

## APPENDIX E RESPONSE TO COMMENTS

### INTRODUCTION

This appendix to the Main Boulder Fuels Reduction FEIS and Record of Decision contains the agency's responses to questions and comments received during the 45-day public review and comment period for the July 2004 DEIS. Public comments were due on September 13, 2004.

A total of 12 letters were received. Table A-1 below lists the letter number and commenter. Comments are grouped by subject matter or resource. Each comment is identified by letter number first and then by individual comment number after the hyphen (Example 1-1). The comments were transcribed as written in the comment letters with the agency response following the comment. Some comments are repetitive, so responses to these comments will refer to previous letters where that specific comment has already been addressed in this appendix. Identical comments have been grouped, showing the letter and comment numbers that apply.

**Table A-1 Letters and Comments received in response to the July 2004 DEIS**

| Letter Number | Commenter   |
|---------------|---|
| 1             | Boulder River Watershed Association   |
| 2             | Don and Sheena Bray   |
| 3             | Craig and Marilee Bobzien   |
| 4             | US Department of the Interior   |
| 5             | Rick Arnold Madison-Gallatin Chapter of Trout Unlimited   |
| 6             | John Wardell-Director of the Montana Office of the EPA  |
| 7             | Tonia Wolf-American Wildlands   |
| 8             | Jeff Juel-Ecology Center (Sept. 10)   |
| 9             | Sara Jane Johnson-Native Ecosystem Council  |
| 10            | Michael Garrity-Alliance for the Wild Rockies, Native Ecosystem Council & The Ecology Center (Sept 9) |
| 11            | Tim Stevens -Greater Yellowstone Coalition  |
| 12            | Jean Public   |

### CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

Appendix E is an addition to the FEIS and responds to public comments received pertaining to the DEIS

## RESPONSES TO COMMENTS

### AIR QUALITY

**Comment 6-19** It is not clear if the public will be notified of proposed burns on the basis of the modeling results alone or if public notifications will be based on adjustments of modeling results based on meteorological conditions or measurements of particulate concentrations with portable models on the day of the burn.

**Response:** Public notification will be outlined in the burn plans. Public notification will consist of contacting residents in the units close to burns which are primarily units 1, 2, 3, 3B, 3C, 4, 11, 12, 13, 14, 14A, 15, 16A, 17A, and 21 to notify about burn dates. Burns will also be announced prior to burning in local media. During burn periods warning signs will be posted along the Main Boulder road.

**Comment 6-20** Please add the reference to aerodynamic diameter where it is missing from the same phrase in a paragraph at the bottom of page 3-109.

**Response:** Completed as requested.(FEIS Ch 3-109)

**Comment 6-21** We suggest that simply be stated that Butte is the nearest non-attainment area for PM10 and Laurel is the nearest non-attainment area for sulfur dioxide.

**Response:** This change was not made since the existing non-attainment area and large industrial source emission description is much more complete.

**Comment 6-22** The FEIS should also disclose that smoke from the same units could cause temporary reductions in visibility in nearby parts of the Absaroka-Beartooth Wilderness.

**Response:** The text for Alternative B was changed to disclose that smoke could cause temporary reductions in visibility in nearby parts of the Absaroka-Beartooth Wilderness (FEIS Ch 3-109).

**Comment 6-23** We suggest noting that there is also an ozone standard.

**Response:** Reference to the ozone standard was added in Chapter 3 – Applicable laws, regulations, and Forest Plan Guidance (FEIS, Ch 3-109).

**Comment 6-24** We suggest that a note be added under Air on page B-2 to make it clear to the public that the codes are distances in miles.

**Response:** Table 3-14 and 3-15 in the Direct and Indirect Effects section of Alternative B has been changed to include the units of miles (FEIS Ch 3-106 & 3-107).

## ALTERNATIVES

**Comment 7-6** Options other than the proposed action should have been analyzed so that the public could evaluate them.

**Response:** Several options were studied (See FEIS Ch 2-43). After numerous discussions among various specialists, the team came to the conclusion that the only alternative that fully addresses the issues, meets the purpose and need of the project, and complies with Forest Plan standards and guidelines is Alternative B, the proposed action. Alternative B fully complies with the legal and administrative constraints that combine to define how well any alternative can provide for greater public safety. The team was somewhat uncomfortable with only fully analyzing the “no action” and “proposed action” alternatives. However, none of the other alternatives considered, met all of the requirements to make them viable.

**Comment 8-2** The FS needs to be looking at other alternatives.

**Response:** See response to Comment 7-6 above.

**Comment 8-3** We request that FS fully evaluate an alternative that focuses on creating defensible space around structures, comparing the likely fire risk scenarios, and allow the public to comment on such a proposal.

**Response:** Alternative H (FEIS, Ch 2-45), which was considered, would attempt to create defensible space in areas adjacent to structures or developments, but would not meet the purpose and need of the project, which is to provide for public and firefighter safety and extend the potential time available for evacuation in the event of a wildfire. As stated on Ch 1-6 of the FEIS, the Intermountain Fire Sciences Laboratory concluded that due to 90 years of successful fire suppression efforts and significant increases in vegetation and fuels, the Boulder river corridor is in a potentially hazardous situation during periods of severe fire weather and that natural safety zones do not exist. It was concluded that an ignition, under these circumstances would seriously threaten life and property. Treating only small areas adjacent to structures and developments would not be enough to effectively break up fuel continuity or reduce fuels enough to either buy time or effectively increase safety for individuals living or recreating in the corridor were there to be a wildfire. The purpose and need of the project is not to protect private structures, however the treatments identified with the proposed action, should help to protect these structures. Structure protection is also addressed by the collaboration of the Main Boulder Watershed group and private landowners.

**Comment 9-46** The lack of alternatives also seems to be based on the almost total lack of any wildlife standards. Otherwise, there would be many different approaches to meeting the various needs of wildlife.

**Response:** The mitigation and design criteria incorporated into the proposed action for wildlife, threatened and endangered, sensitive, and MIS species are outlined in the FEIS, Ch. 2-35. In addition, species recovery planning and conservation assessment and agreements for lynx and grizzly bears, in cooperation with the U.S. Fish and Wildlife Service, have specific direction that must be incorporated into the project.

The analysis has complied with the Endangered Species Act, Section 7. A Biological Assessment for the preferred alternative (located in the Project File) was submitted to the US Fish & Wildlife Service for review. In a letter dated May 13, 2004 the US Fish and Wildlife Service reviewed the Biological Evaluation for the Main Boulder Fuels Reduction

Project proposed action and concurred with the findings of the Big Timber Ranger District Wildlife Biologist. The findings are that the proposed action is not likely to adversely affect the threatened grizzly bear or the threatened Canada lynx, is not likely to jeopardize the continued existence of the nonessential experimental gray wolf, and would have no effect for the threatened bald eagle. The concurrence letter can be found in the Project File at the Big Timber office.

**Comment 9-47** It is clear you didn't consider anything except fuels and timber production.

**Response:** See response to Comment 7-6 above.

**Comment 10-26** The DEIS' s range of alternatives is too narrow if it doesn't attempt to include and fully analyze an alternative that meets VQOs.

**Response:** The proposed action has been designed to meet the Visual Quality Objectives (VQOs) that are outlined in the Forest Plan Chapter III for all of the Management Areas found in the Main Boulder project area. There are also numerous mitigation and design criteria that have been incorporated into the proposed action (FEIS, Ch 2-31) to ensure that the proposal will meet the Forest Plan standard for both Visual Quality and for continued eligibility for study of the potential classification of the Boulder River for Designation as a Scenic and Recreational River.

Because the “outstandingly remarkable values” of the river are not itemized and specifically addressed in the Forest Plan, the ID team and Regional Office staff agree that the maintenance of the visual quality objective is the most appropriate means to assure compliance with potential Scenic and Recreational River classification. Therefore, this proposal considers the viewshed from the Main Boulder River and utilizes the Forest Plan Standard for visual quality (partial retention) to determine probable effects from treatment in the River corridor and to the potential river classifications. As stated in Chapter 2-37, to maintain these standards, all landscape modifications must no longer be visually dominant within the areas seen from the River one year after treatment and associated activities are completed. (Areas seen apply to those areas that are currently visible as well as those areas that become visible after treatment.) Chapter 2, as well as Appendix B, defines the methods and mitigations that will be utilized to accomplish this goal.

**Comment 11-1** We request that the forest take the main points of these comments and incorporate them into designing another alternative.

**Response:** The main points of the comments have already been considered in the array of alternatives that are described in the FEIS, Ch 2-43. Also see response to Comment 7-6.

**Comment 11-3** We request that the forest reconsider developing an alternative that does not include harvest in the riparian areas as contemplated in Alternative D.

**Response:** Alternative D, No Riparian Harvest, would be similar to Alternative B (the proposed action) with the exception that no stand density reduction, fuel removal activities, or controlled burning would take place in any riparian areas. There are currently heavy fuel loadings in many of the riparian areas, which in the case of a wildfire would likely burn very intensely, consuming all or most of the vegetation right to the edge of the tributary streams and/or the Main Boulder River. Eliminating fuel reduction activity in the riparian areas, does not address the possible consequences (loss of shade, rise in water temperature, loss of future woody recruitment, and/or sediment introduction into the streams and river from the lack of

vegetative cover), if a large wildfire were to occur. This scenario is described in FEIS Ch 3-54 in the direct and indirect effects of the no action alternative. Alternative D would not have an improvement over the no action alternative in the riparian areas because the contributing fuels (ladder fuels, large and small diameter trees) would not be removed to break up the continuity of fuels. This alternative was dropped from further analysis because it does not adequately address riparian concerns associated with the purpose and need for fuel reduction in the Main Boulder River Corridor.

## **BMP's**

**Comment 2-4 Page C-8, Section C, Item 1 mentions "Rapid Reforestation" where I'm quite sure "Rapid re-establishment of ground cover" would have been better wording.**

**Response:** Rapid re-establishment of ground cover is better terminology. "Rapid re-establishment of ground cover is encouraged to reestablish protective vegetative cover." This verbage was changed in the FEIS Appendix C-8.

**Comment 5-3 The Chapter supports a thorough monitoring requirement for all phases of the project and is interested in being appointed a member of the BMP monitoring team.**

**Response:** Comment is noted. Boulder River Watershed Association has been involved since the inception of the project. They have shown great interest, as have you in wanting to be a part of a monitoring group for this project. As the project progresses forward we would welcome both groups to work collaboratively with us in developing monitoring plan objectives.

**Comment 5-4 ...to evaluate the success of the program, develop multiple contracts for completion of the timber activities to allow determination if the objectives and concerns are being met.**

**Response:** Comment is noted. We will take your comment under consideration when developing contracts for this project.

## **ECONOMICS**

**Comment 9-58 If the Forest Service is going to finance unprofitable fuels projects with timber sales, and these timber sales are deficit sales, where will the money come from? In fact, where will the money come from to pay for the logging that will be done in the Main Boulder project (-\$118,469.91)? (A-22).**

**Response:** The analysis contributed to the Draft EIS resulted in a predicted deficit of -\$118,469.91. The analysis has been updated to reflect changes in the market for wood products that have occurred since the draft was published. Using market information that was current as of the third quarter of fiscal year 2004 (April-June, 2004) the value of the stumpage (standing trees) to be removed exceeds the anticipated costs to treat slash resulting from the harvest operations and to skid unmerchantable material by \$228,866.75. The updated analysis concludes:

The analysis indicates that the anticipated return from the sale of wood products will exceed the total cost of the activities likely needed to realize the desired post-treatment condition. Any additional treatments, whether they were to occur within the

boundaries of the units identified for conventional harvest or on steeper, adjacent slopes, will reduce the margin potentially available using the least costly logging systems on the most favorable slopes.

**Comment 9-59 The DEIS failed to identify the costs associated with non-logging fuels treatments. Could you please provide this information?**

**Response:** The cash flow analysis was performed in response to the issue:

Since meeting the purpose and need will require actions to modify the vegetation that have no profit potential, there is an issue concerning how much of the unprofitable work can be financed by selling standing trees.

The analysis done in support to the Draft EIS resulted in a predicted deficit of -\$118,469.91. This outcome supported the conclusion reached in the DEIS:

The analysis supports a concern that the anticipated return from the sale of wood products will be less than the total cost of the activities likely needed to realize the desired post-treatment condition. Any additional treatments, whether they were to occur within the boundaries of the units identified for conventional harvest or on steeper, adjacent slopes, will require a supplemental source of funding.

The costs associated with non-logging fuels treatments would be included in the 'additional treatments' referred to in the conclusion.

The analysis has been updated to reflect changes in the market for wood products that have occurred since the draft was published. Using market information that was current as of the fourth quarter of fiscal year 2004 the value of the stumpage to be removed exceeds the anticipated costs to treat slash resulting from the harvest operations and to skid unmerchantable material by \$228,866.75. This amount is predicted to be available to finance unprofitable activities likely needed to realize the desired post-treatment condition. Exactly how much of this potential premium would be spent on which fuels treatment activity or service cannot be determined since a contractor would set the price for his services and the Forest Service would have the option to accept or refuse the offer, based in part on how much of the premium would remain to pay for other, possibly more important activities. The issue called for an estimate of the amount available to finance unprofitable work; it did not ask what work might be done with the amount potentially available.

**Comment 9-60 The DEIS also failed to identify the short and long term costs that will be associated with weed control.**

**Response:** The costs associated with weed control are as follows and are located in the Project File:

1) Main Boulder Road (20 miles Main Boulder Station to Box Canyon)

This treatment would occur annually under any harvest scenario  
25 feet from edge of road on both sides, monitor and treat

|                     |        |
|---------------------|--------|
| Labor               | \$1050 |
| Chemical            | \$ 180 |
| Vehicle (FOR & Use) | \$149  |

2) Monitor of 1100 acres annually cost \$3.00 per acre for a total of \$3,300. per year.

Monitoring would occur annually, however, in the second year it should be done following treatment of weeds identified the previous year. It is very difficult to monitor while carrying a heavy back pack sprayer.

3) Treatment \$75. per acre includes labor, chemical and vehicle

The costs below assume conventional logging practices, *with* recommended mitigations in place.

Logging over snow would greatly reduce these costs and may over time reduce the monitoring costs too. Logging over snow would also reduce the long term costs, those that continue to occur after seven years of monitoring and treatment. "Weeds are forever".

| Year         | Percent of Total | Acres | Cost            |
|--------------|------------------|-------|-----------------|
| 1            | 5%               | ?     | \$4,125         |
| 2            | 40%              | 440   | \$33,000        |
| 3            | 30%              | 330   | \$24,750        |
| 4            | 20%              | 220   | \$16,500        |
| 5            | 10%              | 110   | \$8,250         |
| 6            | 5%               | 55    | \$4,125         |
| 7            | 5%               | 55    | \$4,125         |
| <b>Total</b> |                  |       | <b>\$94,875</b> |

**Comment 10-5 It is not clear if this project is to be designed and implemented using National Fire Plan funding.**

**Response:** As the FEIS, in Chapter 1-22 discusses, the project is responsive to the National Fire Plan, as well as the other documented direction. This project is designed to be implemented using appropriated hazardous fuels reduction funding.

**Comment 10-12 Throwing money at fuel reduction to prepare for later mostly unnecessary fire suppression activities followed by throwing money at post-fire vegetation manipulations makes no sense ecologically nor economically**

**Response:** This comment is an opinion, and one we do not share. The Forest Service is mandated by its role as a steward of public resources to consider opportunities for fuels reduction as a means of improving public safety.

**Comment 10-77 NFMA requires a sophisticated consideration of benefits and costs, including use of both market and non-market methods of determining existing and future resource values, methods to determine opportunity costs, and use of best available quantitative and qualitative techniques [(36 CFR 219.12(e); 219.12(f)2; 219.1(b)12]. This was not done.**

**Response:** The deciding official is responsible for determining the appropriate level of social and economic analysis for the Main Boulder Fuels Reduction EIS. The analysis is to be "cost effective" and "commensurate with complexity of issue, scope of decision, and significance of expected results.":

FSM 1903 provides policy for Forest Service planning. It states, "Conduct appropriate level of analysis commensurate with complexity of issue, scope of decision, and significance of expected results to arrive at decisions" (FSM 1903 (2)). FSM 1904 lists responsibility for Forest Service planning. FSM 1904.1 states that Line Officers are responsible for managing

and controlling any planning process which leads to decisions for which they are the responsible officials.

FSM 1970 provides direction for social and economic analysis in Forest Service planning. FSM 1970.3 (6) states "Select cost effective methods of conducting economic and social impact analyses to ensure that the degree of analysis is commensurate with the scope and complexity of the proposed action."

FSM 1970.6 states, " The responsible line officer determines the scope, appropriate level, and complexity of economic and social analysis needed. In many planning and management situations, certain laws and regulations or Forest Service policy specify analysis requirements (FSM 1901, 1903). In other situations, the scope and depth of analyses depend on the potential effects of the program or project planned or under review."

**Comment 10-78 By not considering the economic impact to fishing, hunting and wildlife viewing, the Main Boulder Fuels Reduction Draft EIS did not properly calculate the present net value of the project and therefore we cannot be sure that the project maximizes long term public benefits**

**Response:** Direction regarding the costs to be considered in a project-level economic analysis is provided in the Forest Service Manual, 1971.4, Analyzing Costs:

In analyzing proposed actions and alternatives, consider all economic costs. These include budget costs... Limit identification of economic costs only to *those costs in the production process* (emphasis added) up to the point of evaluation or to those costs that influence the values of outputs.

A determination of Net Public Benefit includes consideration of many non-market values. This type of analysis is informative when it contributes to an assessment of alternative programs that would provide direction for numerous activities occurring for several years or decades over a large area. The Gallatin Forest Plan is supported in part by an analysis of the Net Public Benefit specific to alternative directions for management of the Forest for fifteen years. At the project level, concerns for fishing, hunting and wildlife viewing are adequately addressed in the narratives in the FEIS Chapter 3, pages 3-7 to 3-10, pages 3-49 to 3-102.

A review of the information disclosed in Chapter 3 suggests that the promise of an insight possible only with the numeric display of a Net Public Benefit Analysis is illusory. What is it, exactly, that is missing from the following paragraphs?

Based on the channel sensitivity analysis, the proposed action poses little threat to the physical integrity of riparian areas or streambank stability. Channels have stable stream banks with a low to very low sensitivity to disturbance. Riparian vegetation exerts low to negligible control on channel form and bank stability. In addition, mitigation measures, including SMZ rules are designed to reduce or eliminate potential for adverse affects on riparian integrity or bank stability (see Mitigation for Alternative B described below). With the mitigations included in the proposed action, fuel treatments are designed to maximize the amount of LWD available for recruitment to stream channels. Mitigation measures described below substantially reduce the potential for adverse LWD related impacts. For example, no treatment would be allowed within 15 feet of streams and all large trees leaning toward the channel will not be harvested. Reducing some understory trees will bring riparian stand density to more normal stocking levels in the absence of wildfire. Reducing high fuel loads along riparian corridors will also reduce the potential for high intensity wildfires along the corridor. (FEIS, Ch. 3- 55)

Since mitigation and design criteria for the project will be followed and the proposed treatment units are oriented along a linear corridor within a quarter mile of a maintained county right-of-way and have been designed to retain between 30-50% cover, representing less than 5% of available hiding cover in the analysis area, and should enhance hiding and foraging habitat in the future; the Proposed action Alternative would not have any direct, indirect or cumulative affects on important hiding cover for grizzly bears. (FEIS, Chapter 3, page 67).

Fuel reduction operations will likely be distributed across a 5-7 year period. However, specific mitigation was added that limit the total impact in the PCA to 250 acres or less in any given years operations and stagger all actions in the corridor to minimize impacts to one area and offer alternative habitat and travel corridors for bears. Effects of the proposal would be temporary with improved forage conditions persisting in the burn area for several years after harvest is complete. (FEIS, Ch. 3-67).

Indirect effects to grizzly bear foraging habitat are expected to be minimal. The expected establishment and enhancement of berry production in many of the treatment units could indirectly affect bears by attracting them nearer to the road. This could increase the potential for bear-human encounters that would ultimately endanger bears. However, this hypothesis is speculative and the grizzly bears natural tendency to avoid humans should prevent this from becoming an issue. (FEIS, Ch. 3-67).

Suitable nesting habitat for goshawks is provided in the larger patches of mature to old growth forests in the Main Boulder analysis area. The better habitat is concentrated in the upper or southern most treatment units (Units 14 thru 32). However, there are no known or recently active nest locations within the project area. Goshawks have been sited in the vicinity of the proposed project, but surveys in the area have not resulted in the discovery of any active nests. There is speculation that these birds are occupying nests in side drainages in the wilderness where access and detection are difficult. (FEIS, Ch. 3-80).

Proposed treatments within the Main Boulder Project Area will remove and alter some mature and old growth forest that could be suitable for goshawk nesting. Mitigations have been included in the project and contractor standards that were designed to protect and buffer any active raptor nest. Specifically, no activity would be permitted within one-quarter mile of any active goshawk nest between March 1 and June 31 and a 100-foot buffer would be retained around the nest tree during treatment of the unit. Indirectly, the proposed treatments may cause goshawks to abandon particular nest sites in future years. However, goshawks normally have up to 5 alternate nests constructed on any given territory and nests located further from the Main Boulder road and higher levels of traffic and human presence would likely improve nest success and reduce disturbance. Cumulative effects to goshawk nesting are not expected because there is abundant nesting habitat immediately adjacent to project treatment areas. Most of the suitable goshawk nesting habitat is located in the wilderness, which would further reduce the potential for any impacts. Furthermore, the threat of wildfire would be reduce after treatments are completed providing more protection for remaining nesting habitat and reducing the threat of a catastrophic wildfire event. (FEIS, Chapter 3-80).

