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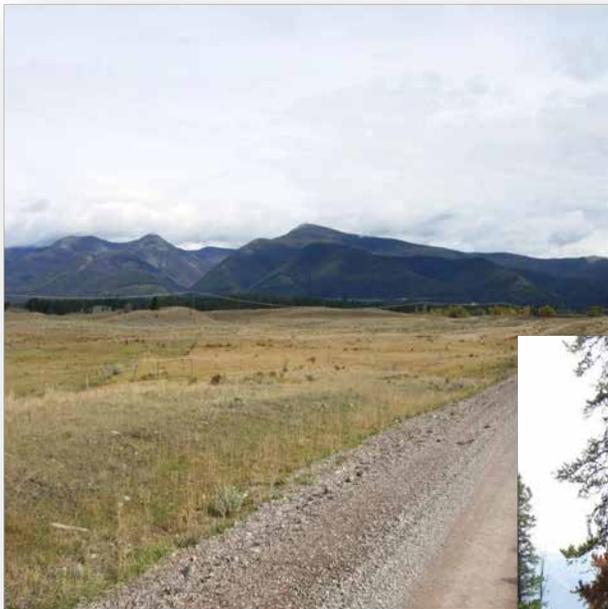


# Draft Environmental Impact Statement

## Stonewall Vegetation Project

### *Volume 2 – Appendices*

Lincoln Ranger District, Helena National Forest  
Lewis & Clark and Powell Counties, Montana



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## **Appendix A – Public Involvement Summary**

## Helena National Forest Scoping Summary

*June 7, 2011*

The initial ‘scoping’ conducted in January of 2010 received 80 comments from our interested publics. Table A-1 lists the letter’s number (used as a reference later in this report) tied to names of the individuals, organizations, and agencies that provided comments from scoping for the Stonewall Vegetation Project, Helena National Forest.

**Table A- 1. Scoping contacts Stonewall Vegetation Project**

<b>Letter #</b>	<b>Name</b>
1	Jean Public
2	Chris Castagne
3	Dick Artley
4	Steve Flynn, Sun Mountain Lumber
5	Michael Garrity, Alliance for the Wild Rockies and Sara Johnson, Native Ecosystem Council
6	Larry Hoffman, Lincoln County Weed Coordinator
7	Bob Bushnell
8	Chris Castagne
9	Richard Debick
10	Don Doyle
11	KD Feedback
12	Dale Gardner, Helena Trail Riders
13	Melvin and Charlette Hagan
14	Bill Hammer
15	Kelly Ingalls
16	Orrin Johnson
17	Richard Juntunen
18	Marc Kneeder
19	Marvin P. Love
20	S.J. Maras
21	Susan Murphy
22	James L. and Maida Paris
23	Harry Poett
24	Ellen Simpson, Mt Wood Products Association
25	Pauline Webb
26	Capital Trail Vehicle Association
27	Ann and Les Bramblett
28	Thomas Kindrick
29	Jim Palagi
30	Bob and Jan Braico
31	Daniel S. Comer
32	Duane Halverson
33	Steven Kloetzel

<b>Letter #</b>	<b>Name</b>
34	Joe Marino
35	Robert Petritz
36	Marc S. Ryckman
37	Nelson Wert
38	Jim Fortune
39	Julie Fortune
40	Albert Clark
41	Miles Partin
42	Phyllis Clark
43	Linda Pope and Bruce Baker
44	Robert Ruthemeyer
45	Richard Thieltges
46	Becky Thurman
47	Joe Baze
48	Jerry Burns
49	Charles Sherman
50	Jim Suck
51	Mrs. K Reeve
52	Ray Geist
53	Julie A. Dalsoglio, US Environmental Protection Agency, Region 8
54	Diana Reichenberg
55	Lu Gardella
56	Dick Noel
57	Sharon Paul
58	Gary Lee Petersen
59	Emily Rundell
60	Ellen Mulcare
61	Don Pettit Sunny Slope
62	Jeanette Nordahl
63	Robert Berry
64	Heidi Bray
65	Kim Gray
66	Sarah Johnson, Native Ecosystem Council - Michael Garrity, Alliance for the Wild Rockies
67	Gary E. Sutton Sr.
68	DeWayne Williams
69	Gregg Brittain
70	Mr. and Mrs. Mark Aquino
71	Lincoln Restoration Committee
72	Montana Fish, Wildlife and Parks
73	Paul N. Spengler, TRICO
74	Stan Frazier, Helena Hunters and Anglers
75	Janey Holm

