)

Heritage Program Laws (National Historic Preservation Act (amended 1992), American Indian Religious Freedom Act, and Native American Graves and Repatriation Act)

These laws essentially require that adequate and extensive review of these undertakings be conducted in order to assess the possible effects of these activities upon cultural resources. They also provide that Federal agencies conduct adequate consultation with pertinent tribes in order to be informed of any possible conflicts the actions to be taken would have on their ability to conduct traditional religious practices.

Evaluation of these alternatives was done in full compliance with direction from the Gallatin Forest Plan (parts II-3, II-17), the National Historic Preservation Act (Section 106 - 36CFR800.1) and the American Indian Religious Freedom Act. There will be no impacts to cultural resources as determined in the Heritage Resources Report (Allen, 2007). Native American communities have been contacted and public comment encouraged. No tribal concerns were identified for this project. (Allen 2007) The proposal and review will comply with the cited acts.

Sensitive Species (Forest Service Manual 2670) - This Manual direction requires analysis of potential impacts to sensitive species, those species for which the Regional Forester has identified population viability is a concern. Potential effects of this decision on sensitive species have been analyzed and documented in a Biological Evaluation for Terrestrial Wildlife Species (Pils 2007 amended 3/2008), Amphibian and Aquatics Report/Biological Evaluation (Roberts, 2007) and Sensitive Plant Report (Pils 2007h). This project as proposed will have either "no impact" or "may impact individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species to sensitive species.

The results of the Biological Evaluation for Terrestrial Wildlife Species (Pils 2007 amended 3/2008) indicate there will be 'no impact' to the Peregrine Falcon, Flammulated Owl, Harlequin Duck, Trumpeter Swan, Western Big Eared Bat. The Gray wolf was recently delisted and is now managed as a Sensitive Species. The Gray Wolf Report was updated (Pils 2007j) updated 4/2008). The action alternatives may impact individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species for the Gray Wolf, Wolverine, Black Backed Woodpecker, Bald Eagle and Grizzly Bear. Mitigation is incorporated to minimize impacts to some of these species, as needed. (pp. 25-26)

Further there will be no impact to Fluvial Arctic Grayling, Westslope cutthroat trout, Yellowstone Cutthroat Trout, Northern or Northern Leopard Frog. My decision may impact

individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species for western toad. (Roberts 2007) Mitigation is incorporated to reduce impacts to individuals. (pp. 19)

The project as proposed, will have "no impact" on listed sensitive plant species except for eight species with habitat potential but no plants present and one species that is protected by mitigation. The determination for these nine species is may impact individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species. (Pils 2007h). Mitigation is incorporated in my decision to avoid impacts to Jove's Buttercup populations. (pp. 24)

Effects of Alternatives on Floodplains and Wetlands - Executive Order 11988

By incorporating project design features, following BMP and SMZ regulations, as well as effective mitigation measures, floodplains, and wetlands will not be adversely affected by any alternative. (EA, section 2.4.3 and Appendix 33-38) (DN pp. 24-25, DN A-30 to A-35))

Migratory Bird Treaty Act

On January 10, 2001, President Clinton signed an Executive Order outlining responsibilities of federal agencies to protect migratory birds.

Project actions that are implemented during the breeding season would have disturbance impacts, and potential for occupied nest destruction, which could affect any migratory bird species in the activity area. Most project implementation will occur during late summer and fall, which will minimize disturbance effects and potential for direct bird mortality. Resulting habitat alterations could be attractive for migratory bird species of concern such as the great gray owl, olive-sided flycatcher, and Swainson's hawk. Implementation of any of the alternatives evaluated will not likely have impacts notable at the population level for any of the migratory bird species considered in this report. (EA, Appendix A pp. 56-59, Pils 2007d)

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to integrate environmental justice considerations into federal programs and activities. Environmental justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by government programs and activities affecting human health or the environment (E.O. 12898 and Departmental Regulation 5600-2).

Public involvement has not identified any adversely impacted minority low income populations. None of the alternatives will have a discernible effect on minorities, American Indians, women, or the civil rights of any United States citizen. No alternative will have a disproportionate adverse impact on minorities or low-income individuals. This proposal complies with the Order.

Short-term Use versus Maintenance and Enhancement of Long-term Productivity

Long-term productivity refers to the capability of forestland, in this case, to provide resources

into the future. The alternatives are designed to protect the long-term productivity by reducing the risk of crown fire initiation, spread and severe fire. Soil, water and noxious weed best management practices further protect the long-term productivity of the treatment area. Impacts to resources are limited in time and intensity and will not deplete their long-term productivity.