**Comment 10-79 Nor was the value of clean water in the project area analyzed or the economic impact of logging and road building on clean water.**

**Response:** Foreseeable impacts to water quality are summarized in Ch 311 of the FEIS. A full discussion is provided in Ch. 3- 44- through 3-48. From the discussion on Ch 3-11:

Fine sediment levels, resulting from Alternatives A and B, are within GNF (Gallatin National Forest) guidelines for spawning habitat composition in the Main Boulder River.

The finding that sediment levels are expected to be within the prescribed guidelines with (Alternative B) or without (Alternative A) the proposed temporary roads is given fuller discussion in Ch 3-47:

The sediment model estimated that the 7.4 miles of temporary road construction over a 4-year period would increase road sediment by a maximum of 2.5 tons/year in year 3 (2006). Timber related sediment from slashing, harvesting, skidding, and yarding is estimated to increase sediment by a maximum of 24.3 tons in 2006. Fire sediment from understory burns was modeled, assuming all burns were done in 2004 (in actuality understory burns would be done over the life of the project 6-8 years), which would result in a 2004 increase of 2.5 tons. Total sediment yield was projected to increase from 2.57% over natural in year 1 (2003) to 3.29% over natural in 2006 (year 3) and increase of 0.82% and decrease to pre-project levels by 2011. Actual project scheduling would extend the implementation longer than the 2004-2007 timeframe for the sediment model, which would result in maximum year increases less than 0.72%. Sediment recovery to pre-project levels, however, would also be extended and would occur about 3-4 years after implementation is completed. The 0.72% increase is too low to be measurable in the Boulder River in terms of actual concentration or physical or biological effects. *None of the treatments are expected to have measurable sediment increases to any of the tributary streams of the Boulder River.* The projected sediment effects are well within Gallatin Sediment guidelines for annual (30% over natural) or 20 year cumulative sediment (300% over natural). (Emphasis added)

**Comment 10-80** The economic impact of building up to 9.27 miles of roads on water was not considered, yet water from our national forests has an economic value of more than \$3.7 billion a year,

**Response:** See the reply to 10-79, above.

## FOREST PLAN

**Comment 9-1** It appears that the district needs to do a Forest Plan Amendment in order to allow fuels management in Management Area (MA) 5

**Response:** See the standards outlined for MA5 in the Forest Plan page III-14 & 15.

- 1) "Maintain and improve the wildlife habitat values and the natural attractiveness of these areas to provide opportunities for public enjoyment and safety".
- 2) "Allow a level of timber harvest consistent with goal 1".

These areas are classified as suitable for timber production and both commercial and pre-commercial thinning are to be permitted if it enhances the recreational value of the area.

As stated in the *FEIS Ch. 1-2*, the primary goal for this proposal is to lesson the risk to the public and increase firefighter safety in the event of a human-caused or wildland fire start

originating in the urban interface of the Main Boulder River Corridor or the adjacent wilderness areas. Reducing and breaking up the continuity of vertical and horizontal fuels would lower public and firefighter risk by changing the fire intensity and pattern, thereby gaining time to implement an evacuation or other safety measures were a fire to occur.

The primary emphasis of this project is to identify fuel modification opportunities on National Forest lands that are adjacent to the Main Boulder Road, the Boulder River, recreation residences, campgrounds, and administrative sites. Specific design criteria and mitigations have been developed to buffer these areas (See FEIS Ch. 2-31 and Appendix B-1) for various resource concerns.

**Comment 9-9 A Forest Plan Amendment is needed to allow fuels reduction to be the primary management program within riparian management areas,**

**Response:** As stated in the Forest Plan page III-19, "Manage the riparian resource to protect the soil, water, vegetation, fish, and wildlife dependent upon it.

Timber harvest is acceptable as long as it is designed to provide for a diverse vegetative pattern and it will meet the needs of riparian zone-dependent species.

Numerous mitigation and design criteria pertaining to water quality and fisheries have been incorporated into the project design as outlined in the FEIS, Ch 2-31 & 2-32.

Also see the direct/indirect and cumulative effects of the proposed action for water quality (FEIS, Ch 3-44 through 3-48) and the effect of the proposed action on fisheries (FEIS, Ch 3-55 through 3-58).

The direct and indirect effects stated in the FEIS, Ch 3-54 & 3-55 for the no action alternative are as follows: "However, it is worth noting that without fuel reduction, the potential for a higher intensity fire along the Boulder River Corridor increases and post-fire vegetative recovery time would also increase. Fish populations have evolved with wildfire and the ecological processes associated with them. Wildfires play an important role in maintaining spatial and structural diversity, habitat complexity and nutrient cycling. However, when fire size, frequency, intensity, or severities are outside the range of natural variability (i.e., fuel loading is excessive), there is potential for watersheds to be burned beyond their adaptive limits. With large-scale high severity fires, there is a potential threat to watershed integrity and associated fish species persistence. Existing fuels loads are high throughout the drainage, including riparian corridors. Treatments associated with the proposed action Alternative will not reduce the likelihood of a large-scale stand replacement fire in the upland Wilderness areas of the Boulder drainage. However, treatments associated with the proposed action Alternative are intended to reduce burn severity along the Boulder River Corridor. Reducing the severity of a future wildfire along the corridor could have some beneficial affect to riparian integrity and fish habitat quality. Those benefits would not be realized for the no action alternative".

**Comment 9-10 Finally, it appears that the planned fuels treatments in riparian areas far exceeds anything projected in the Gallatin Forest Plan, which indicates 70 acres per year.**

**Response:** Commenter is referring to the Schedule of Management Practices displayed in a four-column table on page III-23 of the Gallatin Forest Plan. Opposite the general heading 'TIMBER' the table distinguishes between Timber Harvest and Reforestation activities and lists 70 acres as the Average Annual acres of actions in these categories expected to occur during the first and second decades following implementation of the Forest Plan. This

disclosure is separate from the discussion of Forest Plan Standards specific to Management Area 7. The discussion of Standards begins on page III-19 and concludes at the bottom of page III-22. The averages disclosed in the table on page III-23 do not oblige the Forest to accomplish at least the listed acres every year nor do the displayed average values constrain the total of any year's program of work in either timber harvest or reforestation to no more than predicted average annual value. A closer reading of the table on page III-23 discloses that only the value for Water – Rehabilitation changes from the first to the second decade, indicating that the planners believed most of the outputs foreseen in Management Area 7 would be realized by working at a constant rate over the course of twenty years.

**Comment 9-13 Where is MA 15 in this project area? We don't have any MA 15 on our 1986 Forest Plan map.**

**Response:** See Map 1-5, (FEIS, Ch 1-21). This map clearly depicts MA15 land along the south end of the river corridor from Box Canyon and the junction of East Rainbow Creek to the south end of the project area. The Forest Plan Management Area Map also clearly shows the same area as MA15, extending south to the historic mining town of Independence.

The only unit that is located in MA15 is Unit 30. As shown on Map 2-4 (FEIS, Ch 2-26), no road construction is proposed in this MA and the majority of the area would likely have hand treatments. The areas to be treated by mechanical equipment would be accessed by the current road that goes to Independence. The Forest Plan allows for harvest of post, poles, and other wood products in areas adjacent to existing roads (Forest Plan page III-48).

**Comment 9-41 Where do you get the interpretation that 3 snags per acre are not required in timber harvest activities?**

**Response:** Silvicultural practices that result in a regenerated stand pose the most serious concerns for snag retention and long-term replacement. Fuel reduction activities related to this project are not considered to be regeneration harvests. As disclosed in the wildlife portion of FEIS dealing with design criteria and mitigation (Ch 2-35), the wildlife biologist states:

30) The Forest Plan provides specific direction for snag retention within harvest areas prescribed for regeneration. Specifically, 3 snag trees or potential snag trees (18' in height and 10' DBH) should be retained per acre or 30 snags per 10 acres. Although none of the units to be treated are prescribed for regeneration, we would meet these guidelines for all harvest units where it is safe to do so and potential snag source trees are present.

For Amendment 15, pertinent literature was reviewed, and contacts were made to individuals with expertise in wildlife and timber management. Information gathered was used to develop prescribed retention standards for snags and down woody debris listed in wildlife design feature measures numbers 2 and 8 above. These measures have been deemed adequate to provide the *minimum* amounts of standing and down dead, woody materials required to sustain suitable habitat for wildlife species that depend on these habitat components (FEIS, Ch 2-36).

**Comment 9-42 The DEIS also claims (2-29) that snag management is not required in fuels reduction projects. If so, this is clearly a major flaw of the Forest Plan.**

**Response:** See response to above Comment 9-41.

**Comment 9-51 The Gallatin Forest needs to complete a Forest Plan amendment to address the environmental impacts, and obtain public input, on new management direction for fuels before big projects are implemented.**

**Response:** The Gallatin Forest Plan provides direction and standards that apply to each of the Management Areas (MAs) that are found on the Gallatin National Forest. These standards have resource elements including timber and fire that are outlined for each of the MAs. The units identified in the proposed action do not violate the standards set forth in the Forest Plan for their applicable MA and therefore a Forest Plan Amendment is not required in order to implement the Main Boulder Fuels Reduction Project.

**Comment 10-34 The DEIS tiers to a Forest Plan that is out-of-date in terms of its considerations of fire ecology, as ICBEMP research and the DEIS itself indicate.**

**Response:** Although the current Forest Plan does not give specific direction in regard to fire ecology, nor does the Main Boulder Fuel Reduction Project violate any of the fire related standards set forth by the Forest Plan.

As stated in the FEIS, Ch 1-23, Project objectives include creation of a more defensible area in the WUI by reducing the wildfire severity risk and crown fire hazard in the wildland urban interface of the Main Boulder River Corridor, creating a more defensible site for property, and natural resources from wildfires.

- Directed by National Fire Plan (2000), the Cohesive Strategy (October 2000), 10 Year Comprehensive Strategy (August 2001), 2001 Review and the 1995 Federal Wildland Fire Management Policy, Gallatin National Forest Plan, (1987).
- Measured in terms of a reduction of *crown bulk density*, an increase in *crown base height* and site conversion to *Fuel model 8*. Under these conditions, the sites meet guidelines established in FireSmart – Protecting your Community from Wildfire, (1999) for interface hazard mitigation.

Maintain low risk areas by reducing conifer encroachment.

- Directed by National Fire Plan (2000), the Cohesive Strategy (October 2000), 10 Year Comprehensive Strategy (August 2001), 2001 Review and the 1995 Federal Wildland Fire Management Policy, Gallatin National Forest Plan (NFP), (1987).
- Measured in terms of percent effectiveness of mortality estimates for mature and small trees from the First Order Fire Effects Model (FOFEM, 4.0 Reinhardt, Keane and Brown, 1997).

In August 2000, President Clinton asked Secretary of the Interior (Babbitt) and Secretary of Agriculture (Glickman) to recommend how best to respond to the recent fire events, reduce the impacts of wildland fires on rural communities, and ensure sufficient firefighting resources in the future. The President also asked what actions federal agencies, in cooperation with states and local communities, could take to reduce immediate hazards to communities in the wildland urban interface and to ensure that fire management planning and firefighter personnel and resources are prepared for extreme wildland fires in the future.

National and regional level reports have set the stage for more aggressive fuels management:

**Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildland Fire Threats (GAO/RCED-99-65).** This report concluded: “(The) most serious problem related to the health of the national forests in the interior West is the over-accumulation of vegetation.”

**Managing Impacts of Wildfires on Communities and the Environment, Sept. 2000.** This report (prepared by Secretaries Babbitt and Glickman) made recommendations on how to respond to the 2000 wildfires, how to reduce their impacts to communities, and how to ensure sufficient firefighting resources in the future.

**Protecting People and Sustaining Resources in Fire-adapted Ecosystems – A Cohesive Strategy, October 2000.** This report outlines a strategy to reduce wildland fire threats and restore forest ecosystem health in the interior West. The Cohesive Strategy outlined four priorities: 1) wildland urban interface; 2) readily accessible municipal watersheds; 3) threatened and endangered species habitats; and 4) maintenance of existing low-risk Condition Class 1 areas (refer to 2.3.B).

**Towards Restoration and Recovery: An Assessment of the 2000 Fire Season in the Northern and Intermountain Regions, January 2001.** This document describes current conditions, identifies opportunities, and sets priorities for restoration after the 2000 fires.

**A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment – 10-yr. Comprehensive Strategy, August 2001.** This document responds to Congressional direction for a multi-agency strategy by outlining a comprehensive approach to the management of wildland fire. The 10-year comprehensive strategy has four goals: 1) improve prevention and suppression; 2) reduce hazardous fuels; 3) restore fire-adapted ecosystems; and 4) promote community assistance. This document provides the initial foundation of the recent President’s Healthy Forest Initiative (August 2002).

The Main Boulder Fuels Reduction Project is responsive to the hazardous fuels reduction and restoration elements of the **National Fire Plan (2000)**, which states:

**Hazardous Fuels Reduction** – Assign highest priority for hazardous fuels reduction to communities at risk, readily accessible municipal watersheds, threatened and endangered species habitat, and/or other important local features, where current conditions favor uncharacteristically intense fires.

In addition this project is responsive to the more recent **Healthy Forest Initiative (August 2002)** in terms of reducing hazardous fuels and promoting community assistance in the management of wildfire.

**Comment 10-66** Additionally, the fifteen-year mandatory due date for Revision of the Forest Plans has passed.

**Response:** All of the National Forests in the country have been placed on a National Schedule for Forest Plan Revision. The Gallatin National Forest Plan is scheduled for revision beginning in 2006. Travel Plan Management Revision, which is a part of Forest Plan Revision, is currently underway.

## FUELS

**Comment 1-1 The success of the private land fuels reduction is dependent on significant fuels reduction in the surrounding National Forest.**

**Response:** The fuels treatments proposed on National Forest land are expected to enhance the effectiveness of treatments undertaken by private landowners. The purpose and need for reducing the probability of an uncontrollable crown fire is to better provide for the safety of forest visitors and firefighters. Treatments on private land extend this benefit to include a reduced risk of property damage or loss.

The Sweetgrass County Community fireplan states “In 2003, the US Forest Service is in the planning stage for a fuel reduction program to mitigate a large fire. Also in 2003, grant money should be available for private landowners in the corridor to reduce the fuels on their land. The two programs should compliment each other well, and over the course of several years should decrease the fire danger. One benefit of this project will be to better protect homes through the use of defensible space. Another benefit will be to provide proper safety zones where none exist between the Natural Bridge and Box Canyon. The lack of any safe zones has been a concern of the LEPC (Local Emergency Planning Council) for many years”.

**Comment 1-2 Our grant, which funds this project requires the adjoining National Forest to be treated or be in treatment.**

**Response:** Comment has been noted. It is the full intent of the Forest Services to meet our obligations for managing National Forest lands within the Main Boulder Corridor.

**Comment 3-1 We can appreciate the challenges of using fire in the wilderness but want to support your efforts to pursue this in the future.**

**Response:** We considered an alternative that would allow some of the proposed prescribed burning to cross into the Absaroka Beartooth wilderness area. The goal of this alternative was to allow prescribed fire to cross into the wilderness following natural control boundaries and features, rather than taking control measures to contain the prescribe fire before crossing the wilderness boundary.

While the Absaroka Beartooth Fire Management Guidebook (1993) provides an opportunity to consider management-ignited fire in the wilderness to reduce unnatural buildups of fuels, it also specifies that all four of the following conditions must be met (Absaroka-Beartooth Fire Management Guidelines, page 49).

Specifically, management-ignited prescribed fire may be used in wilderness to reduce unnatural buildups of fuel only if all of the following are met:

1. The use of prescribed fire or other fuel treatment measures outside wilderness is not sufficient to achieve fire management objectives,
2. An interdisciplinary team of resource specialists has evaluated and recommended the proposed use of prescribed fire,
3. The interested public has been involved appropriately in the decision
4. Lightning-caused fires cannot be allowed to burn because they will pose serious threats to life and/or property within wilderness or to life, property, or natural resources outside of wilderness.

This alternative was dropped from further consideration because Conditions 1 and 4 could not be satisfied with the existing conditions. Fire management goals of this project can be met outside the wilderness without allowing prescribed or management ignited fire to cross into the Absaroka-Beartooth wilderness.

With the current situation additional fuels could be treated on less than 50 acres in the wilderness and would mostly consist of fairly open areas with natural barriers, as these are the only places that assure that the prescribed fire could be stopped without vegetative manipulation. Very few of the heavy fuels (thousand hours) would be treated. This small amount of additional fuels treated would not significantly enhance the prescribed natural fire program in the wilderness or significantly reduce the fire risk to the WUI (wildland urban interface ) at this time.

We will, however, continue to assess the fuels situation for the Main Boulder drainage in the future and keep open the option to consider controlled fire in the wilderness.

**Comment 6-27 Is it necessary to harvest such large trees (i.e. 20 inches plus in diameter) to reduce fire risk? The extent of fire risk reduction that would be achieved by removal of many large diameter fire resistant trees should be discussed.**

**Response:** To prevent crown fire from moving from tree to tree, the canopy needs to be thinned across all size classes including some of the larger trees. Thinning of the crown layer is based on the horizontal and vertical arrangement of the fuels and not necessarily by size class of trees. (NEXXUS Modeling).

Graham and others (1999) noted that the primary stand attributes that control a fire's behavior are surface fuel condition, crown bulk density, and crown base height. All three attributes must be managed.

**Comment 6-28 Outside of the clumps approximately 200 trees per acre would be left. This seems like a high tree density to leave for a fuels reduction project.**

**Response:** Reference FEIS, Ch- 2-45, "Alternative G (Fuels Prescription Alternative) would include the same units as Alternative B, the proposed action. Treatments would remove greater amounts of trees and ladder fuels. Stands would be thinned, and fuels removed to the optimum levels identified through the NEXUS and BEHAVE Modeling runs, in order to keep a potential wildfire on the ground. The team felt that this extensive of fuel modification would be inconsistent with retaining the "Sense of Place" in the Main Boulder River Corridor, which is a key concern voiced from the public through scoping comments. Alternative G would not be consistent with the visual quality guidelines for the Main Boulder River Corridor of "partial retention". Partial retention is required to retain the Scenic & Recreational qualities for portions of the Boulder River. The significantly greater removal of both trees and shrubs would likely have negative effects on wildlife species. There would be fewer clumps of trees left for thermal and hiding cover with a higher percentage of the total area treated. The additional tree removal necessary to meet optimal fuel modeling conditions would make it difficult to implement the Best Management Practice guidelines for Streamside Management Zones (SMZ), which call for a minimum of 50% of the trees over 8" diameter, by size class, to be retained within an SMZ."

With the proposed action, an average of approximately 300-500 trees per acre would be left after treatment with a minimum of 15 to 20 percent of the area of each treatment unit being left in a natural appearing condition (may be left untreated) to meet a variety of resource objectives. Outside of these clumps, the average trees per acre left after

treatment would be approximately 200 trees/acre (in other words, the clumps will make up the difference in trees/acre between the approximately 200 left individually and the 300-500 total trees per acre). These remaining trees will vary in size from seedlings to mature trees (six inches tall to 80-100 feet tall). This does not apply to meadow and aspen type units (Treatment Group 3) where trees per acre to be left would be significantly less.

The NEXUS and BEHAVE runs created by using the methods of fuel reduction proposed with the Stand Treatment Groups show a reduction in fire behavior. Fire behavior indicated a change from crown to surface fire after the proposed treatments are completed. On an average day in the drainage, that would result in a rate of spread that would be decreased from the existing condition of 1 - 2.5 mph to .1- .5 mph after the treatments are completed. This is an average decrease over the entire project. The rate of decrease for individual units would vary by treatment and there would still be areas within the project (leave clumps of trees and areas of heavier crown density) where more extreme fire behavior may occur (crown fire). This reduced rate of spread would increase firefighter and public safety by lowering potential fire behavior, and in turn increase the amount of time for evacuation of the Main Boulder Corridor, if it would become necessary.

It is projected that the proposed treatment areas, which currently have a high likelihood of active crown fire, will be reduced to conditional crown fire or ground fire after treatment. This means a crown fire could still occur if the right combination of environmental conditions are present including wind, slope, and dry conditions.

The proposed Stand Treatments, when fully implemented, are expected to reduce the threat of crown fire in the Main Boulder Drainage. By increasing the likelihood that any fire start would remain small and controllable, firefighter safety would be enhanced and additional time would be provided to take measures needed to protect the public. In combination with effective fuels treatments on private inholdings, the proposed treatments associated with Alternative B would meet the purpose and need of the project. See the FEIS Ch 3-30.

**Comment 7-1** It is unclear how effective fuels reduction will actually be in this corridor as that was not actually analyzed. The NEPA document did not make a case that this thinning and prescribed burning will impact fire behavior in the road corridor.