Letter #	Name
76	Bill Koehnke
77	Teresa Martinez, Continental Divide Trail Alliance
78	Wayne and Rebecca Shong, B&W Ranch
79	Andrea Stinson
80	Jerry and Ruth Masee

The scoping document listed preliminary issues considered during development of the proposed action:

1. Restoration of vegetation communities
2. Grizzly bear habitat
3. Lynx habitat
4. Wildfire hazard, risk, and fuels
5. Habitats including ponderosa pine, western larch and aspen

The scoping document noted proposed actions are anticipated to benefit the project area in the following ways:

- Restore ponderosa pine, dry Douglas-fir, and western larch sites to a more natural fire regime condition
- Maintain vigor and restore aspen groves
- Enhance wildlife habitat conditions

### Summary of Public Scoping Comments

Table A- 2 displays the summary of public comments received during scoping identified by letter number (see table A- 1), and then by comment number from within each letter. Table A- 2 also includes each comment’s main topic, and the Forest Service response to the comment as well as identification of significant issues. The comments from public scoping identify those issues that may have a significant cause-effect relationship with the proposal, and determine the scope of issues addressed in specialists’ analyses. The evaluation of these issues may also be the ‘driver’ or foundation of developing additional alternatives. This discussion of issues is based on the approach in the April 1, 2011 FSH 1909.15 (12.41).

Of the 80 scoping responses received, 30 were in support of the proposed project activities. The majority of responses suggested information to include in the analysis documents, identified language to clarify, or listed elements pertaining to a specific resource to include in the effects analyses. The final resource specialists’ reports would include this information as well as the analysis of the project effects on the various resources. The resource specialists’ reports would be filed in the project record and incorporated by reference and summarized in Chapter 3 – Affected Environment and Environmental Consequences of the EIS.

Eight responses expressed concerns or suggestions regarding travel management of area roads and motorized winter recreation opportunities. The Stonewall Vegetation Project is not a travel planning project and does not propose to change the permanent road system in the project area. Travel management of existing routes is being addressed in the ongoing analyses “Blackfoot-North Divide Winter Travel Plan” and the “Blackfoot Travel Plan (Non-Winter)”.

A few responses included items of literature to be considered, some noted as opposing science information. As part of the analysis for this project, resource specialists will review and consider relevant scientific literature, including submitted articles. The literature review would be included and filed in the project record.

### Comments/Issues that Warrant the Development of Additional Alternatives (Significant Issue):

Table A- 2 includes a full listing of comments received during scoping, by letter and comment number (denoted by L#, c#). The interdisciplinary team reviewed the comments received during scoping and identified one significant issue theme (see below). We also reviewed the proposed activities and it was determined appropriate to develop an alternative to address the following significant issue:

**Wildlife Habitat:** Proposed actions may impact habitat for: threatened, endangered and sensitive species and designated critical habitat; management indicator species (MIS); and big game hiding cover, thermal cover, and security cover. The public also commented on habitat connectivity. The public is also concerned about viability of old-growth and snag-dependent species.

Scoping letters and comments pertaining to this issue: L5, c22; L66, c2, 3, 5, 6, 27, 28, 38; L74, c74

#### *Indicators:*

- Total and open-road density during and after activities within the project area relevant to grizzly bear habitat and elk habitat
- Acres of elk hiding cover, thermal cover, and security habitat within the project area and elk herd units
- Acres of lynx habitat or other species that utilize multi-storied forest habitat within the project area
- Maintaining or providing habitat connectivity
- Acres by type of treatment by alternative versus no treatment
- Acres of old growth affected and effects to snag dependent species
- Acres of suitable MIS and sensitive species habitat impacted

## Analysis Issues

In addition to the significant issue identified above, we would analyze the effects of the proposed action and alternatives based on the following issues to display differences between alternatives:

**Weed Spread/Infestation:** Proposed actions may disturb landscapes allowing existing weed populations to expand or allowing additional species to become established.

Scoping letters and comments pertaining to this issue: L5, c2, 3, 4, 5, 29; L33, c33; L48, c17; L62, c1; L71, c10

#### *Indicators:*

- Acres by type of treatment by alternative versus no treatment
- Acres of ground disturbance
- Costs of weed treatment by alternative

**Use of roads that would be built then obliterated immediately following timber removal and use of existing roads:** Comments indicated concern for the effects to soil, water quality, fisheries, and wildlife habitat from roads that would be built then obliterated immediately following timber removal, road reconstruction, and use of existing roads.