Irreversible and Irretrievable Commitment of Resources

An *irreversible* commitment of resources refers to the use or commitment of a resource that cannot be reversed. For example, nonrenewable resources, such as minerals in the ore, would be removed forever during the milling of the ore and would be irreversibly committed. An *irretrievable* commitment is the short-term loss of resources, resource production, or the use of a renewable resource because of land use allocations, or a scheduling or management decision. The action alternatives do not involve an irreversible committment. Removal of wood products is an irretrievable commitment of trees for the project area for the short term.

Possible Conflicts with Other Land Use Plans, Policies and Controls

The alternatives are consistent with the objectives of Federal, regional, State and local land use plans, policies and controls for the area.

Available Information

There is less than complete knowledge about many of the relationships and conditions of wildlife, fish, forests, jobs and communities. The ecology, inventory and management of a large forest area is a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction of resource supply, the economy, and communities is the subject matter of an inexact science. However, the basic data and central relationships are sufficiently well established in the respective sciences for the deciding official to make a reasoned choice between the alternatives, and to adequately assess and disclose the possible adverse environmental consequences. New or improved information would be very unlikely to reverse or nullify these understood relationships

IX. Implementation

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

X. Administrative Review or Appeal Opportunities

This decision is subject to appeal pursuant to 36 CFR 215.11. Only individuals or organizations that submitted comments or otherwise showed interest in this project may appeal. A written appeal must be submitted within 45 days following the publication date of the legal notice of this decision in the Bozeman Chronicle, Bozeman, Montana. It is the responsibility of the appellant

to ensure their appeal is received in a timely manner. The publication date of the legal notice of the decision in the newspaper of record is the *exclusive* means for calculating the time to file an appeal. Appellants should not rely on date or timeframe information provided by any other source.

Paper appeals must be submitted to: USDA Forest Service, Northern Region, ATTN: Appeal Deciding Officer, P.O. Box 7669, Missoula, MT 59807; or USDA Forest Service, Northern Region, ATTN: Appeal Deciding Officer, 200 East Broadway, Missoula, MT 59802. Office hours: 7:30 a.m. to 4:00 p.m. Fax (406) 329- 3411.

Electronic appeals must be submitted to: <appeals-northern-regional-office@fs.fed.us>. In electronic appeals, the subject line should contain the name of the project being appealed. An automated response will confirm your electronic appeal has been received. Electronic appeals must be submitted in MS Word, Word Perfect, or Rich Text Format (RTF).

It is the appellant's responsibility to provide sufficient project- or activity-specific evidence and rationale, focusing on the decision, to show why the decision should be reversed. The appeal must be filed with the Appeal Deciding Officer in writing. At a minimum, the appeal must meet the content requirements of 36 CFR 215.14, and include the following information: The appellant's name and address, with a telephone number, if available; A signature, or other verification of authorship upon request (a scanned signature for electronic mail may be filed with the appeal); When multiple names are listed on an appeal, identification of the lead appellant and verification of the identity of the lead appellant upon request; The name of the project or activity for which the decision was made, the name and title of the Responsible Official, and the date of the decision; The regulation under which the appeal is being filed, when there is an option to appeal under either 36 CFR 215 or 36 CFR 251, subpart C; Any specific change(s) in the decision that the appellant seeks and rationale for those changes; Any portion(s) of the decision with which the appellant disagrees, and explanation for the disagreement; Why the appellant believes the Responsible Official's decision failed to consider the substantive comments; and, How the appellant believes the decision specifically violates law, regulation, or policy.

If no appeal is received, implementation of this decision may occur on, but not before, five business days from the close of the appeal filing period. If an appeal is received, implementation may not occur for 15 days following the date of appeal disposition.

Offer to Meet. When an appeal is received under this rule, the Responsible Official, or designee, must contact the appellant and offer to meet and discuss resolution of the issues raised in the appeal (36 CFR 215.17). If the appellant accepts the offer, the meeting must take place within 15 days after the closing date for filing an appeal (i.e. 45 to 60 days from the publication date of the legal notice of this decision in the Bozeman Chronicle). These meetings, if they take place, are open to the public. For information on if, when and where such a meeting is scheduled, please visit the following web site:

www.fs.fed.us/r1/planning/final_appeals/current_appeals_and_objections.pdf

XII. Contact Person

For additional information concerning this decision or the Forest Service appeal process, contact Teri Seth, West Zone NEPA Team Leader, by telephone at 406/522-2520 or Bozeman Ranger District, 3710 Fallon St., Ste C., Bozeman, MT 59718. You may also call me to discuss my decision. My telephone number is 406/823-6961.

/s/William R. Queen *4/18/2008*

WILLIAM R. QUEEN
District Ranger
Hebgen Lake Ranger District

Date

The U.S. Department of Agriculture (USDA) Forest Service prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion. age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). The USDA Forest Service is an equal opportunity provider and employer.