**Response:** The effectiveness of the fuels treatments was modeled using NEXXUS Fire behavior and hazard assessment system developed at the Missoula Fire Sciences Lab, Rocky Mountain Research Station, Missoula MT. The modeling showed improvement in fire behavior from crown fire to surface fire in representative units. See FEIS, Ch 3-26. Also see the Response to Comment 6-28.

**Comment 7-8** There is no justification to harvest any tree over 20" dbh.

**Response:** Thinning of the canopy prevents fire in the crowns from traveling to tree (especially if the crowns of the trees touch and if radiant heat is great enough to ignite adjoining crowns) and is not dependent on tree size but horizontal and vertical fuel arrangement. Also see Response to Comment 6-27.

**Comment 8-1 The DEIS stretches the definition of “Wildland urban interface” to the breaking point, severely damaging the credibility of the agency on this issue.**

**Response:** The National Fire Plan defines Wildland Urban Interface (WUI) as “The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels”.

The project lies between the Wildland Urban Interface Zone of the Abarsorka Beartooth Wilderness Plan and is defined as WUI as defined in the Sweet Grass County Community Fire Protection Plan. The Sweetgrass County Fire Plan identifies the Boulder River Valley as a high risk for wildland fires. It states that “the highest wildland fire danger is in the southernmost 20 miles of the Main Boulder drainage extending from the Natural Bridge recreation area up to and including Box Canyon”. This description fits the proposed project area. A copy of the fire plan can be found in the Project File.

As stated in the FEIS Ch 1-4, “Due to the unique nature of the drainage, as well as the potential for mineral exploration, development has been continuous. Although there are approximately 115 mining claims in the drainage, recreation has become the predominant use with approximately 250 private structures, many of which are seasonal residences, 25 permitted recreational residences on National Forest land, 4 church camps, 6 well used designated Forest Service campgrounds and numerous wilderness trailheads and dispersed camp sites. Tourists, camp participants, private landowners, and recreationists heavily utilize the project area during the summer and fall months, with as many as 2,000 – 3,000 people occupying the area on a typical summer weekend.

**Comment 8-4 ...diameter of trees to be removed to be scientifically sound sizes—big trees aren’t a fire hazard.**

**Response:** Large trees can contribute to crown fire when their branches touch the ground or are within the flame length of a surface fire acting as ladder fuels, and large trees contribute to crown fire when their crowns touch or are within the a zone of radiant heating that will ignite an adjoining tree crown. See Responses to Comments 6-27, 6-28, and 7-8.

**Comment 8-5 The DEIS fails to discuss the environmental impacts of past fuel reduction projects in the area.**

**Response:** The FEIS, Ch 3-2 through 3-4 provides a complete description of the private and public activities that already have or will likely occur in or near the project area. These past actions have contributed to the existing condition as portrayed in the no action Alternative. These activities may produce environmental effects on issues or resources relevant to the proposed action. Therefore, these activities have been considered in the cumulative effects analyses for the various resources and can be found in Chapter 3 of the FEIS.

**Comment 8-6 The EIS must discuss the environmental, social, and economic costs of periodic fuel treatments to maintain this artificial situation.**

**Response:** It is projected and seems reasonable that continued fuel reduction maintenance treatments would need to be conducted at some point in the future in order to maintain post-harvest fuel conditions. These activities could include underburning, prescribed burning, removing additional insect killed or hazard trees, and removing some small diameter trees and shrubs as they grow back and restore vertical and horizontal fuel continuity

Decisions supported by an environmental analysis of the current situation commonly remain valid for six to eight years. Fuel reduction and maintenance projects that may be necessary and could begin beyond this timeframe (10 to 20 years out) are outside the scope of the decision to be made. The environmental effects of any future projects will be disclosed and a project-specific decision made before these projects are implemented. Cumulative effects analysis for future fuel reduction maintenance treatments can be found in the project file.

We cannot analyze the effects of the above actions with any accuracy at this time. There would be additional NEPA analysis conducted at the appropriate time to address any of these activities that may occur on National Forest lands.

**Comment 9-18** Please define the long-range programs that will be required to "maintain" your fuels program.

**Response:** See the reply to Comment 8-6.

**Comment 9-50** Please define more specifically the Phase I of the Boulder Fuels Reduction Plan developed in 1994 and 1995, and what specific NEPA process this went through.

**Response:** The background information and Main Boulder fire history are discussed in detail in the FEIS in Ch 1-6. The analysis done in support to the decision to be made is based on the best information and analytic techniques available today. The current vegetative condition, specifically the extent and severity of insect predation, could not have been foreseen in prior planning efforts for the Main Boulder corridor.

**Comment 10-6** The FS justifies the proposal on the grounds that it will allow firefighting to be conducted more safely. But the DEIS fails to show a need to fight fire as assumed would happen in the area.

**Response:** The Gallatin Fire Management Plan calls for the appropriate management response to a wildland fire. Outside of the areas of approved wildland fire use, the appropriate response is suppression. The project area is outside of the wildland use approved area, thus the appropriate response to a wildfire in the Main Boulder river corridor would be suppression.

**Comment 10-7** If owners of the homes and other structures take the appropriate steps, any costly and ecosystem-damaging fire suppression will not save anything that can be cost-effectively saved.

**Response:** The purpose and need of this project does not include protecting structures or homes but is about evacuation and protecting the public and firefighters.

The Sweetgrass County Community Fire Plan states "In 2003, the US Forest Service is in the planning stage for a fuel reduction program to mitigate a large fire. Also in 2003, grant money should be available for private landowners in the corridor to reduce the fuels on their land. The two programs should compliment each other well, and over the course of several years should decrease the fire danger. One benefit of this project will be to better protect homes through the use of defensible space. Another benefit will be to provide proper safety zones where none exist between the Natural Bridge and Box Canyon. The lack of any safe zones has been a concern of the Local Emergency

Planning Council (LEPC) for many years". A copy of this fire plan can be found in the Project File.

There is peer-reviewed science and general consensus in the science community that properly implemented and maintained fuel treatments that include prescribed burning will result in reduced fire severity within the treated areas (Graham and others 1999). Depending on how the treatments are placed on the landscape, there may be fire reduction benefits outside the treated areas on the subsequent spread rate, size, and severity of wildfires and on the ease of suppression.

The ease of control of a wildland fire is directly related to fire behavior. Fire behavior is a primary safety consideration for the firefighters and public. Factors that contribute to fire behavior that are unchangeable include weather, topography, and vegetation. Factors that can be changed to ease the difficulty of control of a wildland fire are keeping fires on the ground rather than crown fires, opening up the canopy so that water and retardant can reach the ground fuels, providing for ease of fireline construction. Even if thinning contributed nothing in directly moderating fire behaviors, it could indirectly contribute by providing better access and removing obstacles to safe or effective fire control and by providing a strategic base for fire-line construction or backfiring.

**Comment 10-8** How long will the fuel manipulation actions be effective? When will they have to be undertaken again to be maintained as effective? What are the long-term ecological effects of maintaining such fuel breaks? How much will it cost taxpayers over time?

**Response:** Please refer to the response to Comment 8-6.

**Comment 10-10** It also would seem to contradict ecological sense (and NFMA) to try to alter the forests ability to function as anything but a system that burns with stand-replacing intensity. What is the scientific basis (i.e., cited references) the FS uses to support this part of the proposal?

**Response:** The project area is only a small portion of the landscape of the Main Boulder drainage and will not alter the ecosystem's ability to stand replace across landscape if conditions are favorable. The purpose and need is to alter the fire behavior in the WUI area to protect the public and firefighters.

The ease of control of a wildland fire is directly related to fire behavior. Fire behavior is a primary safety consideration for the firefighters and public. Factors that contribute to fire behavior that are unchangeable include weather, topography, and vegetation. Factors that can be changed to ease the difficulty of control of a wildland fire are keeping fires on the ground rather than crown fires, opening up the canopy so that water and retardant can reach the ground fuels, providing for ease of fireline construction. Even if thinning contributed nothing in directly moderating fire behaviors, it could indirectly contribute by providing better access and removing obstacles to safe or effective fire control and by providing a strategic base for fire-line construction or backfiring.

Thinning is a technique for managing the density and composition of stands. Fire hazard reduction thinning contributes to the primary purposes of fuels treatment: decreasing the probability of crown fires, reducing the area burned by unwanted wildfires, decreasing the severity of the impacts (including smoke reduction) of fires that do burn, enhancing fire suppression effectiveness and safety, and reducing fire control costs. The problem of uncharacteristically intense and volatile fire behavior is increasing. Fire and land managers must make decisions now based on the best available combination of scientific

and practical knowledge. Where they lack peer-reviewed scientific knowledge, they must rely on a blend of practical experience and observation, computer modeling of expected fire behavior under proposed treatments, and the expert opinions of scientists and specialists who study vegetation management and fire behavior.

**Comment 10-11 The real key issue regarding fuels should be the potential of increased public access and the vegetation treatments to INCREASE the likelihood and severity of fire.**

**Response:** Restricting access to the area would be difficult for the Big Timber district since the project is accessed by a county road, which runs throughout the project area. There are numerous church camps, trailheads, and campgrounds. The area is interspersed with a combination of public land and private land. As an agency, we have limited ability to control access in the project area.

There is peer-reviewed science and general consensus in the science community that properly implemented and maintained fuel treatments that include prescribed burning will result in reduced fire severity within the treated areas (Graham and others 1999). Depending on how the treatments are placed on the landscape, there may be fire reduction benefits outside the treated areas on the subsequent spread rate, size, and severity of wildfires and on the ease of suppression.

**Comment 10-13 The proposal fails to focus action on the highest priority activities, which are dealing with vegetative conditions in the immediate vicinity of private homes and other structures.**

**Response:** Providing protection of private homes or structures is not the purpose and need of the project as most structures are on private land not under authority of the USFS. Collaboration continues with private landowners and the Main Boulder Watershed on fuels reduction in the private land area.

The Sweetgrass County Community fireplan states "In 2003, the US Forest Service is in the planning stage for a fuel reduction program to mitigate a large fire. Also in 2003, grant money should be available for private landowners in the corridor to reduce the fuels on their land. The two programs should compliment each other well, and over the course of several years should decrease the fire danger. One benefit of this project will be to better protect homes through the use of defensible space. Another benefit will be to provide proper safety zones where none exist between the Natural Bridge and Box Canyon. The lack of any safe zones has been a concern of the LEPC for many years".

As stated in the FEIS Ch 1-1, Collaboration with the public is an important part of the Main Boulder Fuels Reduction Project. The proposal has been developed with input from adjacent private homeowners, the local watershed association, as well as state, county, and local officials and groups. The Forest Service has been meeting with the Boulder River Watershed Association since September of 2001. More than 20 meetings have been held, with the Forest Service providing information and updates regarding the Main Boulder Fuel Reduction Project. The Big Timber Ranger District has engaged a long list of community interests in this project in addition to the watershed association including the Sweet Grass County Commissioners, Department of Emergency Services, Big Timber Fire Chief and Fire Department, Sweet Grass County Sheriff, the Sweet Grass County Road Department, Park County Commissioners, Park County Rural Fire Department, Montana Department of Natural Resources and Conservation, Bureau of Land Management, and local residents. On May 7, 2003 a meeting was held at the American Legion Hall in Big Timber to inform the public about the availability of and how

to apply for funds through grants, to be used for county and private fuel reduction activities. Following this meeting, a number of these interests joined together, forming the Boulder River Fuels Reduction Cooperative.

The Boulder River Fuels Reduction Cooperative (BFRC) has secured several grants to treat fuels on private land adjacent to the National Forest. The BFRC implemented three pilot projects that treat fuels using several techniques on private land. The BFRC hired a fire management consultant to prepare a community assessment and mitigation plan that prioritizes which private lands should be treated first in order to maximize treatment effectiveness and public and firefighter safety. About ten property owners have completed fuel reduction treatments on private land, and another fifteen property owners are in the process of beginning fuels reductions treatments. In addition, the BFRC has worked with Park Electric Cooperative (PEC) to ensure that PEC's lines through private property have fuel reduction thinning work done around them. Fuel assessments (firewise assessments) have already been completed on seventy of the private residences in the corridor.

**Comment 10-14 We request definition of the wildlands urban interface including distance from structures.**

**Response:** The National Fire Plan defines Wildland Urban Interface (WUI) as "The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels". See the Response to Comment 8-1

**Comment 10-15 Removing overstory trees to mechanically maintain crown separation well-away from private lands will unnecessarily "artificialize" the forest ecosystem over too large an area.**

**Response:** The purpose and need of the project is not to return the project area to an **unmanaged** state because of concerns in the wildland urban interface zone over public and firefighter safety. Refer to the purpose and need discussion in Chapter 1-13 of the FEIS.

Visual quality and "sense of place" within the river corridor have been addressed through design criteria and mitigation associated with the proposed action. See Ch 2-37 of the FEIS.

Graham and others (1999) noted that the primary stand attributes that control a fire's behavior are surface fuel condition, crown bulk density, and crown base height. All three attributes must be managed.

**Comment 10-2 The DEIS lists a lot of reasonably foreseeable activities but does not adequately disclose the cumulative IMPACTS of those actions.**

**Response:** It is projected and seems reasonable that continued fuel reduction maintenance treatments would need to be conducted at some point in the future in order to maintain post-harvest fuel conditions. These activities could include underburning, prescribed burning, removing additional insect killed or hazard trees, and removing some small diameter trees and shrubs as they grow back and restore vertical and horizontal fuel continuity

Decisions supported by an environmental analysis of the current situation commonly remain valid for six to eight years. Fuel reduction and maintenance projects that may be necessary and could begin beyond this timeframe (10 to 20 years out) are outside the

scope of the decision to be made. The environmental effects of any future projects will be disclosed and a project-specific decision made before these projects are implemented. See *Ch 3-4 of the FEIS*. Cumulative effects analysis for future fuel reduction maintenance treatments can be found in the project file.

We cannot analyze the effects of the above actions with any accuracy at this time. There would be additional NEPA analysis conducted at the appropriate time to address any of these activities that may occur on National Forest lands.

The Forest Service can only guess what types of fuel reduction activities may occur on private land and the agency has no control over the amount or type of activity. Decisions private landowners may make concerning fuel reduction activities on private land are outside the agency's authority.

**Comment 10-27** Since the FS is proposing to essentially replace natural fire with management to maintain vegetative conditions within the historic range of variability, we ought to expect they would be eager to provide us with examples of where this has been accomplished. But the DEIS provides none.

**Response:** The objectives of the Main Boulder Fuels Project are:

- to provide for public and firefighter safety by minimizing the probability and effects of future human caused fire starts and /or helping to reduce the intensity of a potential wildland fire leaving the wilderness and entering the wildland/urban interface of the Main Boulder River corridor
- 2) Extend the potential time available for evacuation in the event of a wildfire by reducing the fire hazard along the Main Boulder Road
- 3) Reduce fuel loadings and break up the vertical and horizontal continuity of fuels within the Main Boulder River corridor where possible (*FEIS, Ch. 1-13*).

It is not the intent of the proposed action to “replace natural fire with management to maintain vegetation conditions within the historic range of variability”.

**Comment 10-28** Where the DEIS considers commercial logging to be necessary to reduce fuels, it doesn't take into consideration other FS expert opinion (see Hessburg and Lehmkuhl, 1999).

**Response:** Mechanical treatment is only one of the tools used to accomplish the fuels work to meet the purpose and need of the project. According to Hessburg (personnel conversation, 10-19-04) “the use of fire alone may not be enough of a treatment tool to accomplish fuels objectives and mechanical treatment maybe needed”.

**Comment 10-29** The DEIS failed to incorporate essential information from the Federal Wildland Fire Management Policy and Program Review.

**Response:** The project follows the guidelines of the Gallatin National Forest Plan and the Gallatin National Forest Fire Management Plan. As mentioned in Chapter 1 of the FEIS, the proposed actions are responsive to several guiding principles of the 1995 Federal Wildland Fire Management Policy. Additional discussion on this topic is provided in *Ch 1-22 of the FEIS*.

**Comment 10-30 The DEIS fails to justify or analyze the ecological and economic impacts of continued . fire suppression.**

**Response:** Due to the wildland urban interface concern, limited access in/out of the area, and limited fuel management options within the wilderness area, there will always be a need for fire suppression. Providing firefighter and public safety is the primary concern for this project. The appropriate fire management response strategy for all portions of the project area located outside the Absaroka-Beartooth Wilderness is 'control, confine and contain' (2004 GNF Fire Management Plan, p.7).

**Comment 10-31 The DEIS contains no scientifically valid information that demonstrates significant impact from past fire suppression on all forest types to be logged.**

**Response:** The NEXUS and BEHAVE fire models were used to evaluate potential fire behavior and to model representative forested stands proposed for treatment within the Main Boulder corridor. The models assess changes in average rates of spread, flame length, intensity, and also provide fire predictions for the transition of surface fires to crown fires. These models can be used to compare the effects of treatments between alternatives. Using NEXUS and BEHAVE, the average rate of spread for an active crown fire and surface fire was found to be 1 to 2.5 miles per hour for the existing fuels conditions. The extreme behavior of a crown fire would make an unsafe situation for ground firefighting forces to implement control tactics that would be effective. Using NEXUS in conjunction with FVS-FFE Model, results indicate that over 80% of the forested stands within the Boulder River corridor currently contain conditions conducive to active crown fire potential. (*Reference FEIS Chapter 3-26*).

The lack of small, stand-replacing fires and frequent, low intensity surface fires within the drainage (which were historically more typical for this area) has led to higher tree densities and the formation of a continuous horizontal fuel-bed through the length of the corridor. Stand 'densification' has resulted in little or no space between the crowns of trees. As a result, a fire could spread quickly through the crowns, unlike a slower moving surface or ground fire. The increasing stand densities and fuel loadings, along with the continuous fuel-bed arrangement (both horizontal and vertical), are key components for the occurrence of an extreme crown fire situation. (*Reference FEIS Chapter 3-25*).

**Comment 10-32 The DEIS contains inadequate information on historic fuels levels.**

**Response:** The purpose and need of the project is not to restore the area to the historic fuel levels but to change the fire behavior for public and fire fighter safety if a wildfire were to occur in the drainage.

**Comment 10-35 The DEIS at vaguely discloses a range of fire return intervals for certain forest types termed "fire groups" but the way this range is presented doesn't conform to any accepted method of statistics, and therefore may be misleading or otherwise less than informative. In order to provide the necessary accuracy and scientific integrity, please disclose the mean and standard deviation of the fire return intervals of each of the various "fire groups" in the project area.**

**Response:** Fire groups are for descriptive purposes and referenced from "Fire Ecology of Montana Habitat Types East of the Continental Divide" Fisher, William C. and Clayton, Bruce D. Intermountain Forest and Range Experiment Station, USDA, GNT report INT-141. The purpose and need of the project is public and firefighter safety and returning fire intervals to ecosystem does not meet this purpose and need of this project.

**Comment 10-36** The DEIS does not disclose, for stands to be thinned, the fire risk into the foreseeable future. Science on this topic strongly suggests stands opened up by logging will actually increase in flammability

**Response:** We acknowledge that opening the stands may cause some drying effect and increased partial sheltering of the stands that could have an effect on fire ignitions. The fuels treatments will help to keep the fire behavior and intensity to a surface fire, which meets the purpose and need of the project, rather than a crown fire with the increased rate of spread and fire behavior intensities.

Prompt treatment of thinning residuals, or slash, greatly reduces the potential for fire behavior to be intensified due to residual thinning material. "Thinning in general will lower crown bulk densities and redistribute fuel load significantly, thus decreasing fire intensities if the surface fuels are treated (Graham and others 1999, Agee 1993, Alexander 1988, Alexander and Yancik 1977)". Many managers in recent fire seasons have observed dramatic reductions in fire spread and intensity as fires entered stands that have been thinned and/or previously burned. On the other hand, there have been reports of extremely intense fires burning around treated areas or spotting over them (references?). These observations strongly suggest the positive impact of treatments on fire behavior.

Fire behavior depends on forest density, composition, amount of surface fuel, its arrangement, moisture content, prevailing weather, and physical setting (Graham and others, 1999). Each of these elements may be differently affected by stand density, composition, spatial juxtaposition to other stands, and other dimensions of forest structure. In management applications, it may be necessary to make some tradeoffs among different elements of fire behavior. For example, at some time one might incur a somewhat greater likelihood of surface fire spread with fire hazard reduction thinning due to brush build-up in the understory because of prescribed fire burning delays. But the lower likelihood of crown fire transition and spread in that event still remains.

Based upon existing science, appropriate thinning, followed by adequate treatment of surface fuels, does reduce intensity and severity of subsequent wild land fires within the treated areas.

**Comment 10-37** Given:the DEIS's claims that recent fires were unnaturally large and intense, etc., we wonder why there is no discussion of unnatural effects of those fires.

**Response:** The purpose and need of the project is to provide for public and firefighter safety by modifying expected fire behavior and not to analyze the unnatural effects of other large fires, for which modification would be on a landscape scale. None of these past large fires were located in the analysis area for this project. *See the discussion in the FEIS, Ch 1-6 pertaining to fire history.*

**Comment 10-68** Forest Service documents in recent years, including this DEIS, suggest that there are many thousands acres of this national forest that have been seriously adversely affected by suppression of wildland fires. Yet the Forest Plan and DEIS fail to provide the kind of long-term planning to address this issue.