Scoping letters and comments pertaining to this issue: L3, c12; L66, c34, 35, 36; L71, c9

***Indicators:***

- Miles of roads that would be built then obliterated immediately following timber removal
- Miles of roads that would be built then obliterated immediately following timber removal and reconstruction of existing roads within the INFISH buffers
- Number of new stream crossings
- Miles and location of haul routes

**Amount of Prescribed Fire:** Concern that the Forest Service has limited experience implementing prescribed fire in mixed-severity fire regimes. Concern with the amount of acres proposed for prescribed burning; proximity to private land and timing of burns introduce risk to private lands (e.g., loss of homes, buildings, smoke effects to air quality).

Scoping letters and comments pertaining to this issue: L1, c3; L57, c1; L75, c4; L79, c1; and public meetings

***Indicators:***

- Acres of prescribed fire immediately adjacent to private land and the qualitative values of risk and potential consequences
- Acres of prescribed fire by fire regime within the project area
- Acres and type of pretreatment prior to use of prescribed fire
- Estimated emissions from burning

## ***Other Issues***

The following lists other issues considered in the analysis; however, they did not rise to the level of significant issues. The proposed action is not expected to have significant impacts on these issues. The effects are limited in intensity and context. For some of these issues, potential impacts are limited through project design. Analysis of potential effects related to these issues would be addressed in Chapter 3; however, analysis may not be as in-depth as for the significant issue. The Forest Service response follows each issue.

*Some members of the public feel use of timber harvest, including regeneration harvest, to achieve restoration goals is a contradiction.*

Scoping letters and comments pertaining to this issue: L1, c2; L3, c4, c7; and public meetings

Timber harvest and prescribed burning are means to diversify areas to achieve broader restoration goals across the landscape. To promote a resilient forest a combination of treatments to restore the broader landscape were considered. The proposed action includes regeneration harvests for some areas where the majority of the existing overstory trees have been killed by bark beetles.

Due to the amount of mortality caused by insects and/or diseases across the Stonewall Vegetation Project area, restoration opportunities exist to reforest lands for the following purposes:

- Establishment of tree species most able to cope with disturbance
- Promote a diverse species mix as well as genetic diversity
- Promote desired species distribution across the Stonewall Vegetation Project area
- Enhance regeneration of forested lands to create diverse structures across the Stonewall Vegetation Project area
- Manage for species persistence within/across the Stonewall Vegetation Project area
- Maintain adequate seed bank of desired species

Resource effects would be noted in Chapter 3 of the DEIS, e.g., wildlife habitat elements that may be affected and how the proposed actions may restore those habitat elements. The proposed actions may have short-term adverse impacts with long-term benefits for some resources.

*Merchantability and Economic Feasibility of Harvest - trees being dead too long, agency action/response too slow.*

Scoping letters and comments pertaining to this issue: L4, c4; L33, c3; L35, c1

Insect-caused mortality effects are greater than anticipated when the project started. Fuels reduction in wildland urban interface (WUI) and restoration goals throughout the broader landscape have benefits that would be realized through the proposed actions. In the fall of 2010, timber industry representatives made an on-site field review of forested areas on the Lincoln Ranger District experiencing insect-caused mortality. Industry representatives indicated timber merchantability is still present and anticipated to be present at the time of contract award (A.Kamps, personal communication).

*Proposed treatments would increase sediment and adversely affect cutthroat trout habitat.*

Scoping letters and comments pertaining to this issue: L5, c 23, 26, 27, 28, 30; L16, c1

Effects to fisheries would be discussed in Chapter 3 of the DEIS. The proposed action would include the best management practices (BMPs) to ensure proper drainage and reduce potential increases to sediment from proposed activities. The INFISH management direction would be incorporated to reduce potential effects to cutthroat trout habitat. A literature review and local Forest monitoring of BMP effectiveness would be discussed in Chapter 3 of the DEIS.

## Additional Public Concerns

The following is a summary list of additional public concerns considered in the analysis of issues; however, they did not rise to the level of significant issues. The proposed action is not expected to have significant impacts on these issues. The effects are limited in intensity and context. For some of these issues, potential impacts are limited through project design. Analysis of potential effects related to these issues would be addressed in chapter 3; however, analysis may not be as in-depth as for the significant issue.