XIII. Literature Cited

Allen, Walt. Heritage Resource Report, 2007. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Anderson, Anna. Fire/Fuels Report, 2007 amended 4/2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Hebgen Lake Ranger District,West Yellowstone, MT.

Anderson, Hal, 1982. Aids for Determining Fuel Models for Estimating Fire Behavior. General Technical Report INT-122. Ogden, Utah. 1982 USDA Forest Service.

Brewer, L., R. Bush, J. Canfield, and A. Dohmen. 2007. Northern Goshawk Northern Region Overview: Key findings and project considerations. USDA Forest Service. 57 pages.

DNRC, 2004. Best Management Practices for Forestry in Montana . Montana Division of Natural Resources and Conservation - Forestry Division, Missoula, MT

DNRC, 2006. SMZ rules. Guide to the Streamside Management Zone Rules 2006. Montana Division of Natural Resources and Conservation - Forestry Division, Missoula, MT.

Federal Departments and Agencies. 2001. Review and Update of the 1995 Federal Wildland Fire Management Policy. Chapter 1, Pages: 2-3. Obtain copy of report from Bureau of Land Management Office of Fire and Aviation at the National Interagency Fire Center. Boise, ID.

Federal Register 2001. (66 FR 160), pp. 43409. Urban Wildland Interface Communities within the Vicinity of Federal lands that are at risk of Wildfire. August 2001.

Fusselman, Milton. Recreation/Special Uses Report, 2007. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Gallatin County (Montana)-Wildfire Protection Plan GC-CWPP March 2007. Gallatin County Fire, Belgrade, MT.

Gallatin National Forest - Forest Plan. 1987. United States Department of Agriculture. Bozeman, MT

Gallatin National Forest. 1990. Settlement Agreement to the Appeal of the Gallatin National Forest Plan by the Madison/Gallatin Chapter of trout Unlimited, Inc. U.S Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Gallatin National Forest. 2006. Gallatin National Forest Travel Management Final Impact Statement. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Gallatin National Forest, 2007a. Lonesome Wood Project, Content Analysis of Scoping Comments received in February 2006. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, MT.

Gallatin National Forest, 2008. Lonesome Wood Project, Content Analysis of EA Comments received in January 2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, MT.

Gallatin National Forest 2008a. Review of references cited during scoping. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

USDA, Forest Service. 2006. Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests. FEIS and ROD. Available at: http://www.fs.fed.us/r1/wildlife/igbc/Subcommittees/yes/YEamend/gb_internet.htm (2006).

Hebgen Basin Watershed Risk Assessment Report, October 2005. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Hebgen Lake Ranger District, West Yellowstone, MT.

Healthy Forest Initiative. 2002. http://www.heatlthyforest.gov/ The Healthy Forest Initiative and Healthy Forest Restoration Act – Interim Field Guide. USDA, Forest Service, USDI, BLM FS-799 February 2004.

Healthy Forest Restoration Act. 2003. http://www.heatlthyforest.gov/ The Healthy Forest Initiative and Healthy Forest Restoration Act – Interim Field Guide. USDA, Forest Service, USDI, BLM FS-799 February 2004.

Lamont, Susan. Invasive Weeds Report, 2007. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Hebgen Lake Ranger District, West Yellowstone, MT.

Lamont, Susan. Livestock/Range Allotments Report, 2007a. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Hebgen Lake Ranger District, West Yellowstone, MT.

Lamont, Susan. Economic Analysis, 2007b. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Hebgen Lake Ranger District, West Yellowstone, MT.

Lonesome Wood Vegetation Management Environmental Assessment (12/2007). Gallatin National Forest, USDA. 2007. West Yellowstone, MT

Novak, Mark. Vegetation – Old Growth, Structural Diversity, Huckleberries and other vegetation concerns Report, 2007. Amended 3/2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman Ranger District, Bozeman, Montana.

Kempff. Jonathan. Transportation/Roads Analysis Process, 2007. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Montana Bald Eagle Working Group. 1994. Montana Bald Eagle Management Plan. United States Department of the Interior, Bureau of Reclamation, Billings, MT. 104 pp.

Murphy, Kathy; Rich, Tim; Sexton, Tim. 2007. An Assessment of Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition on the Angora Fire. R5-TP-025. http://www.fs.fed.us/r5/angorafuelsassessment/dat/angora-entire.pdf

National Fire Plan (NFP) 2000. "Managing the Impacts of Wildfires on Communities and the Environment – A Report to the President In Response to the Wildfires of 2000"; September 8, 2000. http://www.fireplan.gov/ content/ home.