**Response:** All of the National Forests in the country have been placed on a National Schedule for Forest Plan Revision. The Gallatin National Forest Plan is scheduled for revision beginning in 2006. Travel Plan Management Revision, which is a part of Forest Plan Revision, is currently underway.

The effects of years of fire suppression on thousands of acres on Gallatin National Forest is outside the scope of this project and will be addressed in the Forest Plan Revision process.

**Comment 11-9 We would like to see an analysis of the potential effects of the proposed activities on the increase in fire threat.**

**Response:** See the response to Comment 10-36.

**Comment 11-11 We question some of the underlying assumptions about the current status of the Boulder in relation to the relative “healthy” or “Unhealthy” status of the area.**

**Response:** The primary purpose and need for this project is not about forest health or restoring forest health. Secondary goals for the proposed action do include increasing vigor at the stand level, in the corridor, making trees less susceptible to future insect and disease occurrences (*FEIS Ch 1-13*).

There are active populations of Douglas-fir beetle (DFB) throughout the drainage and corridor, mountain pine beetle in lodgepole pine and whitebark pine is active in the wilderness within the drainage with occasional occurrences in the corridor, and western balsam bark beetle is active throughout the drainage and corridor. Initial infestations started by movement out of the adjacent wilderness areas surrounding the corridor. Attacks are progressing across federal and private lands as the populations move north thru the corridor. These attacks are one of the largest contributing factors to the high natural fuel loadings within the corridor. Past salvage harvest has been accomplished in an attempt to reduce fuel loadings and pheromone trapping has been used to reduce the impacts of the beetle attacks. See *Appendix A-26 of the FEIS*.

## GENERAL

**Comment 3-6 Correct spelling is Bobzien (page 3-101 Unit 16).**

**Response:** Correction Noted.

## Mapping

**Comment 2-1 Maps 2-1 through 2-4 These maps seem to have been done using only existing maps, which are of questionable value for a project of this size and detail.**

**Response:** These maps were made for estimation of effects and display of alternatives. More detail will be required for on-the-ground-layout, and there will be field review of all units. Project maps in the file show more detail. Final review will include evaluation of risks identified on the ground.

**Comment 2-2 Area 12 needs to be reviewed and a better plan of implementation is required.**

**Response:** These maps were made for overall estimates of resource effects. This steep slope is too small an extent to show up in the analysis to date. This area will be reviewed on the ground.

**Comment 2-3** I assume that the other areas require additional review but have no true basis for assumption.

**Response:** Before layout of roads or units, ALL areas will be reviewed on the ground.

**Comment 9-57** You have an unlabeled unit at the north end of the project.

**Response:** This unit is labeled "Main Boulder Station" but was partially covered by the unit pattern.

**Comment 10-65** With all the maps in the DEIS, it does not provide a map showing the locations of past logging activities and other major human developments in relation to the current proposal. This is basic cumulative effects disclosure.

**Response:** This map is in the project file, and was used in analysis during the project. A list is included in *Table 3-1 in FEIS Ch 3-3*.

## MONITORING

**Comment 10-20** The DEIS does not cite the results of monitoring on the Forest that demonstrates the efficacy of the proposed mitigation measures.

**Response:** The Forest Plan Monitoring Report for the years 1998 - 2003 can be found in the Project File. The report includes the results of the monitoring procedures that Gallatin National Forest specialists have used to measure the effectiveness of various mitigation measures and design criteria associated with recent projects. The Main Boulder Fuel Reduction project incorporates mitigation and design criteria that have been monitored for effectiveness for the past several years. This reference has been added to the monitoring section of the *FEIS, Ch 2-41*.

## RECREATION

**Comment 3-4** DEIS Appendix B-2. Recreation buffer of 100 feet will protect many residences but we have water line extending beyond 100 feet. The waterline should be marked for protection when treating Unit 16.

**Response:** The intent of the proposal as documented in the project file is to protect "all structures and improvements" on National Forest System lands "from damage due to project activities." The FEIS reflects the planned protection of improvements (*Chapter 2-40 & Appendix B*).

**Comment 3-5** Skidding across the road to the main Boulder Road (rather than down our access road) is preferred. This would avoid road damage, avoid rubbing and damaging trees that screen the road, and reduce chances of creating an unnecessarily wider and more noticeable access road.

**Response:** As stated, it is the intent of the Forest Service to protect "all structures and improvements" on National Forest System lands (*FEIS Ch 2-40*). Use of existing recreation residence's access roads on the Forest System lands may be necessary to access certain areas however it is somewhat premature to determine specific locale for all project roads and skid trails. Your concerns are noted, if your access road is used it will be rehabilitated.

## ROADS

**Comment 6-2 EPA supports minimizing road building in riparian areas as much as possible...**

**Response:** All proposed temporary roads are designed to cross-streams at a right angle to flow. No roads are being proposed to parallel a stream course. Design Criteria and specific mitigations have been designed to limit impacts to riparian areas (*FEIS 2-31 thru 2-32 and Appendix C, BMP's*)

**Comment 6-3 We also encourage minimization of road stream crossings, and believe road locations should be identified as much as possible during the EIS process so that environmental impacts associated with proposed roads can be identified and disclosed in the EIS.**

**Response:** See response to Comment 6-2 and 6-12 pertaining to stream crossings  
To the extent possible all roads have been identified on *Maps 2-5 through 2-8 of the FEIS on Ch. 2-27 through 2-30*. No new permanent road construction is being proposed. Commercial harvest operations are expected to require the construction of temporary roads. A maximum of 7.4 miles of temporary road may be necessary to access the areas proposed for mechanical fuels treatment using conventional ground-based logging systems. Of this total, approximately 4.8 miles will be re-examined on the ground prior to project implementation to determine whether opportunities exist to reduce the length of newly constructed temporary road by using existing roads on private or National Forest land. One of the key factors in determining the use of existing roads on private land is whether permission to use the roads can be obtained. Existing roads on either ownership may require reconstruction to support safe and efficient use, consistent with project design criteria and mitigations. Options to use existing roads will be examined to assure that the environmental effects of using roads on private and public land do not exceed what has been disclosed in this document.

Actual temporary road locations are determined through agreement by the Forest Service during timber sale contract administration. Temporary roads would be constructed to provide access to the interior of harvest units to facilitate ground-based harvest systems. These roads would be built on relatively flat ground slopes (less than 20%) and would be constructed to the lowest possible standard capable of supporting log haul in order to minimize ground disturbance.

**Comment 6-12 We believe road locations should be identified as much as possible during the EIS process so that environmental impacts associated with the roads can be estimated and disclosed.**

**Response:** See the response to Comment 6-3.

**Comment 6-14 Will any existing roads such as the Main Boulder Road be upgraded or improved during the project?**

**Response:** The Main Boulder Road is a county owned road and we have no jurisdiction for upgrading or improving it. Any upgrades or improvements that occur on the road would be done by the county or upon the approval by the county.

See Ch 3-4 of the FEIS. Sweetgrass and Park County officials have applied for Forest Highway Access Money (through Federal Highways Administration appropriations) to widen some single lane portions of the Main Boulder Road (which is a county road). It is not known at this time whether or not these funds will be made available.

The Sweetgrass County Community Fire Plan states, "Another major concern has been the limited access provided by the Boulder Road. Because sections of the road are only narrow enough for one lane of traffic, emergency crews would be forced to make some sections of it a one-way road during emergency situations. In 2003, the first "bottleneck" on the Boulder Road is scheduled to be widened. Many more miles still need to be increased in width before it will be sufficient for emergency operations. If the fire burns too close to the road, emergency crews will require that the road be closed for safety reasons. Reducing the fuels in this corridor will also help to protect the road for continuous emergency access. A copy of the fire plan can be found in the Project File.

**Comment 7-11 We are concerned about the proposed temporary roads and water crossings. With slight modifications some of the units could be redesigned to further protect water quality.**

**Response:** See comment 6-2.

**Comment 9-16 Will any of the new roads be open to public use at any time?**

**Response:** No. There will be no change in public access to the Main Boulder. All newly constructed temporary roads would be closed to the public during harvest activities and permanently closed and rehabilitated within one year upon completion of harvest related activities within that portion of the project area (FEIS Ch 2-13 and 2-32).

**Comment 9-17 The DEIS notes that additional fuels treatments will be required in the future (3-3) to main low fuels conditions. Does this mean that these temporary roads will have to be used indefinitely?**

**Response:** No. All newly constructed temporary roads would be closed to the public during harvest activities and permanently closed and rehabilitated or recontoured within one year upon completion of harvest related activities within that portion of the project area (FEIS Ch 2-13 and 2-35).

**Comment 9-24 Specifically why is road building allowed outside of November 1 and April 30?**

**Response:** In order to provide for adequate protection for the soil resource the building of roads must be done when they are the most stable. Condition must be present when the soils are dry and not frozen or wet. Summer months are also the best time to ensure conditions exist where the proposed route is easily identifiable, stream crossings other resource considerations are clearly visible.

**Comment 10-17 Since fire starts, to a very significant degree, are caused by human activities, the EIS must fully consider minimizing road access in the project.**

**Response:** There will be no change in public access to the Main Boulder. A balance between the number temporary roads needed to access the treatment areas and limiting the number of roads to protect the resource is always a concern. Access to the treatment areas is

necessary for both operational efficiency and harvest operations to be done away from the public to provide for safety. All newly constructed temporary roads would be closed to the public during harvest activities and permanently closed and rehabilitated or recontoured within one year upon completion of harvest related activities within that portion of the project area (*FEIS Ch 2-13 and 2-34*). Operators will be required to be fully compliant with all fire safety equipment including water tenders during operations in order to reduce the risk of human caused fire.

**Comment 11-2 More than any other issue in the DEIS, we are concerned about the large number of temporary roading identified to implement the preferred alternative.**

**Response:** To meet the need for full disclosure, every road foreseen to be needed to assess areas prescribed for direct treatment using mechanical means has been identified. Since the planned roads are temporary, an operator could elect alternative methods for access that would reduce the length of road needed or possibly eliminate the need for a particular road. We are confident no more roads will need to be constructed than have been identified in the EIS. The effects analysis is based on the maximum length of roads that could be constructed. All newly constructed temporary roads would be closed to the public during harvest activities and permanently closed and rehabilitated or recontoured within one year upon completion of harvest related activities within that portion of the project area (*FEIS Ch 2-13 and 2-34*).

A maximum of 7.4 miles of temporary road may be necessary to access the areas proposed for mechanical fuels treatment using conventional ground-based logging systems. Of this total, approximately 4.8 miles will be re-examined on the ground prior to project implementation to determine whether opportunities exist to reduce the length of newly constructed temporary road by using existing pads on private or National Forest land. One of the key factors in determining the use of existing roads on private land is whether permission to use the roads can be obtained. Existing roads on either ownership may require reconstruction to support safe and efficient use, consistent with project design criteria and mitigations. Options to use existing roads will be examined to assure that the environmental effects of using roads on private and public land do not exceed what has been disclosed in this document.

## SILVICULTURE

**Comment 3-2 Chapter 2-31, numbers 39 and 44. Suggest you also include the windfirmness of trees when selecting trees to be retained.**

**Response:** The prescription marking guides use wind firmness as a selection criterion, depending on the objectives of the stand treatment and other resource concerns. *Reference FEIS Ch 2-32 mitigation*; lack of wind firmness is a recruitment tool for Large Woody Debris (LWD) especially along riparian zones.

**Comment 3-3 Chapter 3-27. While the project could take several years to implement, we suggest doing the aspen regeneration treatment as close to one single year as possible.**

**Response:** Aspen regeneration treatment is a secondary treatment objective of the Main Boulder Fuels Reduction Project. Reference FEIS Ch 1-13  
2) "Rejuvenate aspen stands."

While aspen regeneration treatments will be coordinated wherever possible, concerns for wildlife (grizzly bear) and other resources will limit the scale, timing, and location of aspen treatments in a given year.

The aspen clones referred to in the DEIS are mostly small remnant pockets that will not be accessible for treatment until fuel reduction operations in each unit are completed. Furthermore, while maximizing the area of aspen clones treated at one time may reduce browsing impacts, previous aspen treatments in the Main Boulder corridor have not been affected to any extent by ungulate browsing. The District may also be working with the Rocky Mountain Elk Foundation through a challenge-cost-share grant that will address these concerns during implementation.

**Comment 5-1**     **Reviewing the info in each Stand Treatment Group, the question arises whether they really meet the intent of the purpose and need with the intensity of the proposed treatments. .**

**Response:** *Reference FEIS, Ch 1-13, 2-14, 3-28 thru 3-30.* Treatment groups are designed to reduce ladder fuels (small to mid-story trees and shrubs), thinning the overstory to increase the space between crowns so as to break up the horizontal fuel and vertical continuity, reduce the existing natural ground fuel buildup so as to reduce the probability of a sustained crown fire and create stand conditions less hospitable for insect attack.

The primary objective for prescription treatments is lessening the risk to the public and increasing fire fighter safety in the event of a human caused or wildland fire start originating in the urban interface of the Main Boulder river corridor or the adjacent wilderness area. Prescription treatments are also designed to meet the secondary goals to:

- 1) Improve wildlife habitat/forage by enhancing winter range and meadows.
- 2) Rejuvenate aspen stands.
- 3) Improve fire protection in the wildland/urban interface.
- 4) Increase vigor at the stand level, in the corridor, making trees less susceptible to future insect and disease occurrences.
- 5) Encourage adjacent private property owners and local groups to implement similar hazardous fuel reduction plans thus maximizing effectiveness by increasing the amount of contiguous acres treated.
- 6) Maintain and protect values for river segments that were identified as eligible for consideration and inclusion into the "Scenic and Recreational" classification of the National Wild and Scenic River System.

**Comment 5-2**     **The prescriptions should be re-evaluated to determine if the existing stands of trees remaining following harvest meet or exceed the amount of harvest that is minimally required in order to meet the P&N statement.**

**Response :** *Reference FEIS, Ch 2-45, 3-30 to 3-31.*

"Alternative G (the Fuels Prescription Alternative) would include the same units as Alternative B, the proposed action. Treatments would remove greater amounts of trees and ladder fuels. Stands would be thinned, and fuels removed to the optimum levels identified through the NEXUS and BEHAVE Modeling runs, in order to keep a potential wildfire on the ground. The team felt that this extensive of fuel modification would be inconsistent with retaining the "Sense of Place" in the Main Boulder River Corridor, which is a key concern voiced from the public through scoping comments. Alternative G would not be consistent with the visual quality guidelines for the Main Boulder River Corridor of "partial retention". Partial retention is required to retain the Scenic & Recreational qualities for portions of the

Boulder River. The significantly greater removal of both trees and shrubs would likely have negative effects on wildlife species. There would be fewer clumps of trees left for thermal and hiding cover with a higher percentage of the total area treated. The additional tree removal necessary to meet optimal fuel modeling conditions would make it difficult to implement the Best Management Practice guidelines for Streamside Management Zones (SMZ), which call for a minimum of 50% of the trees over 8" diameter, by size class, to be retained within an SMZ."

"For Alternative B, The proposed action, the NEXUS and BEHAVE runs created by using the methods of fuel reduction proposed with the Stand Treatment Groups show a reduction in fire behavior. Fire behavior indicated a change from crown to surface fire after the proposed treatments are completed. On an average day in the drainage, that would result in a rate of spread that would be decreased from the existing condition of 1 - 2.5 mph to .1-.5 mph after the treatments are completed. This is an average decrease over the entire project. The rate of decrease for individual units would vary by treatment and there would still be areas within the project (leave clumps of trees and areas of heavier crown density) where more extreme fire behavior may occur (crown fire). This reduced rate of spread would increase firefighter and public safety by lowering potential fire behavior, and in turn increase the amount of time for evacuation of the Main Boulder Corridor, if it would become necessary.

It is projected that the proposed treatment areas, which currently have a high likelihood of active crown fire, will be reduced to conditional crown fire or ground fire after treatment. This means a crown fire could still occur if the right combination of environmental conditions are present including wind, slope, and dry conditions.

The proposed Stand Treatments, when fully implemented, are expected to reduce the threat of crown fire in the Main Boulder Drainage. By increasing the likelihood that any fire start would remain small and controllable, firefighter safety would be enhanced and additional time would be provided to take measures needed to protect the public. In combination with effective fuels treatments on private in-holdings, the proposed treatments associated with Alternative B would meet the purpose and need of the project."

**Comment 6-1 ...we do have concerns regarding timber harvest and construction of roads, in riparian areas, since activities have potential for adverse impacts to riparian functions and habitats.**

**Response:** Road construction is not proposed within any riparian areas. All temporary roads are outside of riparian areas except for some small stream crossings. All road construction in riparian areas is constrained by Montana SMZ rule 6 (36.11.306) which prohibits road construction in the SMZ unless necessary to cross a stream or wetland. (*page E-45 for response to Comment 6-1*).

*Reference FEIS 2-32, Appendix B, and Appendix C* should reduce the impacts of harvest and maintain function of the riparian habitats.

"In order to protect riparian vegetation and soil in a manner that maintains an effective sediment filter, protect the integrity of stream channel and banks, have an effective source of large woody debris (LWD) recruitment for fish habitat, ensure floodplain stability, maintain diverse habitats (e.g., maximizing LWD) which is critical for long-term persistence and surviving catastrophic events:

8) Follow a functional definition of riparian zone consistent with GNF Plan and FSM direction, and consider riparian vegetation in relation to stability, integrity, and meeting

needs of riparian zone dependent species including fish and fish habitat. Unit specific mitigations are described in Appendix B-1.

9) Follow Streamside Management Zone (SMZ) rules and Gallatin FP in operation of wheeled or tracked equipment in riparian zones. This type of equipment is not permitted within 50 feet on either side of the stream course.

10) Favor retention of large diameter (>20") spruce trees in the riparian corridors

11) In SMZ areas retain a minimum of 50% of the trees greater than or equal to 8" diameter

12) Follow a functional approach to the SMZ rules. This approach will augment the Montana SMZ rules with additional functional riparian definitions. It also incorporates SMZ harvest guidelines relative to fish habitat needs.

- No harvest will be allowed within 15 feet of any stream segment. This is more restrictive than the Montana SMZ rules. This "no harvest" mitigation is designed to protect thermal regulation, overhead cover, and immediate bank protection. It also maintains age class diversity of overstory vegetation along the stream corridor.
- Minimize the harvest of large (20"+) spruce trees within the riparian corridor. These trees are most likely to provide anchored and stable large woody debris (LWD) when it is recruited to the channel.
- Within the riparian corridor, leave species and sizes of trees that represent the original stand per Montana SMZ retention guidance.
- Retain trees that are leaning toward the stream channel and favor harvest of trees that are leaning away from the channel.

In addition to the criteria above, for trees within and outside of the 50 ft SMZ boundary, use the following procedure to determine leave and harvest trees: Using standard tree height measuring procedures, determine the height of the tree where the stem diameter is 8 inches. Favor leaving the tree if that height is  $\geq$  to the perpendicular distance from the tree bole to the bankfull edge of the channel. This mitigation is more restrictive than SMZ rules, protecting larger diameter, taller trees that could provide LWD recruitment but that may lay outside the 50 foot SMZ boundary. It maximizes LWD recruitment potential while allowing for harvest of smaller diameter trees that contribute to high fuel loads.

13) Fisheries Biologist will assist in marking units with prescribed riparian treatments.

14) No harvest on steep slopes (>35%) that drain directly into the Boulder River, where there is no floodplain filter. In other words, where there is no active floodplain and a steep side slope, do not harvest on side slope. (Applies primarily to north end of Unit 31 for the main Boulder and East Boulder confluence).

15) No harvest in active floodplains."

**Comment 6-7 ...it is not clear how many large diameter spruce trees are likely to be harvested vs. how many are likely to be retained per acre in riparian areas. We believe it would be helpful if such information were estimated and disclosed in the FEIS.**

**Response:** Available data indicates that the estimated average diameter of spruce is 12.9 inches and the estimated average number of spruce per acre is 91. Based upon the requirement (FEIS 2-32) to retain 50 percent of those trees greater than 8 inches in diameter it is estimated that 45 trees per acre larger than 8 inches would be retained. Please note that these figures are just averages and estimates. The actual number of large diameter spruce to be retained will vary between units due to variances in site conditions.

**Comment 7-12** The DEIS does not address the effects of the proposed action regarding beetle infestations. Logging, especially the timing and method of treating slash frequently increases insect problems. How is this being addressed and why was this issue not better analyzed?

**Response:** Slash treatment and insect problems are more often a result of timing and the tree species of the slash on the Gallatin National Forest. Lodgepole pine slash is often host to Ips beetles. Slash treatment recommendations as displayed in *FEIS 2-13* will provide sufficient protection for residual stands.

Reference *FEIS 2-13*:

Pile burning would occur in conjunction with the thinning activities to obtain downed woody fuels objectives of maintaining 5-10 tons per acre and would only occur during the spring (April/May) and fall (late September to December) seasons. Slashing of conifers, followed by prescribed burning would occur on approximately 400 acres of meadow type areas. The prescribed burning, as well as understory burning in some of the thinned units would occur in spring (May/June) or fall (late September to November).