These other issues were expressed as concerns. Individual responses to comments are located in table A-2. There are concerns that:

- Ground disturbance and prescribed fire in the Historic Lincoln Townsite could result in loss of the historical integrity of this site

- Dust from increased road use could temporarily reduce sight-distance and cause safety concerns on native and aggregate surfaced roads used for timber hauling
- Removal of commercial-sized timber and thinning treatments to reduce hazardous fuel conditions may increase fine fuels on the ground that exacerbates fire behavior and increases fire risk
- To ensure project effects are appropriately disclosed, the analysis needs to use the best science available, disclose ecological liabilities from past actions, incorporate past monitoring information, and address conflicting science literature brought forward by the public during scoping
- Ground disturbance from timber removal and prescribed fire may impact threatened, endangered, rare and sensitive plant, animal and fish species, or their viability within the project area
- Proposed timber removal and prescribed burn activities could exacerbate climate change due to the loss of carbon storage
- Control lines used for prescribed burning in the inventoried roadless areas may increase unauthorized motorized use into new areas, which could affect the inventoried roadless character
- Evaluate if jobs would be available due to the proposed actions
- The proposed use of fire is going to require a major educational effort before it is acceptable to many of the residents
- Proposed activities should allow for multiple uses, and timing may impact recreational users (road and trail users, campers, berry picking), areas should be open for firewood gathering prior to burning
- Concern that proposed treatments may have a visual impact, especially along property lines and in-holdings
- Proposed timber removal may change densely vegetated areas that currently prevent livestock movement and change grazing patterns in the project area

Some concerns raised for the Stonewall Vegetation Project were outside the scope of the proposed action, or decision to be made, or were already decided by law, regulation, Forest Plan, or other higher level decision. Individual responses to comments are located in table A- 2. These items included:

- Management of private lands including building locations and vegetation management, Insurance of private structures
- Terminology, wording and phrasing used in scoping document
- Scope of the Purpose and Need
- Designating the contracting process (stewardship and size of commercial harvest sales) for potential implementation of project activities
- Developing a detailed long-term program for maintaining the safer conditions, including how areas would be treated in the future following proposed treatments, or how areas not needing treatment now would be treated as the need arises
- Travel management concerns regarding the existing National Forest System roads being analyzed under the Blackfoot –North Divide Winter Travel Plan and Blackfoot Travel Plan (non-winter).
- Items related to Forest Plan programmatic direction (e.g. long-term fire management plans, roadless area evaluations)
- Need to update allotment management plans
- Allocation of funding
- Staffing of controlled burns; this would be addressed through the site-specific burn plan
- Explore monitoring partnerships

## Specific Alternatives Suggested for Consideration in Public Comments and Forest Service Response

*Maximize timber harvest and fuels reduction activities, particularly in the WUI. (L1, c2)*

The WUI was identified during development of the “Tri-County Regional Community Wildfire Protection Plan” (2005). The proposed action was designed to address fuels concerns on National Forest System lands adjacent to private lands. Treatments on private lands are outside the scope of our proposed action, but past, current and planned treatments would be considered in the individual specialist’s cumulative effects reports, where applicable.

We reviewed the project area to identify potential vegetative treatments based on site conditions.

This alternative would be similar to the proposed action, and would not be analyzed in detail.

*The roadless areas within the project area were created by the Rare 2 process identifying possible additions to the wilderness system. Management should reflect this quality. In addition, burning whitebark pine seedling and sapling areas, present in the roadless areas, could reduce white bark pine habitat, an important food source for grizzly bears. Consider an alternative that does not include prescribed burning in the roadless areas, but allows for the use of natural prescribed fire without mechanical treatments, including cutting trees and brush, in the roadless areas. (L5 c7; L48 c8)*

The large prescribed burn units in the roadless areas are proposed to improve the mix of vegetation composition and structure across the landscape making it more diverse, resilient, and sustainable to wildfire and insects. In particular, the burns in the roadless areas would be designed to encourage whitebark pine regeneration in proximity to existing mature whitebark pine trees. Portions of some units are lacking adequate ground fuels to carry fire across the desired burn unit locations. Without the prep work, burn prescriptions could not be implemented and fire lines could not be prepared.

For any action alternative, design features could be incorporated to exclude large concentrations of whitebark pine regeneration from burning, and protect mature whitebark trees that may provide seed sources.

The no action alternative does not include slash treatments or prescribed burning in the roadless area and would address this issue.

This alternative would not address the purpose and need to improve the mix of vegetation composition and structure, or modify fire behavior to create conditions that allow the reestablishment of fire as a natural process across the roadless area portions of the landscape. This alternative was eliminated from detailed analysis.