Pils, Andrew. Biological Evaluation for Terrestrial Wildlife Species, 2007. Amended 3/2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Pils, Andrew. Canada Lynx Report, 2007a. Amended 3/2008. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Pils, Andrew. Migratory Birds Report, 2007d. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Pils, Andrew. Moose Report, 2007e. Amended 3/2008. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Pils, Andrew. Northern Goshawk Report, 2007f amended 3/2008. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Pils, Andrew. Wolf Report, 2007j. Updated 3/2008. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Pils, Andrew. Biologcal Assessment, 2008. USDA Forest Service, Gallatin Naitonal Forest, Hebgen Lake Ranger District, Bozeman, MT.

Pils, Andrew. Biodiversity Report. 2008a. USDA Forest Service, Gallatin Naitonal Forest, Hebgen Lake Ranger District, Bozeman, MT.

Pils, Andrew. Best science summary, 2008. USDA Forest Service, Gallatin Naitonal Forest, Hebgen Lake Ranger District, Bozeman, MT.

Pils (2008c), personal communication about Canada Lynx Critical Habitat. 04/2008. Gallatin National Forest, Bozeman, MT.

Queen, Bill. Roads Analysis Process Determination, 2007. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Roberts, Bruce. Aquatic and Amphibian Report, 2007. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Rothermel, C. Richard, 1991. Predicting Behavior and Size of Crown Fires in the Northern Rocky Mountains. Research Paper INT-438

Schlenker, Kimberly. Inventoried Roadless Report, 2007. U.S. Department of Agricultural,

Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Scott, Reinhardt, 2001. Assessing Crown Fire Potential by Linking Models of Surface and Crown Fire Behavior. Res. Pap. RMRS-RP-29. U.S. Department of Agriculture, Forest Service; Rocky Mountain Research Station. Pp 5-7, 23-24, 49-59. http://www.fs.fed.us/rm/main/pubs/order.html

Scott, Reinhardt, 2001. NEXUS: Fire Behavior and hazard assessment system. Excel spreadsheet that links surface and crown fire prediction models. Developed by Systems for Environmental Management and Missoula Fire Sciences Laboratory. http://www.fire.org/nexus/nexus.html .

Scott, Joe H. and Elizabeth D. Reinhardt. 2005. Stereo Photo Guide for Estimating Canopy Fuel Characteristics in Confier Stands. GTR RMRS-GTR-145, USDA-Forest Service

Seth, T. 10/2007. Huckleberry Summary - Summary of Literature Related to Huckleberry Plants. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Seth, T. Public Comment Log from 2007 to 2008. Gallatin National Forest, Bozeman Ranger District, Bozeman, MT.

Shovic, Henry. Soils Report, 2007. Amended 2/2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Story, Mark. Water Quality report, 2007a. Amended 3/2008. U.S. Department of Agricultural, Forest Service, Northern Region, Gallatin National Forest, Bozeman, Montana.

Ten Year Comprehensive Strategy. August 2001.

Timber Stand Management Record System. Version 2.30. USDA Forest Service.

USDA Forest Service, 1993. Gallatin National Forest – Forest Plan Amendment 14. Bozeman, MT. 1 page.

USDA Forest Service, 1993a. Gallatin National Forest – Forest Plan Amendment 15. Bozeman, MT. 3 pages.

USDA 1998. Forest Service. Northern Region Overview – Detailed Report. October 1998. pp. 179.

USDA, 2000. Forest Service Roadless Area Conservation – Final Environmental Impact Statement.

USDA, 2000a. Protecting People and Sustaining Resources in Fire-Adapted Ecosystems – A Cohesive Strategy. 2000. The Forest Service Management Response to the General Accounting Office Report GAO/RCED-99-65 (Oct. 13, 2000).

USDA, 2001(a). Roadless Conservation Rule. 36 CFR P

USDA, 2005. Roadless Final Rule. Federal Register Volume 70, Number 92. RIN 0596-AC10. 36 CFR Part 294

USDA Forest Service. 2006. Gallatin National Forest – Travel Plan, Bozeman, MT, Gallatin National Forest.

USDA Forest Service. 2007. Black-backed Woodpecker Northern Region Overview. Unpublished Report on file at USDA Forest Service Northern Region Office, Missoula, MT.

USDA Forest Service. 2007*a*. Northern Rockies Lynx Management Direction, Final Environmental Impact Statement. Missoula, MT. 534 pages.

USDA Forest Service. 2007*b*. Northern Rockies Lynx Management Direction, Record of Decision. Missoula, MT. 67 pages.

USFWS, 2007. List of Threatened or Endlagered Species on the Gallatin National Forest. Bozeman, MT.

U.S. Fish & Wildlife Service. 2007. National Bald Eagle Management Guidelines. 23 pages.

USFWS, 3/2008. Biological Opinion for The Lonesome Wood Vegetation Management Project. Letter from USFWS to Forest Supervisor of the Gallatin National Forest. Bozeman, MT.

This page was intentionally left balnk.