These burning and slash disposal recommendations were developed as a result of recommendations by Regional Entomologist Ken Gibson and resource objectives of the stand treatments: "Some thinned stands will be under-burned to reduce fuel loadings and maintain desired tree spacing. If Douglas-fir beetle populations are still abnormally high—and our observations suggest they may be for a few more years—we suggest under-burns be scheduled for fall, if possible; or postponed until beetle populations return to endemic levels. It has been our experience that survival of under-burned Douglas-fir leave trees in situations where root disease is prevalent, bark beetle populations are high, or drought conditions exist, is tenuous at best. Spring burning seems to place stress on trees just as beetles are emerging and seeking susceptible hosts. Trees recently weakened by fire are often damaged just enough to succumb to beetle attack. Burning in the fall often gives trees time to recover from fire-induced "stress" before beetles fly the following spring. (Gibson Trip Report TR-03-10, 2003)"

A secondary objective of the Main Boulder Fuel Reduction Project is:

1) Increase vigor at the stand level, in the corridor, making trees less susceptible to future insect and disease occurrences.

Reference *FEIS A-26 thru A-28*:

"There are active populations of Douglas-fir beetle (DFB) throughout the drainage and corridor, mountain pine beetle in lodgepole pine and whitebark pine is active in the wilderness within the drainage with occasional occurrences in the corridor, and western balsam bark beetle is active throughout the drainage and corridor. Initial infestations started by movement out of the adjacent wilderness areas surrounding the corridor. Attacks are progressing across federal and private lands as the populations move north thru the corridor. These attacks are one of the largest contributing factors to the high natural fuel loadings within the corridor. Past salvage harvest has been accomplished in an attempt to reduce fuel loadings and pheromone trapping has been used to reduce the impacts of the beetle attacks.

## Direct/Indirect and Cumulative Effects

If no action is taken within the Main Boulder corridor to reduce stocking density, age and composition of the existing stands, within the next five to ten years, it is estimated that the Douglas-fir beetle, mountain pine beetle, and western balsam bark beetle will kill the majority of these trees in the most susceptible stands along the river corridor. The beetle attacks and subsequent mortality will create more fuel loadings in addition to the existing high fuel levels, as the standing dead trees begin to fall or be wind-thrown. In the event there is a fire start within the corridor, the fire would spread more rapidly through the corridor endangering the public and private landowners utilizing the corridor. These higher fuel loadings would hamper fire control actions and create public safety hazards during efforts to control the fire.

Healthy forests require more than a reaction to the attack of insects and diseases on trees. While direct suppression can be a part of the strategy, it is important to understand pest dynamics and how to prevent conditions that favor population buildups. Silvicultural treatments that reduce insect and disease risk and damage, play a major role in the strategies involved with the preparation of the proposed action. (Forest Health and Ecological Integrity in the Northern Rockies). The proposed action will reduce stocking densities; remove unhealthy and/or diseased trees, improving the health and vigor of individuals and groups of remaining trees within the treatment units. Harvest activities will also remove trees that are currently beetle-infested (reducing current beetle populations in the area) and reduce downed fuel loadings, all of which contribute to healthier stand conditions that are less susceptible to beetle and mistletoe occurrences. It is important to note that the proposed action treatments will only improve the vigor of the stands treated and reduce fuels within the actual treatment units that are located along the river corridor. The proposed treatments will do little to effect the population and fuel buildup that is occurring in the wilderness areas of the drainage, which comprises approximately 82% of the drainage. Effectiveness of the treatments for insect and disease reduction would be noticeable only within the river corridor where the treatments occur, not the entire Main Boulder drainage.”

Slash disposal was not raised as a key issue or concern during scoping.

**Comment 9-2** The DEIS at 3-28 notes that clearcutting will reduce disease, such as mistletoe, and that logging will prove forest health. (DEIS 2-13). Reducing insects and disease is not beneficial for wildlife.

**Response:** There is no reference to clearcutting in the DEIS on Ch 3-28 or anywhere else in the DEIS. Prescriptions are designed to leave stands stocked with approximately 200 trees/acre outside leave clumps (FEIS 2-14). Also, see Pretreatment Forest Visualization Simulator (FVS) example depictions on FEIS, Ch 2-16 for Stand Treatment Group #1, Unit #25.

*Reference FEIS A-28:*

“The proposed treatments will do little to effect the population and fuel buildup that is occurring in the wilderness areas of the drainage, which comprises approximately 82% of the drainage. Effectiveness of the treatments for insect and disease reduction would be noticeable only within the river corridor where the treatments occur, not the entire Main Boulder drainage.” The areas outside the treated corridor will provide sufficient habitat for wildlife.

**Comment 9-11 .What specifically are the differences in the fuels reduction program within and outside of the riparian area?**

**Response:** *Reference FEIS 2-32*

“In order to protect riparian vegetation and soil in a manner that maintains an effective sediment filter, protect the integrity of stream channel and banks, have an effective source of large woody debris (LWD) recruitment for fish habitat, ensure floodplain stability, maintain diverse habitats (e.g., maximizing LWD) which is critical for long-term persistence and surviving catastrophic events:

8) Follow a functional definition of riparian zone consistent with GNF Plan and FSM direction, and consider riparian vegetation in relation to stability, integrity, and meeting needs of riparian zone dependent species including fish and fish habitat. Unit specific mitigations are described in Appendix B-1.

9) Follow Streamside Management Zone (SMZ) rules and Gallatin FP in operation of wheeled or tracked equipment in riparian zones. This type of equipment is not permitted within 50 feet on either side of the stream course.

10) Favor retention of large diameter (>20”) spruce trees in the riparian corridors

11) In SMZ areas retain a minimum of 50% of the trees greater than or equal to 8” diameter

12) Follow a functional approach to the SMZ rules. This approach will augment the Montana SMZ rules with additional functional riparian definitions. It also incorporates SMZ harvest guidelines relative to fish habitat needs.

- No harvest will be allowed within 15 feet of any stream segment. This is more restrictive than the Montana SMZ rules. This “no harvest” mitigation is designed to protect thermal regulation, overhead cover, and immediate bank protection. It also maintains age class diversity of overstory vegetation along the stream corridor.
- Minimize the harvest of large (20”+) spruce trees within the riparian corridor. These trees are most likely to provide anchored and stable large woody debris (LWD) when it is recruited to the channel.
- Within the riparian corridor, leave species and sizes of trees that represent the original stand per Montana SMZ retention guidance.
- Regardless of tree size, retain trees identified by a hydrologist or fisheries biologist that have potential to provide riparian, floodplain, or bank stability.
- In addition to the criteria above, for trees within and outside the 50 ft SMZ boundary, use the following procedure to determine leave and harvest trees: Using standard tree height measuring procedures, determine the height of the tree where the stem diameter is 8 inch. Favor leaving the tree if that height is  $\geq$  the perpendicular distance from the tree bole to the bankfull edge of the channel. This mitigation is more restrictive than SMZ rules, protecting larger diameter, taller trees that could provide LWD recruitment but that may lay outside the 50 foot SMZ boundary. It maximizes LWD recruitment potential while allowing for harvest of smaller diameter trees that contribute to high fuel loads.

13) Fisheries Biologist will assist in marking units with prescribed riparian treatments.

14) No harvest on steep slopes (>35%) that drain directly into the Boulder River, where there is no floodplain filter. In other words, where there is no active floodplain and a

steep side slope, do not harvest on side slope. (Applies primarily to north end of Unit 31 for the main Boulder and East Boulder confluence).

15) No harvest in active floodplains.”

Outside riparian area items 8 thru 12 above might be modified depending on stand treatment needs, forest plan management area objectives and other resource objectives.

**Comment 9-48** Could you please clarify what would be different if this were a timber management project instead of a fuels reduction project?

**Response:** If this were a timber management project, depending upon stand conditions, forest plan management area objectives, and other resource objectives, more regeneration harvest activities would likely be proposed within the Main Boulder Corridor.

**Comment 9-49** You also indicated for various units that forest health is an objective. We don't see how this project differs from any other timber harvest project on the Gallatin Forest.

**Response:** *Reference FEIS Ch 1-13.*

- 4) Increase vigor at the stand level, in the corridor, making trees less susceptible to future insect and disease occurrences.

The above is a secondary objective of the Main Boulder Fuel Reduction Project and timber harvest is a tool with which to reduce stocking density, age and stand composition.

*Reference FEIS A-28:*

“If no action is taken within the Main Boulder corridor to reduce stocking density, age and composition of the existing stands, within the next five to ten years, it is estimated that the Douglas-fir beetle, mountain pine beetle, and western balsam bark beetle will kill the majority of these trees in the most susceptible stands along the river corridor. The beetle attacks and subsequent mortality will create more fuel loadings in addition to the existing high fuel levels, as the standing dead trees begin to fall or be wind-thrown. In the event there is a fire start within the corridor, the fire would spread more rapidly through the corridor endangering the public and private landowners utilizing the corridor. These higher fuel loadings would hamper fire control actions and create public safety hazards during efforts to control the fire.”

**Comment 9-56** There are no units in Table 2-1 for treatment group 6. What units are these?

**Response:** *Table 2-1 Main Boulder Station (MBS) (FEIS Ch 2-21)* has listed treatment groups 3/6 being used. Also, on *FEIS, Ch 2-18* the Stand Treatment Group 6 describes the treatment for around the Main Boulder Station.

**Comment 10-16** The rationale and analysis of this proposal do not look at the forest as an ecosystem with interrelationships. It failed to assess fungal and insect organisms as capable of operating in a self-regulatory manner and exist as beneficial organisms within the project area.

**Response :** *Reference FEIS A-26.* Fungi and insects, like all things in moderation, may be beneficial in a forested ecosystem. However a disturbance (blowdown, defoliation, drought, or fire damage) may occur that can trigger an outbreak. The outbreak may spread to other stands that may have been self regulating within their own sphere of influence. This outbreak may create conditions that could become life threatening to other organisms within that ecosystem and treatments need to be applied to bring the system back into balance.

*Reference FEIS A-28*

"If no action is taken within the Main Boulder corridor to reduce stocking density, age and composition of the existing stands, within the next five to ten years, it is estimated that the Douglas-fir beetle, mountain pine beetle, and western balsam bark beetle will kill the majority of these trees in the most susceptible stands along the river corridor. The beetle attacks and subsequent mortality will create more fuel loadings in addition to the existing high fuel levels, as the standing dead trees begin to fall or be wind-thrown. In the event there is a fire start within the corridor, the fire would spread more rapidly through the corridor endangering the public and private landowners utilizing the corridor. These higher fuel loadings would hamper fire control actions and create public safety hazards during efforts to control the fire."

**Comment 10-18** Stating that "The largest diameter and oldest trees would be retained" is meaningless since the DEIS does not adequately quantify the terms "largest diameter" and "oldest."

**Response:** This statement does not occur within the document. Please refer to *FEIS 2-14 thru 2-18* that describes the stand treatments. The treatments describe removing a variety of tree sizes and hence age classes.

**Comment 10-19** How will thinning lodgepole pine not result in a stand more susceptible to windthrow and, therefore, higher fire risk?

**Response:** The prescription marking guides use wind firmness is a selection criterion, depending on the objectives of the stand treatment and other resource concerns. Some of the lodgepole pine will be lost to wind and snow throw. However these losses are expected to be minimal and to be cleaned up by firewood seekers and other recreational opportunists.

**Comment 10-39** Reduction of tree densities and maintaining it such in Habitat types where forests were naturally denser and functioned differently would be creating a situation where repeated, periodic entries are necessary to maintain this artificial situation, but the DEIS does not examine the cumulative ecological or economic effects of these obviously foreseeable activities.

**Response:** It is projected and seems reasonable that continued fuel reduction maintenance treatments would need to be conducted at some point in the future in order to maintain post-harvest fuel conditions. These activities could include underburning, prescribed burning, removing additional insect killed or hazard trees, and removing some small diameter trees and shrubs as they grow back and restore vertical and horizontal fuel continuity

Decisions supported by an environmental analysis of the current situation commonly remain valid for six to eight years. Fuel reduction and maintenance projects that may be necessary and could begin beyond this timeframe (10 to 20 years out) are outside the scope of the decision to be made. The environmental effects of any future projects will be disclosed and a project-specific decision made before these projects are implemented.

Cumulative effects analysis for future fuel reduction maintenance treatments can be found in the project file.

We cannot analyze the effects of the above actions with any accuracy at this time. There would be additional NEPA analysis conducted at the appropriate time to address any of these activities that may occur on National Forest lands.

**Comment 10-62 The susceptibility of green trees to insect infestations is mere speculation.**

**Response:** *Reference FEIS A-26 thru A-28.*

“It is helpful to realize that the greatest benefits in dealing with actual or potential Douglas-fir beetle infestations are derived from efforts aimed at preventing outbreaks rather than suppressing them (Schmitz and Gibson, 1996). To the extent possible, susceptible stands should be identified and conditions altered to make them less susceptible, before some type of stand disturbance occurs that may trigger an outbreak. Likewise, disturbances such as blowdown, defoliation, drought, and fire damage should be moderated to an acceptable level as quickly as possible to help prevent possible beetle infestations from exceeding acceptable levels. There has not been a true hazard-rating system developed for Douglas-fir beetle in the Northern Region; but know what stand conditions are most conducive to beetle depredations, once outbreaks are generated. They are as follows:

**Douglas-fir Beetle**

1. Stands where Douglas-fir is the predominant species and sites where those stands are most commonly found. The higher the percentage of Douglas-fir in the stand (particularly in excess of 50-60 percent), the greater the susceptibility. Douglas-fir habitat types on south-facing slopes and dry ridges sustain more beetle-caused mortality than other types. Much of the Main Boulder drainage meets these criteria.
2. As Douglas-fir reaches maturity--and becomes overmature—it grows more slowly and is susceptible to beetle infestation and mortality. Trees that are greater than 80 years old are considered to be susceptible, with those beyond 120 years becoming extremely susceptible. Existing data for Douglas-fir stands in the Main Boulder corridor indicates the average age of Douglas-fir is 129 years old.
3. Size of Douglas-fir in the stand. Usually associated with age, stand susceptibility is also reflected in the size of host trees. Generally, the larger trees in the stand are the more susceptible. Trees less than about 16 inches dbh are not as likely to be attacked successfully. Existing data indicates average dbh to be 8 inches (this value is heavily influenced by the number of trees per acre especially in the smaller size classes (1-7 inches dbh) in the modeling calculations. The ongoing / continuing epidemic would indicate there are sufficient large diameter (greater than 16 inches) trees to sustain the epidemic. The epidemic in the Main Boulder corridor is sufficiently strong and spill over is occurring into smaller diameter (ten to fifteen inch diameter) trees that are being attacked and killed.
4. The overall stand density also contributes to epidemic levels of infestation. When stocking levels exceed 80% of "normal" stocking for the site, susceptibility to attack increases significantly. The denser the stocking, which increases between-tree competition and also provides a cooler, more shaded environment preferred by the beetle, the greater the probability of infestation. As a rule, if total stand stocking exceeds 150 square feet of basal area, susceptibility to the beetle correspondingly increases. Existing data for beetle epidemics indicate the average basal area to be 153 square feet.

Management activities, which alter one or more of these stand conditions (species, size, composition, age, or stocking) can correspondingly reduce the stand's susceptibility to

Douglas-fir beetle. Where infestations occur, it is usually desirable to salvage recently killed and currently infested trees. It would be of even greater benefit to reduce stand susceptibility by thinning before the stands are infested. Where management objectives and other resource considerations permit, removing the larger, older Douglas-fir component from susceptible stands will significantly reduce future beetle-caused mortality in those stands and in adjacent, less-hazardous stands.

### **Mountain Pine Beetle**

The mountain pine beetle is the primary predator of lodgepole pine. It will also attack whitebark pine. This beetle is normally present at low populations or endemic levels. As the susceptible trees age, the inner bark or phloem thickens and makes a more viable host for the mountain pine beetle. As the tree ages, its growth rate declines, and its ability to defend itself against insect and disease attack is reduced. This reduced vigor, in conjunction with suitable environmental conditions, leads to beetle population explosions. Improving the vigor of individual trees and stands, through harvest and other cultural treatments, helps to maintain lodgepole pine on a site for longer periods of time by lowering the likelihood of mountain pine beetle infestation.

The hazard rating system currently recommended was developed by Shore and Safranyik (1992).

Stands where Lodgepole pine is predominant and sites on which those stands are most commonly found are the most susceptible. Higher percentages of lodgepole in species composition and high stand densities also contribute to greater susceptibility. The average basal area of infested lodgepole pine stands is 148 square feet.

As Lodgepole pine becomes mature to overmature, it slows in growth and is more susceptible to beetles. Lodgepole of 80 years and greater are considered to be highly susceptible and beyond 120 years extremely susceptible. The average age of inventoried lodgepole stands in the corridor is 113 years. The average age of infested lodgepole pine stands is 114 years.

Lodgepole stands with a stand density between 300-600 trees per acre appear to be the most susceptible. As lodgepole stands become denser than 600 trees per acre, usually indicating smaller-diameter trees, susceptibility actually decreases.

Stands located at an elevation/latitude combination conducive to beetle survival (at 46 degrees north latitude, stands at elevations lower than 6200 feet) are at high hazard; as elevation increases, hazard becomes correspondingly lower (stands between 6200 and 7200 feet) are at moderate hazard.”

**Comment 10-63 The DEIS does not consider research that indicates logging, roads, and other human caused disturbance contribute to the causes of "forest health" decline by promoting the spread of tree diseases and insect infestation**

**Response:** There are certain disease and insect pathogens that may be transferred from one area to another. These pathogens are host specific and the host species are not known to occur on the Gallatin National Forest.

**Comment 11-11 We question some of the underlying assumptions about the current status of the Boulder in relation to the relative “healthy” or “Unhealthy” status of the area.**

**Response:** The primary purpose and need for this project is not about forest health or restoring forest health. Secondary goals for the proposed action do include increasing vigor at the stand level, in the corridor, making trees less susceptible to future insect and disease occurrences (*FEIS Ch 1-13*).

There are active populations of Douglas-fir beetle (DFB) throughout the drainage and corridor, mountain pine beetle in lodgepole pine and whitebark pine is active in the wilderness within the drainage with occasional occurrences in the corridor, and western balsam bark beetle is active throughout the drainage and corridor. Initial infestations started by movement out of the adjacent wilderness areas surrounding the corridor. Attacks are progressing across federal and private lands as the populations move north thru the corridor. These attacks are one of the largest contributing factors to the high natural fuel loadings within the corridor. Past salvage harvest has been accomplished in an attempt to reduce fuel loadings and pheromone trapping has been used to reduce the impacts of the beetle attacks. See *Appendix A-26 of the FEIS*.

## SOILS

**Comment 6-17** Are any treatment units located on sensitive or erosive landtypes or landtypes subject to mass failure?

**Response:** A Review of units with the Gallatin Forest Soil Survey showed no units were in sensitive or erosive landtypes nor were there any in those subject to mass failure. This was verified on the ground by the soil scientist in 2002 and 2003. See *Table A-1, FEIS A-2 and FEIS Ch 1-4 for further description*.

**Comment 6-26** Is 5 to 10 tons per acre of coarse woody debris likely to be adequate for maintaining soil productivity and nutrient recycling?

**Response:** Five to 10 tons per acre is below our usual guidelines. Because of fuel-reduction objectives and the likelihood of crown fires in the area destroying all woody debris, this appears to be an acceptable compromise.

**Comment 7-3** BMP guidelines were developed for slopes under 35%. Tractor harvest is planned for slopes up to 45% There is a recommendation that activities take place over a minimum 8" of snow cover but this is not a requirement.

**Response:** The EIS was amended to indicate no harvest using ground-based equipment would occur on slopes over 35%. This would leave options open for the contractor to use cable systems, other specialized equipment, or hand treatment, depending on the situation for slopes greater than 35%. Use of BMP's on slopes less than 35% will keep significant soil disturbance below Regional levels.

**Comment 10-54** what are the cumulative effects of management activities on the productivity of the land? What results of research studies can you cite that have examined changes in soil productivity in the soil types that exist in the project area following similar management activities, including the cumulative effects of grazing, motorized travel, logging, and other human activities?

**Response:** Cumulative effects for soils could result from significant previous harvest in areas planned for treatment. There are no local research studies for the effects of similar management

activities, including the cumulative effects of grazing, motorized travel, logging, and other human activities. Regional and national studies in similar environments exist.

**Comment 10-55** The DEIS does not cite adequate scientific basis for adopting 15% as the numerical limit

**Response:** These limits were defined on a Regional basis. Scientific justification exists on that level.

**Comment 10-56** Neither soil function nor soil quality, as FSM 2500-99-1 defines it, have ever been monitored on the Gallatin NF following management activities.

**Response:** Regional guidelines specify kinds of detrimental disturbance that affect productivity. These serve as indicators of soil function and soil quality. Adherence to these guidelines is monitored on a local level.

**Comment 10-57** Without it, rainfall soon compacts and often concretes the surface leading to the first stages of runoff and erosion. Neither soil function nor soil quality, as FSM 2500-99-1 defines it, have ever been monitored on the Gallatin NF following management activities.

**Response:** On-the-ground-survey indicates there is presently a layer of duff and litter. Use of Regional soil guidelines keep soil disturbance below 15%. Though there are no established limits to the amounts of duff and litter needed to prevent erosion and compaction, keeping 85% of the duff and litter intact appears to be reasonable.

**Comment 10-58** It is also this set of organic layers that supports a host of microorganisms including those acting as antagonists to pathogenic fungi such as root-rotting fungi. There was little in the DEIS disclosing the diseases that are present and their current levels of activity.

**Response:** On-the-ground survey revealed no gross indicators of soil diseases.

**Comment 10-59** There is no inventory or monitoring of indicators, including lichens, fungi, insects, etc. although these can and do define existing and probable future forest conditions.

**Response:** On-the-ground survey revealed no gross indicators of problems with lichens, fungi, etc.

**Comment 10-60** The DEIS's discussion of the no-action alternative's effects on soils is again little more than the playing of the "fire scare" card.

**Response:** Potential fire effects to soils is documented in the *FEIS, Appendix A-1*.

**Comment 10-61** The DEIS is also vague regarding the consideration of the impacts of the existing road and trail system in the analysis area, in terms of meeting soil productivity or soil quality standards.

**Response:** Soil quality standards are applied only to harvest units and new roads in this analysis.

**Comment 11-4** We are concerned that there appeared to be little in the way of substantive analysis regarding the effects of the proposed action on various soil types.

**Response:** An analysis of Gallatin Forest Soil Survey landtypes (with field verification) was completed and no hazards were identified. In low or moderate hazard areas, BMP's are applied to keep disturbance below critical levels to protect soil productivity. See *Table A-1, Ch 1-4, and Appendix C (BMP's) of the FEIS for further description.*

**Comment 11-7** We appreciate the forests commitment to hand treatments only on slopes greater than 45%. However it would be our preference that their be no soil disturbing activities on slopes above 45%

**Response:** The FEIS was amended to indicate no harvest using conventional ground-based equipment would occur on slopes over 35%. This would leave options open for the contractor to use cable systems, specialized equipment, or hand treatment, depending on the situation for slopes greater than 35%. Use of BMP's on slopes less than 35% will keep significant soil disturbance below Regional levels.

**Comment 11-8** We also request a better analysis regarding the relative stability of slopes and overall roadbuilding and treatment activities.

**Response:** We used the Gallatin Forest Soil survey for the general analysis of slope stability over the area (*FEIS Appendix A-1, Ch 1-4.*) On-the-ground review was used to tighten this down to the scale of this analysis. Further review will occur when actual road layout is proposed in case there are conditions not visible at the scale of the EIS analysis.

## VISUALS

**Comment 7-2** It is unclear what provisions are being made to insure that restoration of Wild and Scenic areas will actually be accomplished post-harvest.

**Response:** For clarification, the Main Boulder River is not currently part of the Wild and Scenic River System. As part of the Amendment No. 12 of the Gallatin National Forest Plan dated June, 1993 the Forest Service agreed to manage the Main Boulder River to protect its outstanding remarkable values for future consideration and potential classification for inclusion into the Wild and Scenic River System. Current eligibility prior to formal study includes both "Recreation" and "Scenic" River classifications. To assure that the proposed fuel management activities do not visually dominate the area seen from the river one year after treatment and associated activities are completed, the mitigations as listed in *FEIS Chapter 2-37. and in Appendix B* will be incorporated into treatment prescriptions. (Also see response to 9-62).

**Comment 8-7** The DEIS does not adequately disclose how the artificialization of vegetation in this narrow corridor would be fully consistent with Wild and Scenic designations.

**Response:** It is unclear what exactly "artificialization" means however, both "Scenic" and "Recreation" classifications of the Wild and Scenic River System allow for the management of timber within the corridor as described in *FEIS Chapter 3-58.* (See responses at 9-62 and 7-2).

**Comment 9-62** According to the agreement made with Trout Unlimited on the management of Wild and Scenic River candidates, they will be maintained in a near natural environment on 1/4 mile of each river bank. A massive thinning, logging, and roading

**project hardly seems to fit with a "near natural condition," as do stumps and slash piles.**

**Response:** The agreement with Trout Unlimited has no reference to Wild and Scenic designation. It is assumed that this comment is referencing Amendment No. 12 of the Gallatin National Forest Plan dated June, 1993 also known as the Northwest Rivers Council Settlement Agreement (not "Trout Unlimited"). In this, the Forest Service agreed to manage the Main Boulder River to protect its outstanding remarkable values for future consideration and potential classification for inclusion into the Wild and Scenic River System. This potential eligibility includes four separate river segments alternating between Recreation and Scenic River classifications. Both the "Scenic" and "Recreation" classifications of the Wild and Scenic River System allow for the management of timber within the corridor as described in the *FEIS Chapter 3-22*.

Because the "outstandingly remarkable values" of the river are not itemized and specifically addressed in the Forest Plan, the ID team and Regional Office staff agree that the maintenance of the visual quality objective is the most appropriate means to assure compliance with potential Wild and Scenic River classification. Therefore, this proposal considers the viewshed from the Main Boulder River and utilizes the Forest Plan Standard for visual quality (Partial Retention) to determine probable effects from treatment in the River corridor and to the potential river classifications. As stated in Chapter 2-37, (DEIS & FEIS) to maintain these standards, all landscape modifications must no longer be visually dominant within the areas seen from the River one year after treatment and associated activities are completed. (Areas seen apply to those areas that are currently visible as well as those areas that become visible after treatment.) DEIS & FEIS Chapter 2, as well as Appendix B, defines the methods and mitigations that will be utilized to accomplish this goal.

## **WATER QUALITY/FISHERIES**

**Comment 5-5 We recommend that specific provisions be incorporated into the timber contracts that require logging practices which eliminate the possibility of any erosion or recruitment of sediment into the river system and requiring special yarding requirements.**

**Response:** As explained in *FEIS Chapter 2-31*, Design Criteria Specific to the proposed action, A. and in Appendix C – BMP's, Water Quality, timber sale contracts will include standard B and specific C clauses for erosion and sedimentation control which are based on standard timber sale clause provisions, Montana Forestry BMP's, Montana SMZ rules, Wetland Executive Order 11990, and additional provisions in the B. Fisheries Design Criteria listed on *FEIS Ch 2-32* and unit specific mitigation as described in *Appendix B-1*.

**Comment 5-6 The riparian area should be delineated by a field survey by a team including a fisheries biologist.**

**Response:** Riparian area marking will be done, as explained in *Ch 2-31*, Design Criteria Specific to the proposed action, in accordance with Montana SMZ rule 2 (36.11.302), which requires that SMZ boundaries must be clearly marked on Class 1 and Class 2 stream segments when forest practices that are prohibited within the SMZ will be conducted next to the SMZ. A fishery biologist will assist in marking units with prescribed riparian treatments as indicated in Fisheries Design Criteria explained on *Ch. 2-32*.

**Comment 5-7 Activities in the riparian zone have to be limited to removal of dead and dying trees only.**

**Response:** Alternative I – “Remove only Dead and Dying Trees from the Riparian Areas”, was considered as an alternative but dismissed from detailed study because it does not adequately address the purpose and need for fuel reduction in the Main Boulder River corridor. Likewise, removing only dead and dying trees from the riparian area would significantly reduce the amount of large woody debris immediately available for recruitment to streams throughout the project area. The design criteria intended to protect fishery and aquatic resources allows for retaining trees (alive and dead) that have potential to be recruited to project area streams while still meeting the purpose and need of the project.

**Comment 5-8 An interdisciplinary team including a fisheries biologist should be involved in the final design and layout of the projects.**

**Response:** Final design layout will be done primarily by fuel and timber staff with review by other functional staff including a hydrologist and fishery biologist. A fishery biologist will be involved with marking units with prescribed riparian treatments as indicated in B. *Fisheries Mitigation 13 on FEIS Ch 2-32*.

**Comment 5-9 The mitigation objective measures identified for Alternative B, are appropriate, but are not measurable or quantitative as stated.**

**Response:** The Mitigation for Alternative B section on *FEIS Ch 3-57* describes the objectives of mitigation intended to protect aquatic resources. Specific mitigation intended to meet those objectives in a functional, measurable way are listed in *Ch 2-32*. These mitigation measures to be implemented are an integral component of the proposed action (see *FEIS Ch 3-57*, Effect Determination for Alternative B without mitigation). More specific information on other mitigation designed to protect aquatic resources can be found in Appendix B and Appendix C. Implementation and effectiveness monitoring of all riparian mitigations will be an integral part of the BMP review process.

**Comment 5-10 The Stand Treatment Group prescriptions previously identified should be revised to incorporate those additional items. (Trout Unlimited Agreement)**

**Response:** The Trout Unlimited Settlement Agreement (1/90) item #4 requires that vegetative manipulation within riparian areas will occur for the purposes of meeting riparian dependent resource objectives such as watershed, wildlife or fisheries and not for timber management activities. The objective of the riparian harvest in the Main Boulder Fuels Reduction Project is to reduce the chance and severity of wildfire impacts in riparian areas and allowing the riparian areas to function as reduction areas of fire intensity. The treatments, which consist primarily of understory conifer encroachment removal, ladder fuel reduction, and in places, stand density reduction, are designed to achieve more fire resistant and more robust riparian areas consistent with the Design Criteria on *FEIS Ch 2-31 (Water Quality)* and *Ch 2-32 (Fisheries)*. Stand density and fuel reduction treatments along riparian corridors will bring stand densities and fuel loadings closer to a pre-fire suppression state. This assumes that fire frequency has been reduced because of fire suppression and that existing stands, including stand density and fuel loads, are abnormally high. The mitigation measures identified to protect water quality and fishery resources applies to all stand treatment group prescriptions.

**Comment 6-1** ...we do have concerns regarding timber harvest and construction of roads, in riparian areas, since activities have potential for adverse impacts to riparian functions and habitats...

**Response:** Road construction is proposed for riparian areas in unit 25A where approximately 0.4 miles of temporary road are proposed. All other temporary roads are outside of riparian areas except for some small stream crossings such as in unit. All road construction in riparian areas is constrained by Montana SMZ rule 6 (36.11.306) which prohibits road construction in the SMZ unless necessary to cross a stream or wetland. An alternative practices approval from the DNRC will be required for the section of temporary road in Unit 25A which would be in the SMZ.

**Comment 6-4** ...but note that timber harvests in riparian areas should be carefully planned and implemented to maintain adequate protection of the physical integrity of aquatic systems;...

**Response:** Design Criteria for Water Quality (*FEIS Ch 2-31*) and Fisheries (*FEIS 2-32*), Appendix B-1, and Appendix C will be implemented to protect water quality and the physical integrity of aquatic systems.

**Comment 6-5** We understand this to mean that all trees in the riparian zone of the Main Boulder River that are over 8” in diameter that have potential to fall into the stream will be retained. Is this correct? We suggest that this mitigation measure be worded more clearly.

**Response:** No, EPA's interpretation of this wording is incorrect. The intent of this mitigation is to provide additional criteria for larger diameter, taller "leave trees" that lie outside the 50 foot corridor where SMZ rules apply. The intent is to leave the larger trees both within and outside the 50 SMZ boundary that could provide shade and LWD recruitment to streams. The criteria for determining leave trees is as follows: If a tree within or outside the 50 foot SMZ boundary were to fall perpendicular towards the stream, and if the diameter of the tree stem, in a fallen state, at the bankfull edge of the channel is  $\geq 8$  inches, then the tree would not be removed. Additional clarification to the text on *FEIS Ch 2-32* is provided.

**Comment 6-6** How will it be determined which trees will be harvested?...

**Response:** The narrative has been reworded to provide additional clarification. In addition to the criteria above, for trees within and outside of the 50 ft SMZ boundary, use the following procedure to determine leave and harvest trees. Using standard tree height measuring procedures, determine the height of the tree where the stem diameter is 8 inches. Favor leaving the tree if that height is  $\geq$  to the perpendicular distance from the tree bole to the bankfull edge of the channel. This mitigation is more restrictive than SMZ rules, protecting larger diameter, taller trees that could provide LWD recruitment but that may lay outside the 50 foot SMZ boundary. It maximizes LWD recruitment potential while allowing for harvest of smaller diameter trees that contribute to high fuel loads.

Shading by large trees is not part of the criteria. Rather, the criteria is based on potential for trees to provide bank and/or floodplain stability and large woody debris recruitment. However, the design criteria by default will favor leaving the larger trees which provide the most shade. Because of fire seclusion, stocking densities are high. It is reasonable to assume that because stocking densities are higher than what would normally occur, that shading in riparian corridors is also abnormally high. For that reason, tree shading/water temperature interactions were not considered to be a significant issue.

**Comment 6-7 ...it is not clear how many large diameter spruce trees are likely to be harvested vs. how many are likely to be retained per acre in riparian areas. We believe it would be helpful if such information were estimated and disclosed in the FEIS.**

**Response:** The number of large spruce trees >20 inch diameter retained and harvest will vary by harvest unit and other design criteria, primarily LWD recruitment potential and criteria established to address visual concerns. SMZ rules allow a maximum of 50% removal of trees >8 inches dbh within the 50 foot SMZ boundary. This design criteria is intended to favor removal of the smaller diameter trees that are >8 inches dbh. In other words, the 50% reduction will primarily be targeted towards understory trees.

**Comment 6-8 We suggest that the fisheries and riparian mitigation measures be adjusted to assure that large diameter (14+) spruce trees be favored for retention.**

**Response:** The 20" diameter trees were included in the design criteria since these larger trees are most likely to provide anchored and stable large woody debris. Where spruce trees occur, the majority are larger diameter (e.g., >20 in diameter). The SMZ rules and functional approach outlined in Design Criteria, B. Fisheries, *B.1 Ch 2-32 of the FEIS* will result in retention of at least half of the large spruce trees, and other species, along riparian corridors regardless of size. In addition, all trees >8 inches dbh will be evaluated by a fisheries biologist based on their potential to provide LWD recruitment and streambank stability. As such, all trees, regardless of size, that have potential to provide LWD recruitment or floodplain or bank stability, will be favored as leave trees.

**Comment 6-9 ...the EPA has concerns regarding the level of aquatic protection provided by the Montana SMZ rules, particularly regarding protection for fisheries habitat in headwater streams.**

**Response:** See Design Criteria, B. Fisheries, *Mitigation 12 page 2-32 of the FEIS*, which are more restrictive than the Montana SMZ rules in that no harvest is allowed within 15' of any stream segment with retention of more 20" trees and trees leaning toward the stream than Montana SMZ rules. In addition, a fisheries biologist will be involved with all riparian marking. Trees that have potential to provide LWD recruitment and/or bank stability will not be harvested.

**Comment 6-10 We generally believe that riparian buffers should be at a minimum approximately a width of one representative tree height from the stream to allow adequate shading and future woody debris recruitment for stream habitat.**

**Response:** Shading and future woody debris recruitment provisions are outlined in Design Criteria, B. Fisheries, *Mitigation 12, Ch 2-32 of the FEIS*. A "no treatment" zone with a minimum approximate width of one representative tree height would not meet the purpose and need of the project. Stand densities along the Boulder corridor are abnormally high due to fire suppression. It is assumed that there is a higher potential for irreversible effects to aquatic systems under high severity burns because fire size, intensity and severity are outside a natural range of variability. In other words, in some cases watersheds can be burned beyond their adaptive limits. By reducing the understory component, stocking densities will more closely approximate pre fire suppression densities and will reduce the potential for high intensity and severity fire within the riparian corridor. In addition, most tributary streams to the Boulder River are extremely high gradient and incised. Vegetation (i.e., species composition) adjacent to many tributary streams is not different from vegetation

types adjacent to the riparian corridor. In many cases, the 15-foot no harvest buffer exceeds the riparian zone width, if riparian zones are defined by vegetative composition.

**Comment 6-11** It is stated that there will be no harvest in active floodplains (p.2-25), yet they are not defined in the glossary..

**Response:** The design criteria “no harvest in active floodplains” applies to floodplains that are inundated during a normal 2 to 5 year recurrence interval. These are typically lateral bars within the active channel where conifers and other vegetation has established. Furthermore, these would be areas where the 15 foot no harvest rule, and other design criteria are not sufficient to protect the physical integrity/stability of streambanks and floodprone areas. One such area occurs at the north end of Unit 31 where large spruce trees are located on a lateral bar that appears to be frequently inundated during high peak flow events. Other areas may be found during the marking phase of the project and will be identified by a fisheries biologist.

This definition has been added to the glossary in the FEIS.

**Comment 6-13** EPA also supports inspections and evaluations to identify existing road conditions that cause or contribute to nonpoint source pollution and stream impairment, and conduct the necessary maintenance to correct deficiencies. Will any existing roads such as the Main Boulder Road be upgraded or improved during the project?

**Response:** The Main Boulder Road is a Sweetgrass County road with County maintenance consisting of grading, ditch cleaning, culvert cleaning, and culvert and bridge maintenance and we have no jurisdiction for upgrading or improving it. Any upgrades or improvements that occur on the road would be done by the county or upon the approval by the county. No upgrades to the Main Boulder Road are planned as a part of the project. Minor maintenance will be done on some of the unit access roads. No road density reduction is planned in project other than obliteration of temporary roads.

See Ch 3-4 of the FEIS. Sweetgrass and Park County officials have applied for Forest Highway Access Money (through Federal Highways Administration appropriations) to widen some single lane portions of the Main Boulder Road (which is a county road). It is not known at this time whether or not these funds will be made available.

The Sweetgrass County Community Fire Plan states, “Another major concern has been the limited access provided by the Boulder Road. Because sections of the road are only narrow enough for one lane of traffic, emergency crews would be forced to make some sections of it a one-way road during emergency situations. In 2003, the first “bottleneck” on the Boulder Road is scheduled to be widened. Many more miles still need to be increased in width before it will be sufficient for emergency operations. If the fire burns too close to the road, emergency crews will require that the road be closed for safety reasons. Reducing the fuels in this corridor will also help to protect the road for continuous emergency access. A copy of the fire plan can be found in the Project File.

**Comment 6-16** It is our understanding that only hand treatments would be used within 50 ft riparian zone since operation of wheeled and tracked vehicles is not permitted within 50 feet of a stream course. Is this correct?

**Response:** The Montana SMZ rules and Design Criteria, B. Fisheries, Mitigation 12, FEIS Ch 2-29 restrict equipment operation in SMZ's. The Montana SMZ Rule 2 (36.11.304) restricts

wheeled or tracked equipment to within 50 feet of the ordinary high water mark. Cabling from areas where trees were felled to outside the restricted area is allowed in the SMZ rules. Most of the SMZ treatments will consist of slashing and pile burning. Broadcast burning is not allowed in SMZ's via Rule 3 (36.11.303).

**Comment 6-18** We recommend delineating wetlands and perennial seeps and springs on maps and marking them on the ground before harvesting so that timber contractors will be able to avoid them.

**Response:** Wetlands and perennial seeps are being mapped on aerial photo's for marking on contract maps and for any summer logging on the ground for treatment exclusion. The equipment operation SMZ restriction mentioned in comment 6-16 also applies to wetlands.

**Comment 7-10** The Forest Service proposes a 15' buffer that does nothing to accommodate shoreline habitat fluctuations, vegetation variation, and wildlife needs. Distance to stream channel may be used to restrict harvest but it should not automatically indicate harvest.

**Response:** The 15' buffer under Design Criteria, *B. Fisheries, Mitigation 12, FEIS Ch 2-32* is project mitigation, which is more constraining than the Montana SMZ rules. It does not automatically indicate harvest of trees farther than 15' from stream channels. The 15' buffer is from the bankfull elevation of the channel. In other words, the 15' is not measured from the wetted channel width, rather it is measured from the peak flow elevation of the channel. Thus, it accommodates fluctuations in flow during spring snowmelt runoff and flood events. Most channels throughout the project area are relatively incised, meaning higher flood flows are primarily contained within the channel. Other design criteria are in place to protect channels where higher flood flows would extend significantly beyond the normal high water mark.

**Comment 10-9** The proposal to log and construct so many miles of new road would seem to be inconsistent with state water quality standards and requirements under the Code of Federal Regulations.

**Response:** Projected sediment effects of the 7.4 miles of temporary roads are shown in *Table 3-7, FEIS Ch 3-47* and subsequent narrative. Projected maximum sediment increase of the temporary roads and fuels treatments is 0.72% in the Main Boulder River which is too low to be measurable in terms of actual concentration or physical or biological effects. As explained on *FEIS Ch 3-48* in the Applicable laws, regulation, and Forest Plan guidance the effects are well in compliance with Montana water quality standards.

A maximum of 7.4 miles of temporary road may be necessary to access the areas proposed for mechanical fuels treatment using conventional ground-based logging systems. Of this total, approximately 4.8 miles will be re-examined on the ground prior to project implementation to determine whether opportunities exist to reduce the length of newly constructed temporary road by using existing roads on private or National Forest land and one of the key factors in determining the use of existing roads on private land is whether permission to use the roads can be obtained. Existing roads on either ownership may require reconstruction to support safe and efficient use, consistent with project design criteria and mitigations. Options to use existing roads will be examined to assure that the environmental effects of using roads on private and public land do not exceed what has been disclosed in this document.

**Comment 10-50** The DEIS does not disclose the amount of error in its water quality analysis methodology, especially the erosion model.

**Response:** The R1R4 model used in the sediment analysis is designed to address the cumulative effects of timber harvest operations, road construction, and fire. The model does not attempt to analyze the effects of grazing and mining activities (other than vegetation removal and road construction) or individual episodic storm events. The model is designed to compare relative differences among alternatives rather than to predict precise sediment and water yields that are likely to occur upon project implementation. Because the R1R4 model relies on climatic conditions averaged over long periods, the models' accuracy is best when averaged over several years. The model is less reflective of individual drought or flood years. The R1/R4 Sediment model focuses on slope processes and estimates the water and sediment delivered to the main channel by forest management within the watershed, including the headwater stream channels. However, the routing of sediment and water through the main channel is limited to broadly based regional curves as no main channel hydrologic or hydraulic processes are modeled directly.

**Comment 10-51** The DEIS fails to disclose the ongoing impacts of sediment and other problems caused by roads that will receive no treatments.

**Response:** Sediment from roads that will receive no treatments is the majority of the projected sediment over natural, which is shown in *FEIS Table 3-5, Ch 3-45 and Table 3-7, Ch 3-47*. This is projected to be approximately 32.7 tons/year or 2.5% over natural. Impacts are described on *FEIS Ch 3-45* and are not a measurable level of sediment in the Main Boulder River or tributaries.

**Comment 10-53** Due to the fact that Westslope cutthroat trout (WCT) populations are isolated in the headwaters, and given the science showing that such small populations are at risk to extinction, the FS must devise conservation strategies to ensure long-term viability. This is lacking in both Forest Plans and in the DEIS.

**Response:** Genetically pure Yellowstone cutthroat trout inhabit the Boulder drainage upstream of Box Canyon, the South Fork Boulder River, and the East Boulder River upstream of the Brownlee Creek confluence, all of which are outside the project area and do not have potential to be influenced by the project. Lower densities of YCT inhabit the main Boulder River downstream of Box Canyon, however, most YCT in this reach are hybridized. Two tributary streams, Hawley Creek and Bridge Creek support pure populations of YCT upstream of the project area boundary. Design criteria and mitigation measures described on *FEIS Ch 2-32* will be implemented to protect aquatic habitats. Furthermore, reducing the abnormally high fuel loads throughout the Boulder River corridor will reduce the risk of high severity fire and associated impacts to aquatic habitat along the corridor. Westslope cutthroat trout do not inhabit the Boulder River system, which is outside of their historic range. Population connectivity is a key factor in ensuring population resilience and reducing the risk of extinction due to catastrophic event such and uncharacteristic wildfire. Barriers to fish movement (e.g., culverts) have been evaluated for the Boulder River and are being addressed via the Gallatin National Forest forest-wide culvert inventory. Opportunities to improve connectivity throughout the corridor are being addressed outside of this project.

**Comment 10-57 Forest Plan direction for protection of native fish species habitats is inadequate for insuring population viability in the bodies of water to be directly or indirectly affected by the proposed project.**

**Response:** Forest Service Manual direction, Forest Plan direction, Implementation guidelines found in the TU Settlement Agreement, the Land Use Strategy for WCT and YCT, and the Conservation Agreement for Yellowstone cutthroat trout, are all intended to ensure protection and viability of native fish populations. The project, including all mitigation measures and design criteria stipulations are measures that would be implemented to ensure protection of aquatic habitats and biota.

## **WEEDS**

**Comment 6-25 No spraying should occur in or near streams, wetlands, or other aquatic areas.**

**Response:** Please refer to the Gallatin National Forest Invasive Weed Control EIS, July 2004, especially page 3-19. This section references the "Watershed Management Guidelines for the Gallatin National Forest" and lists pesticide and chemical requirements. Also refer to the Water Quality, Fisheries and Amphibians Effects Analysis in the Gallatin National Forest Invasive Weed Control DEIS beginning on page 4-21.

**Comment 9-61 The DEIS did not address the problem of weed spread into the wilderness, as well as increase of weeds in potential Wild and Scenic River areas.**

**Response:** Please refer to Issue 2, Weeds DEIS, page 2-5, and this *FEIS* page 3-32. The discussion of each weed species includes an analysis of "habitat at risk". Prime suitable habitat varies somewhat from species to species but of course crosses any human created boundaries or designations. When the Noxious Weed Risk Assessment determined "habitat suitable for weed expansion", (*FEIS*, page 3-36) that habitat maybe or is Wilderness or Wild and Scenic river corridor depending on the location of the unit.

**Comment 10-64 The DEIS' s does not disclose the effectiveness of the mitigation measures it requires to limit or prevent the spread of noxious weeds.**

**Response:** Effectiveness of proposed weed mitigations is discussed in the Effects Analysis under each of several possible harvest scenarios starting on this *FEIS* Ch 3-38. In summary, weed expansion following harvest is closely tied to the amount of ground disturbance and road building, *FEIS* Ch 3-41. Treatment effectiveness is closely tied to how long soils are exposed and the quality, timeliness and length of treatment efforts following disturbance. Mitigation, *FEIS* Ch 2-31 are designed to reduce weed spread during and immediately after fuels reduction activities and provide for extensive treatment following these activities

## WILDERNESS

**Comment 10-1** The DEIS does not disclose the project's impacts on the unique social, ecological, and other values represented by roadless areas, nor does it adequately disclose the impacts on potential Wilderness designation.

**Response:** As stated in *FEIS Chapter 3-7*, IRAs are to be analyzed to determine the effects of any proposed activity that would substantially alter the roadless characteristics of the IRA as to render them unsuitable for future designation as wilderness. Only a portion of one unit (the Main Boulder Station Unit) has proposed treatment within the North Absaroka Inventoried Roadless Area (IRA). One additional unit lies adjacent to the IRA. *Appendix A, FEIS A-29* explains that within the Main Boulder Station Unit, minor effects to the IRA's apparent naturalness, opportunity for solitude and the feel of remoteness will be short-term. The natural integrity of the area will be affected by the reintroduction of fire back into the ecosystem. The other Roadless characteristics will not be affected. This proposed treatment is supported by direction for the Management of Inventoried Roadless Areas at FSH 1920, Interim Directive No. 1920-2004-1. This authorizes the type of stand treatment proposed within the IRA portion of the Main Boulder Station Unit as having Forest or even District level approval authority. Direction at 1925.04a.2.a.(2) acknowledges that when "the timber is generally small-diameter material and the removal of the timber is needed ... to maintain or restore the desirable characteristics of ecosystem composition and structure, for example, to reduce the risk of uncharacteristic wildfire effects" effects to the area's roadless characteristics are minimal. This is precisely the case in the Main Boulder Station Unit. It has been determined that these short-term effects to the area's roadless characteristics would not render any portion of the IRA unsuitable for future wilderness consideration (*FEIS Chapter 3-7, Roadless Summary*).

**Comment 10-2** The DEIS does not adequately analyze the linked issues of uninventoried roadless areas and validity of the boundaries of the Inventoried Roadless Areas.

**Response:** In 1987, the Gallatin Forest Plan identified non-wilderness areas on the Forest that could possibly have wilderness attributes and inventoried those areas as "Roadless." Other non-roadless areas (referred to in this comment as "uninventoried roadless areas") were not identified as possessing these characteristics and are not considered potentially suitable for wilderness designation. Therefore, there are no linked issues, connection, correlation or other relationships between "uninventoried roadless areas and the validity of the boundaries of Inventoried Roadless Areas."

**Comment 10-3** Nothing is discussed as far as the possibility that other areas outside of IRAs may be eligible for IRA or Wilderness status.

**Response:** See Response to Comment 10-2. This comment is moot.

**Comment 10-4** Proposing logging and road building activities in roadless areas of any status would irretrievably alter their wilderness characteristics. The American public, in the context of commenting on the Roadless Rule proposal, has clearly spoken against such activities.

**Response:** Impacts to "roadless characteristics" from this proposal have been evaluated as described in response to Comment 10-1. Furthermore, no logging or road building is being proposed in the IRA.

**Comment 11-5: We are concerned that with no buffer, wilderness qualities will be degraded.**

**Response:** Although no defined untreated buffer is proposed adjacent to the Absaroka-Beartooth Wilderness, certain treatment recommendations will be implemented that will mitigate degradation of the wilderness resource (*FEIS Chapter 2-37, Mitigation for G & H*). First, the wilderness boundary shall be surveyed and posted to assure that no treatment of any type will occur within the wilderness. Secondly, the edges of all units would be irregularly shaped or feathered to be predominately natural appearing. This is to ensure that there would be no unnatural appearing straight vegetative edge lines being introduced especially adjacent to the wilderness. This second mitigation will create a default buffer in most areas along the wilderness boundary.

## **WILDLIFE**

**Comment 6-29 Will it be specified that whitebark pine trees that are identified as a key food source for grizzly bears in the Yellowstone Ecosystem (P3-67) will not be harvested.**

**Response:** The project is located between 5,000 and 7,000 feet in elevation. There are no known or expected white-bark pine trees that occur in the proposed treatment units. White-bark pine typically occurs above 8,000 feet in elevation, with some variability for aspect and soil type. If any white-bark pines are identified in the proposed treatment areas, they will be marked for retention.

**Comment 7-4 Without pre-harvest baseline monitoring it is difficult to understand how these activities affected wildlife during and post-harvest.**

**Response:** The effects to federally listed species, Forest Service sensitive species, and to wildlife in general were addressed in the biological evaluation and biological assessment prepared for the project. In general, it was determined that the scale of the project in relation to the home range of these species and its location adjacent to the Main Boulder road resulted in negligible impacts to wildlife. A copy of the documents and letter of concurrence from the USFWS are available upon request and are located in the Project File.

**Comment 7-5 Management activities should allow substantial areas of inactivity interspersed throughout any active management areas.**

**Response:** Refer to *Mitigation 29, FEIS Ch 2-35*.

**Comment 7-7 While spruce is stated as the preferred species to provide anchored and stable LWD, it is not necessarily the best snag for snag dependent species.**

**Response:** There is no statement or reference within the DEIS that targets spruce for snag retention. Spruce trees are the predominant species that grows in moist soil sites along the Boulder River and spruce trees have a substantial root fan which helps to anchor riverbank and provide LWD when they fall across the river prism.

**Comment 7-9 The snag management plan should ensure adequate amounts of cavities.**

**Response:** Refer to Mitigation and Design Criteria in the FEIS. *Mitigations discussed on Ch 2-35* will provide for more than the adequate snag retention and recruitment as required by the Forest Plan amendment.

**Comment 9-3 The DEIS at 3-80 notes that goshawk foraging habitat will be removed.**

**Response:** Although some habitat which meets the definition of goshawk foraging may be removed as a result of treatments, there are no known goshawk nest sites nor have any goshawks been observed foraging within the proposed treatment areas in past surveys or observation.

**Comment 9-4 The DEIS at 3-79 notes that old growth suitable for goshawk nesting will be removed.**

**Response:** Refer to *FEIS Appendix A-15*. Although some old-growth habitat that meets the definition of goshawk nesting habitat may occur in the proposed treatment units, there are no known nest locations that have been identified in past surveys or observation within any of the proposed treatment units. Some old growth trees may be removed, but most large fire resistant trees will be marked for retention. Also refer to mitigations on *FEIS Ch 2-36*, which provide additional protections in the event that an active nest is located in or near any treatment unit.

**Comment 9-5 The DEIS at 3-87 notes that this project will reduce coarse woody debris for the pine marten.**

**Response:** Refer to *FEIS, Ch 3-88* in the same paragraph cited; “The Main Boulder analysis area currently provides an abundance of marten denning habitat.”, and “The proposed treatment will remove and alter structure and remove some potential marten denning habitat. However, there will be abundant marten denning habitat within one-quarter mile of any proposed treatment units”. The retention areas within the treatment units, which represent at least 15 to 20% of any treated unit, will also retain all of the coarse woody debris requirements necessary for Pine Marten denning.

**Comment 9-6 Winter range will be lost (DEIS 2-28, 1-13) with forest canopy thinning.**

**Response:** Refer to *Ch 3-90 in the FEIS*. Elk winter range may be affected in the short term, but there are mitigations incorporated into the project design that address these concerns. In addition, long term projections are that the treatments will enhance and help to sustain elk winter foraging habitat.

**Comment 9-7 The DEIS at 3-23 notes that the area is currently good hiding cover, and this cover will be lost with thinning, to the detriment of big game and the grizzly bear.**

**Response:** Refer to *3-10 in the FEIS*. Elk hiding and thermal cover may be affected in the short term, but there are mitigations incorporated into the project design that address these concerns. In addition, there will be abundant hiding and thermal cover directly adjacent to treated areas and within all of the untreated areas within the corridor. Analysis of aerial photography and ground surveys of the analysis area indicated that hiding and thermal cover were not a limiting factor to elk presence and viability. If there is any limiting factor

within the analysis area, it is the lack of quality nutritional year round forage sources associated with earlier successional forest types.

**Comment 9-8** The DEIS at 2-29, 2-30, 3-23, and 3-67 notes that the roads in the project area already have extensive traffic, and are displacing wildlife, including the grizzly bear. Additional traffic will exacerbate this situation, not improve it.

**Response:** The Main Boulder road is managed by Sweetgrass and Park Counties. The Forest Service has no jurisdiction to limit access or traffic along this roadway. The current use has the effect of discouraging some species from using habitat adjacent to the road either seasonally or diurnally. The limited additional traffic associated with project implementation would not increase this effect. Furthermore, proposed mitigations were incorporated to minimize any potential impacts to all species of concern inhabiting the analysis area.

**Comment 9-12** What are the specific wildlife objectives for management of these riparian areas, and are they different from the rest of the treatment areas?

**Response:** There are no specific wildlife objectives for management of riparian areas other than the protective measures incorporated into mitigations. Although, there are general secondary objectives to enhance and improve degraded riparian habitats through removal of encroaching conifer and by small scale burning too invigorate decadent riparian habitat (primarily *Salix* spp.).

**Comment 9-14** Could you quantify how many miles of new temporary roads will be constructed in Management Situation 2 grizzly bear habitat?

**Response:** There may be up to approximately 3 miles of temporary road constructed in the southern most units that are within Management Situation 2 grizzly bear habitat. Road construction will only be done where it is determined that it is necessary to safely and effectively complete proposed treatments. These temporary roads will not be open to the public and will be rehabilitated when treatments are completed.

**Comment 9-15** It looks like approximately 60%, or over 1000 acres of the logging, will occur in grizzly bear recovery habitat. It is not clear how you can meet Amendment 19 of the Forest Plan with this logging and new roads.

**Response:** Amendment 19 of the Gallatin National Forest Plan does not allow for increased motorized access in grizzly bear recovery zones "unless allowed through consultation with USFWS". A copy of the Biological Assessment and letter of concurrence from the U.S. Fish and Wildlife Service is available upon request and is located in the Project File at the Big Timber District.

**Comment 9-19** What is the effect of creating this long, narrow displacement zone on the grizzly bear moving throughout this wilderness?

**Response:** Refer to Ch 3-67 thru Ch 3-69 in the FEIS. Based on analysis and review of observation records, the effect will be negligible. The U.S. Fish and Wildlife Service (USFWS) concurred with our findings. A copy of the Biological Assessment and letter of concurrence from the U.S. Fish and Wildlife Service is available upon request and is located in the Project File at the Big Timber Ranger District.

**Comment 9-20** .How much hiding cover is currently in the project area, and how much will be left after your treatment?

**Response:** The analysis area is 111,425 acres in size. It has been estimated that approximately 80% of the analysis area offers good to excellent hiding cover. Therefore, approximately 89,000 acres represent hiding cover and over 87,000 acres will remain in the analysis area when the project is completed.

**Comment 9-21** The DEIS at 3-67 infers that corridors were provided for grizzly bears and other wildlife. Where are these corridors along this 24-mile long treatment area, and what designs are considered important to encourage movement by these threatened species?

**Response:** There are no defined or designated travel corridors for grizzly bears within the Main Boulder River drainage. The statement made in the DEIS, Ch 367 referred to the infrequent movement of bears across the drainage from east to west and back, or up and down the river that usually occurs in early spring after emergence from dens. During the remainder of the season, when grizzly bears are active they rarely occupy the lower elevations in the drainage and appear to prefer the higher slopes and drainages in the Absaroka–Beartooth Wilderness.

**Comment 9-22** What are the specific criteria and what harvest units constitute whereby activities will be allowed in recovery habitat outside November 1 and April 30.

**Response:** Refer to Ch 2-35 in the FEIS. The specific criteria allowing fuel reduction activities between April 30 and Nov 1 are a determination of the presence and potential impact to threatened or sensitive species by the District Biologist or other qualified personnel. The units potentially involved within the MS-2 recovery area are Unit 21 through Unit 32.

**Comment 9-23** what constitutes a "restricted period for a limited basis" for activities in recovery habitat outside November 1 and April 30?

**Response:** The "restricted period" refers to a minimum time necessary prescribed to complete the activity. The "limited basis" is meant to infer that activity outside the prescribed activity period within the recovery area will not be permitted as part of a regular operating plan and will only be authorized to complete work where no potential or actual impacts to listed or sensitive species can be determined.

**Comment 9-25** What is considered "important hiding cover" for the grizzly bear, as discussed in the DEIS at 3-66?

**Response:** Refer to Ch 367, Paragraph 1 in the FEIS. "Hiding cover is important to grizzly bears for security while feeding, resting or traveling.

**Comment 9-26** How do you plan to enhance hiding cover? If it is hiding cover now, and cover will be lost, how does regret of this cover constitute enhancement?

**Response:** The definition of hiding cover is: the vegetation capable of hiding 90 percent of an adult elk from human view at a distance of 200 feet. The quality of the hiding cover in the Main Boulder drainage consists of large quantities of dead and downed timber and debris in forest stands that are mostly mature timber. Eventually this hiding cover will degrade and no

longer provide the necessary components to adequately obscure an elk from human view. By managing the fuel component and age classes of the forest stand this will enhance hiding cover in portions of the treatment area. Furthermore, by reducing the potential for a catastrophic wildfire event, hiding cover that may be completely destroyed may be partially preserved.

**Comment 9-27** You have no analysis of the grizzly bear mortality risk that will occur from this project.

**Response:** There is no risk of grizzly bear mortality because there is no observed evidence that they are regular inhabitants of the immediate project area. The Biological Assessment addresses these concerns and a letter of concurrence from the USFWS supports our conclusions. These documents are available upon request and are located in the Project File at the Big Timber District..

**Comment 9-28** . What are the specific habitat management standards for occupied habitat outside designated recovery habitat that will protect the threatened grizzly bear?

**Response:** Based on the Draft EIS amending National Forest Plans in the Greater Yellowstone area, specific habitat management standards could vary between lethal control or re-stratification that would include newly occupied habitat into the primary MS-1 recovery area. This would depend on other management concerns, infrastructure that exists in the area and whether human grizzly conflicts could be minimized. Currently, if grizzly bears occupy habitat outside the recovery area they are documented and activity is monitored to determine if any conflicts with other forest uses exist. If conflicts occur, then a determination on a course of action is made in consultation with the USFWS.

**Comment 9-29** What specific management regime was incorporated into occupied habitat outside the recovery zone, or in the 10-mile buffer zone, in the Main Boulder project to promote recovery and conservation of the grizzly bear?

**Response:** There are no known areas occupied by grizzly bears in or directly near the Main Boulder Fuel reduction units. There are only incidental records and observations of transient bears moving through the area. Grizzly bear recovery is not being actively promoted in the vicinity of the Main Boulder Fuel reduction project because of relatively high recreational use, private landowner concerns, and concern for public safety. Any negative grizzly bear encounter would be handled through the Nuisance Grizzly Bear Guidelines. Grizzly bear recovery is being encouraged on the Forest in places where there is less potential for conflicts with humans.

**Comment 9-30** The goshawk is a management indicator species for Douglas fir old growth. Where is this old growth in the project area?

**Response:** Old growth Douglas fir is well distributed throughout the analysis area. There is both dry-site and moist-site Douglas-fir old growth within the treatment units. The larger wet-site Douglas fir is located primarily south of the confluence with Four-mile creek, but is also distributed in smaller pockets along the Main Boulder River and in side drainages. Old growth Douglas-fir is the preferred target for Douglas-fir beetle and approximately seventy-five percent of the larger old growth Douglas-fir has been killed by recent beetle outbreaks in the drainage.

**Comment 9-31** What are the habitat criteria for nesting and foraging habitat, and how much is needed within a localized area to ensure adequate habitat is available for the goshawk?

**Response:** Refer to Ch 2-36 in the FEIS. The general criteria for buffers around active goshawk nests are between 0.25 and 0.5 miles. Foraging habitat boundaries can vary widely depending on the availability and distribution of a suitable prey base. There are no specific buffer zone criteria prescribed for goshawk foraging territories. There is an abundance of potentially suitable foraging habitat within the Main Boulder analysis area necessary to provide forage prey for nesting goshawks, but there is no evidence that goshawks are actively nesting in the proposed treatment units.

**Comment 9-32** What was the breakdown of the analysis area to evaluate goshawk nesting and foraging habitat?

**Response:** Refer to Ch 3-80 in the FEIS. The majority of the analysis area is located in wilderness, and because no active management is planned or permitted in wilderness, little is known about the presence or distribution of goshawks. Within the Main Boulder corridor where the project is located, there are no known active goshawk nests or territories. Because goshawks were not known to occur within the proposed project units, addition breakdown of the analysis area was not warranted. Further, mitigation incorporated (2-29, DEIS) provides for additional protections for goshawks if they occur or occupy a territory in any proposed treatment unit.

**Comment 9-33** In the analysis of suitable goshawk nesting and foraging habitat, did you include elevation as a suitability criteria? If not, why not?

**Response:** The analysis was structured around suitable forested nesting and foraging habitat. It was not necessary to use elevation as a suitability criterion because goshawks will nest and forage in suitable forested habitats regardless of elevation, if suitable nest sites in proximity to foraging habitat with adequate prey is present.

**Comment 9-34** What is the source for the mitigation criteria on goshawks for a 100 foot buffer around nests for no logging? Even the DEIS notes that 125 acres is optimal for goshawk nest stands (3-79).

**Response:** Goshawks exhibit strong nest site fidelity. The mitigation of a 100 foot protective buffer was proposed to protect the nest tree itself from any potential damage by treatment activities and to provide for retention of some screening and cover around the nest to encourage future nesting activity.

**Comment 9-35** What will be the change in suitable nesting habitat in the project area before and after logging?

**Response:** Since there are no known nest sites within the proposed treatment units, there will be no change to suitable nesting habitat. In addition, mitigation measures should preclude any impacts to nests and nesting habitat provided any active or inactive nests are identified in the treatment units during implementation.

**Comment 9-36** What types of old growth exist in the project and analysis area, as per tree species, and how many acres of this old growth were validated as per Region 1 criteria? How much of this old growth is suitable for goshawk nesting as per tree species and elevation (under 7000 feet)?

**Response:** Refer to Appendix A and specifically page A-20 and Table A-7 in the FEIS. Potential impacts to specific old-growth species were not stratified. There are relatively even quantities of Douglas-fir, lodgepole pine and Englemann spruce distributed throughout the treatment units. Approximately two-hundred acres of Douglas fir old growth suitable as goshawk nesting habitat is proposed to be treated.

**Comment 9-37** Do you have any specific habitat goals for goshawks, other than 10% old growth in each timber compartment?

**Response:** The retention of 10% old growth within each timber compartment coupled with the mitigation measures that have been incorporated should adequately provide for a viable and stable goshawk population in the analysis area.

**Comment 9-38** You did not address the current status of the goshawk, a sensitive species, on the Gallatin Forest. This seems inappropriate, given that you will be removing both nesting and foraging habitat in this project.

**Response:** A biological evaluation that addresses all of the Regional Forester's sensitive species was completed and is available upon request and is located in the Project File at the Big Timber District.

**Comment 9-39** Could you please clarify what research specifically found goshawk I populations increased in logged habitat?

**Response:** There is no statement within the DEIS 379-80 that specifically states that goshawk populations will increase in logged habitat. Refer to FEIS Ch 381 where a statement is made that fuel reduction treatments may result in improved goshawk foraging habitat.

**Comment 9-40** What other indicators have you monitored to date that were used to help design this project that will impact both snags and riparian habitat?

**Response:** General surveys of each proposed treatment units have been conducted. The results of these informal surveys were incorporated into the analysis and determination of effects for all threatened, sensitive and other general wildlife species.

**Comment 9-43** ...how do you know that a basal area of 60-80 square feet per acre will provide 3 large snags per acre through time?

**Response:** Refer to 2-35 in the FEIS. Mitigation measures are incorporated to provide retention of a minimum of 15- 20 percent of each treatment acre to be left untreated in irregular shape clumps. Given the current stand structure more than three snags will be retained in these leave areas alone, in order to meet Forest Plan standards. Additional snags and snag recruitment trees will also be left outside of these leave areas where safety concerns can be met.

**Comment 9-44** The DEIS did not evaluate the expected decline in cavity nesting birds that will occur with this logging.

**Response:** Refer to Ch 3-92 thru Ch 3-94 in the FEIS. And in particular Ch 3-78 thru Ch 3-79 in the FEIS where effects to the sensitive cavity nesting black-backed woodpecker were addressed.

**Comment 9-45** Has there been any snag inventory within these proposed treatment units?

**Response:** No snag inventory has been conducted, nor is any required under forest plan direction.

**Comment 9-53** The project area of 2500 acres does not include private land. It is unclear how these private lands, including their wildlife habitat or the lack of, was considered in the analysis and planning, including corridors and hiding cover.

**Response:** The cumulative effects portion of the analyses in the FEIS incorporated private land issues and concerns.

**Comment 9-54** The DEIS notes that this area is big game winter range (1-13, 3-67), and that winter range will be enhanced by these treatments. What literature and or monitoring data is available to support this claim?

**Response:** Good quality elk winter range includes the presence and accessibility of palatable forage in conjunction with topographic and thermal cover conditions conducive to energy conservation behaviors (MTFWP 1992). In the Main Boulder analysis area the limiting factor on existing elk winter range, as determined by aerial photo analysis and ground surveys, is the presence, abundance and quality of elk forage. Thermal and topographic concerns have been addressed by mitigation measures.

**Comment 9-55** What size of forest is required for thermal cover for elk, and will there be any in the project area winter range after logging?

**Response:** Refer to 3-89 in the FEIS. There is no maximum or minimum size that defines elk thermal cover. These areas tend to be traditional use areas that have vegetative, aspect, topographic or thermal qualities attractive to elk. The mitigation measures that provide for retention of 20 percent of treatment units in untreated clumps and the adjacency of untreated wilderness will provide all of the necessary thermal cover requirements in the elk winter range in the Main Boulder.

**Comment 10-22** The implementation of an alternative that is not consistent with LCAS does not insure viability of the Canada lynx. The DEIS also fails to fully demonstrate alternatives' consistency with all LCAS Standards and guidelines.

**Response:** A Biological Assessment that included detailed analysis of the potential effects to Canada lynx has been completed for the Main Boulder Fuel Reduction Project. The USFWS concurred with our findings and mitigation measures with regard to the Canada lynx. Copies of these documents are located in the Project File and are available upon request.

**Comment 10-23 The DEIS fails to qualitatively address the effects of logging on landscape pattern, which is essential for designation of critical habitat.**

**Response:** There is no designated critical habitat for any federally listed threatened or endangered species within the project analysis area.

**Comment 10-24 Also, the impacts of both winter and non-winter motorized route densities have not been adequately considered. (LCAS)**

**Response:** Currently, the only authorized winter and non-winter motorized route in the analysis area is the Main Boulder road. This is the jurisdiction of Sweetgrass and Park Counties. The Forest Service is not authorized to restrict or limit any motorized use on this road.

**Comment 10-25 The DEIS fails to provide adequate maps of LAUs and habitat components along with areas of human activity as the LCAS requires, making it impossible for the public and decision maker to understand the impacts of motorized travel, as well as to understand impacts on habitat and connectivity of habitat.**

**Response:** The LCAS does not require that we provide LAU maps and habitat components in the DEIS; although the Forest Service is required to map LAU's and their habitat. These maps were not included because the scale would have been of no value in assessing the impacts of the proposed project. Maps are available upon request. Further, the effects to lynx were analyzed in detail in the Biological Assessment for the Main Boulder Fuel Reduction project and the USFWS concurred with our findings and mitigation measures. Copies of these documents are located in the Project File and are available upon request.

**Comment 10-33 The DEIS fails to disclose how the FS will maintain fire-adapted or fire-dependent wildlife habitat in the portion of the project area that is not proposed for fuel treatment.**

**Response:** Implementation of the proposed project will not preclude natural fire from occurring in those portions of the project area that will not be treated. Areas that were excluded from treatment in this project were left out because they were inaccessible by conventional means, were located on slopes or terrain that was not practical for fuels work and were deemed not necessary for treatment in order to meet the purpose and need of the project. The habitat requirements of fire dependent or fire adapted wildlife will be met by the proposed project within the area and should allow for future prescribed and prescribed natural fires to occur in the drainage without potential catastrophic impacts.

**Comment 10-38 Please disclose the habitat types (as per the Green et al., 1992 definitions) of each unit to be logged or burned. Please discuss how ecological functioning and processes would compare post-project and pre-project, by each habitat type**

**Response:** *Refer to FEIS Appendix A (A-15 thru A-22).* Old-growth was not separated into old-growth types as described in Green et al. 1992, because it was not deemed necessary to adequately assess the potential impacts to the ecosystem or species that utilize these habitat types that would result from project implementation. Effects to old growth and vegetative diversity are discussed in detail in Appendix A and the analysis data is located in the Project File at the Big Timber District Office.

**Comment 10-40 The DEIS does not disclose the intensity of the FS's recent old-growth surveys, so that expected accuracy can be estimated.**

**Response:** A rigorous statistical assessment of timber stand compartment data was completed to determine the relative percentages of old growth, mature timber, pole timber, saplings and seedlings within the analysis area. Every unit proposed for treatment has been visual inspected in order to ground truth the estimates produced through statistical analyses. Additional vegetation class definitions and clarification of vegetation data analyses is included in the Project File.

**Comment 10-41 The landscape-level effects on wildlife from the reduction of snag habitat under the snag management regime adopted by the DEIS was not evaluated.**

**Response:** The proposed project is in compliance with Amendment 15 of the Gallatin National Forest Plan. Proposed mitigation measures will meet or exceed snag retention guidelines, while meeting the purpose and need of the project.

**Comment 10-42 Moreover, since the Gallatin NF has not monitored for the presence of old-growth wildlife species in areas previously treated in this fashion, the DEIS's conclusions are unreasonable.**

**Response:** Based on the best available science, the Gallatin NF does not have any old-growth wildlife species. There are species that use old-growth forest stands during different stages of their annual cycle, but they are not dependent on old-growth forest structure to maintain viable populations within the analysis area. *Refer to Appendix A-15 in the FEIS* for more information regarding old growth forest structure in the Main Boulder analysis area before and after the proposed treatment.

**Comment 10-43 What old growth data determine the block size of old-growth areas it purports to measure? What are the minimum sizes of old growth blocks needed to meet the habitat needs Douglas fir old-growth MIS and TES species? How is it determined that the current and proposed dispersion patterns of existing old-growth blocks will insure old-growth MIS and TES species' population viability?**

**Response:** Old-growth data was generated from timber compartment examinations. There are no specific Forest Plan standards or Regional direction for TES species, or specifically goshawk or pine marten management. Forest Plan vegetative and old growth standards aid in providing habitat for all of these species. Furthermore, approximately 182,000 acres of wilderness surround the Main Boulder River corridor on the Big Timber Ranger District. Where old growth occurs in the wilderness, it will remain old growth unless a catastrophic event occurs. In addition, mature forest will be recruited over time into the old-growth quotient. Based on vegetative analyses in Appendix A-15 in the FEIS and viability analyses in Appendix D, it was determined that the proposed treatment will not limit the availability of forest stands with old growth character and conversely will not effect the viability of wildlife species that utilize old growth forest.

**Comment 10-44 The DEIS does not adequately justify its claim that proposed logging will not impact hairy woodpecker population status.**

**Response:** The hairy woodpecker is not a federally listed species nor does it appear on the Regional Forester's Sensitive species list for the Gallatin National Forest. The black-backed

woodpecker is a Regional Forester's sensitive species and was addressed in some detail in Ch 3-78 thru Ch 3-79 in the FEIS.

**Comment 10-45** Does the Gallatin NF consider the northern goshawk to be a sufficient old-growth forest MIS to represent viability of other old-growth wildlife species on the Forest?

**Response:** Refer to Ch 3-80 in the FEIS.

**Comment 10-46** Given that the Forest Service's lacks population monitoring information for old growth MIS, fails to maintain an accurate inventory of forest wide old growth, an EIS for such a project must disclose the methodology for maintaining viable populations of old growth species.

**Response:** Refer to the FEIS, Appendix A-15 for old-growth forest structure analyses and Appendix D for population viability analyses.

**Comment 10-47** The DEIS does not disclose the location and size of viable populations of MIS and TES species and other species of special concern at sufficient scale anywhere.

**Response:** Refer to Appendix D in the FEIS for information on viability of MIS and TES species and other species of special concern.

**Comment 10-48** The DEIS fails to disclose the direct and indirect impacts of increased motorized disturbance during project activities, and the increased risk cumulative impacts caused by later motorized access, on landscape patterns that provide the specific habitat features that the local populations of MIS and TES species depend upon for persistence.

**Response:** Refer to Ch 3-69 and Ch 3-91 in the FEIS. All road construction and the limited increase in motorized density associated with the proposed project will be temporary. All temporary roads will be rehabilitated upon completion of treatment in each unit. Motorized access along the Main Boulder road is the jurisdiction of Sweetgrass and Park Counties and is outside the control or regulatory authority of the Forest Service.

**Comment 10-49** The DEIS reveals no baseline or quantitative population data for the Sensitive species or their habitats.

**Response:** A biological evaluation that addresses potential impacts to sensitive species has been completed. Copies are available upon request and are located in the Project File at the Big Timber District.

**Comment 10-50** Since the GNF does not meet species viability requirements, it is critical for the Forest to take steps to develop conservation strategies.

**Response:** Refer to Appendix D in the FEIS regarding species viability concerns. The Forest would be interested to see supporting information that indicates that the Gallatin National Forest does not meet species viability requirements.

**Comment 10-51** A big problem with the DEIS's analyses is that effects of cumulative habitat fragmentation from roads, logging, private land developments, livestock grazing, motorized access, etc. is missing. The issue of fragmentation should have been more thoroughly considered with respect to interior forest species.

**Response:** These concerns have been considered through out the entire project development. Because of the existence of a County road that bisects the project area in addition to the numerous private land in-holdings, the immediate project area is fragmented. It is beyond the scope or purview of the Forest Service to affect a change to this status. However, it is a responsibility of the Forest Service to manage our lands in a manner that provides for the safety of our employees and the general public. The purpose and need of this project were generated based on these concerns. The safety of the public supercedes the concern for any species of concern or the fragmentation of its habitat. Furthermore, if fuel reduction is not completed in advance of the next stand replacement fire, the impact to wildlife and fragmentation effect will be much greater.

**Comment 10-52** The DEIS failed to disclose and analyze the uncertain and precarious population status of fishers, as described in Witmer, et al., 1998.

**Response:** Potential effects to the fisher were addressed in the Biological Evaluation for the Main Boulder Fuel Reduction Project. This document is located in the Project File and is available upon request. This species is not known to occur in or near the project area based on MTFW&P trapping records. Fishers are not believed to occur on the Gallatin National Forest or adjacent areas.

**Comment 10-53** The DEIS never states how a logging project that targets for removal dead and dying trees and supposedly reduces future levels of dead trees still maintains local populations. Also, Harris, 1999, discusses issues very pertinent to snag habitat. Inadequate quantitative commitments to protecting snag habitat are made in the DEIS.

**Response:** Foremost, an over-abundance of dead and dying trees within the project is in direct contradiction to the purpose and need of the project. The project does not target dead and dying trees. The purpose and need are very clearly stated in *Ch 1-13 of the FEIS*. Also, refer to *Ch 2-32 in the FEIS* where mitigation measures provide for snag retention that meets the Forest Plan standards and for retention of 15-20 percent of each unit in untreated irregularly shaped clumps. Retention of untreated areas alone will provide for more snag retention than the Forest plan Standard requires.

**Comment 10-54** The DEIS provides no information on the thoroughness of goshawk surveys in this project area.

**Response:** The Forest Service is not required to provide this information in the DEIS or the FEIS. However, informal goshawk surveys have been conducted throughout the analysis area using playback tape calls for the past 15 years. During this time period no goshawk responses or nests have been identified from the proposed treatment areas.

**Comment 10-55** The DEIS and Forest Plan do not contain any population data or population trend data for goshawks.

**Response:** It is not necessary to assess overall population data or population trend data in order to assess whether the potential effects of the proposed project will adversely affect the

goshawk. In order for the goshawks to be negatively affected, they would first have to be foraging or nesting within the immediate area.

**Comment 10-56** The DEIS does not state how the changes that would be caused by the proposed logging would affect other species that are said to be represented by the MIS elk. Black bears are one example.

**Response:** The DEIS addressed the potential effects of the proposed project to MIS and found that any impacts would be negligible or potentially beneficial. Thus, by association, any species dependent on similar habitat characteristics would also incur no detrimental effects.

**Comment 10-67** There is clearly a potential for significant cumulative impacts on forest songbirds in areas managed for timber. This management concern, however was never addressed in the Forest Plans, Forest Plan EISs, nor DEIS.

**Response:** Refer to Ch 3-92 in the FEIS where effects to migratory birds were addressed in detail.

**Comment 10-69** The project area is within occupied grizzly bear habitat and supports residential use by grizzly bears. It is within the Yellowstone Grizzly Bear Recovery Zone and most of the project area is within Management Situation 1 (MS-I) Grizzly Bear Habitat, where all resource conflicts are to be decided in favor of the grizzly.

**Response:** The project is not within occupied Management Situation 1 habitat. A portion of the proposed project area (approximately 1,000 acres) is within Management Situation 2 grizzly bear habitat.

**Comment 10-70** The Boulder River project DEIS makes several fundamental errors in its assumption the project will have no significant affect on grizzly bears. The analysis is sparse or nonexistent and is based upon a 14-year old internal Forest Service memo.

**Response:** There are no known or expected resident grizzly bears in or near the proposed treatment units. These assumptions are based on the best available information and records for the project area. If grizzly bears do not currently occupy the immediate area and there are no plans to encourage grizzly bears in the project area then additional analysis is not necessary. Further the Biological Assessment completed for the Main Boulder Fuel Reduction Project analyzed potential impacts in detail and the findings were concurred upon by the USFWS. These documents are located in the Project File and are available upon request.

**Comment 10-71** The impacts of roads within the project area is seriously underestimated in the DEIS.

**Response:** The effects of temporary roads were discussed in detail throughout the DEIS. Based on analysis, knowledge of the planning area and professional judgment these effects were provided to the best of our ability. The proximity of the Main Boulder road (within 800 feet in most areas) to all portions of proposed treatment units limits the potential impacts of additional temporary roads.

**Comment 10-72** The sparse analysis in the DEIS fails to account for geographic influences in amplifying the impacts to grizzly bears. All of the logging areas are within a narrow corridor bordered on either side by steep canyon slopes.

**Response:** The geographic influences to some degree; and the County road, private land and associated infrastructure to a greater extent, are the primary reason that grizzly bear presence is limited within the proposed treatment units.

**Comment 10-73** While the DEIS acknowledges that grizzly bears may be displaced during logging activities, the Forest Service simply assumes they will move into adjacent secure areas and foraging opportunities will not be affected. This is inconsistent with the science.

**Response:** There are no documented resident grizzly bears inhabiting the vicinity of the proposed treatment. If grizzly bears are displaced, they will likely be transient bears crossing the Boulder River corridor and will only be required to find a different avenue above or below the active treatment to navigate a crossing. The Forest Service would be interested to know what science the commenter is referring to.

**Comment 10-74** Thus, the impact of roads and reduction in cover will extend into the Wilderness and Recovery Zone, reducing habitat effectiveness and grizzly bear use.

**Response:** Refer to Ch 2-35 in the FEIS. Mitigation for timing and extent of activity in MS-2 grizzly bear habitat will provide adequate protections for the incidental grizzly bear use and habitat effectiveness.

**Comment 10-75** The DEIS relies on a 14-year old internal memo for direction on cover standards, concluding 30- 50% reductions in cover won't have any impacts. Both NEP A and the ESA require use of the "best available scientific information." There have been dozens of peer-reviewed scientific papers on grizzly bear habitat needs, including many from the Yellowstone Ecosystem. Relying on an unpublished internal memo is simply unacceptable.

**Response:** The findings illustrated in the FEIS are further supported in the Biological Assessment for the Main Boulder Fuel Reduction Project, for which concurrence from the USFWS was received. These documents are located in the Project File and are available upon request. The determination of potential impacts to grizzly bears was not based solely on a 15-year old Forest Service memo.

**Comment 10-76** The cumulative effects of the impacts to grizzly bears and their habitat as shown above, covering several thousands of acres, indicates that the effects of the project on grizzly bears would certainly be much higher than what the Forest Service concludes in the DEIS.

**Response:** Refer to Ch 3-66 thru 3-70 in the FEIS. There are no known or expected resident grizzly bears in or near the proposed treatment units. Further the Biological Assessment completed for the Main Boulder Fuel Reduction Project analyzed potential impacts in detail and the findings were concurred upon by the USFWS. These documents are located in the Project File and are available upon request.

**Comment 11-6** We would like to see an emphasis on protecting some measure of secure habitat within the grizzly bear recovery zone designed into this project.

**Response:** Refer to Ch 2-35 in the FEIS. Specific mitigation measures have been included to protect and secure grizzly bear habitat within the Management Situation 2 habitat in the proposed project treatment units.

**Comment 11-10** We request that despite the nature of this particular project that the forest meet the Amendment 15 standard in all action alternatives.

**Response:** Refer to Ch 2-35 in the FEIS. Mitigation measures are incorporated to provide retention of at least 15- 20 percent of each treatment acre to be left untreated in irregular shaped clumps. Given the current stand structure more than three snags will be retained in these leave areas alone in order to meet Forest Plan standards. Additional snags and snag recruitment trees will also be left outside of these leave areas where safety concerns can be met.