*Burning activities proposed may char merchantable timber and decrease its value in areas managed for timber products. Consider an alternative that does not include prescribed burning in areas managed for timber products. Prescribed fire units in management areas T1-5 include all of units 2 and 78, and portions of units 77, 79, 80, 81, 84, 85, 86 and 87. (L79, c2, c3)*

The Forest Plan identifies prescribed burning as an appropriate tool for vegetation and fuels management (pages II/33 – 34), and the Forest Fire Management Plan direction in place at the time of implementation would be followed. The no-action alternative would include no controlled burning in areas managed for timber products.

This alternative would not address the purpose and need to modify fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape. Therefore, this alternative was eliminated from detailed analysis.

*Proposed actions may disturb landscapes allowing existing weed populations to expand or allowing additional species to become established. Consider an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals. (L5 c2)*

The Forest Weeds FEIS (USDA Forest Service 2006) identified most of the roads in the project area for weed monitoring and treatment due to the presence of weeds. Appropriate preventive measures would be incorporated in the project design features including post treatment spraying of landings in year 1 after mechanical treatment, and monitoring at years 3 and 5, with retreatment if needed.

The no action alternative addresses this suggestion.

Eliminating units with noxious weeds would eliminate fire management treatments in all units in the WUI accessed by existing roads. Not treating areas within the WUI would not enhance community protection. This alternative would not meet the purpose and need for the project of modifying fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape.

Eliminating the units within the WUI would not meet the purpose and need for the project of modifying fire behavior to enhance community protection. In addition, the appropriate project design and mitigation of relevant best management practices would be applied to any developed action alternative. Therefore, developing an alternative that eliminates units that have noxious weeds present on the roads within them from fire management proposals is not necessary. This alternative would not be considered in detail.

*Public comments noted the continued loss of motorized recreational opportunities as a primary concern. A recommendation was made to consider a Pro-Recreation Alternative that would address recreation opportunities and include the following characteristics (L26 c1, 2, 4):*

- 1. Dispersed camping within 300 feet of all existing routes*
- 2. Use of seasonal closures, where required, to protect the environment and wildlife with the intention of keeping routes open for the summer recreation season*
- 3. All of the existing routes are needed as OHV routes due to the cumulative effects of all other closures*
- 4. Additional OHV routes are needed to address the growing popularity of OHV recreation and the greater needs of the public for access and motorized recreation*

Effects to recreation resources would be addressed in analysis and project design features would be included to minimize potential impacts to recreation opportunities within the project area.

Travel management is being evaluated in the current Blackfoot Travel Plan (non-winter) and the appropriate project design and mitigation of the relevant best management practices would be applied to any developed action alternative. Developing a pro-recreation alternative with additional OHV routes was considered, but this would not address the purpose and need identified for this project for fuels reduction in the WUI or restoration across the landscape. Therefore, this alternative was eliminated from detailed analysis.

*Consider a watershed or ecosystem restoration alternative or incorporate restoration elements in the alternatives considered. (L53 c6, 10, 11)*

The Stone Dry Watershed Assessment (2009) was considered when developing the proposed action. The purpose and need includes a restoration element. The proposed action was designed to

incorporate treatments that move the project area towards a more resilient forest to address restoration of vegetative composition and structural diversity elements. Effects to vegetation and watershed resources would be discussed in chapter 3 of the EIS.

Watershed restoration and reducing sedimentation is often focused on changes to roads, and includes fixing drainage structures, road design or decommissioning roads. Changes to existing road alignments and decommissioning existing roads are being evaluated in the current analysis for the Blackfoot Travel Management Plan (Non-Winter) and therefore not being considered in this proposal.

Since many of the watershed elements of concern are being evaluated in the current Blackfoot Travel Plan (Non-Winter), and the appropriate project design and mitigation of relevant best management practices would be applied to any developed action alternative, a true or purer watershed restoration type alternative is not necessary; therefore, this type of alternative will not be considered in detail.

## Summary of Public Comments and Forest Service Response

Nonsignificant issues are categorized as those: (1) outside the scope of the proposed action, or decision to be made; (2) already decided by law, regulation, Forest Plan, or other higher-level decision; (3) comments pertaining to disclosing the effects to various resources, which are addressed by the specialists’ analyses and the discussions in the draft environmental impact statement (DEIS); or (4) comments in support of the project.

**Table A- 2. Summary of public comments and Forest Service responses**

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(les)
1	Private land	1. Stop allowing home owners to build near the forest. Simply zone out those areas as home sites. let home owners who insist on building there know that there is always a possibility of fire - and try to change their minds and you can do that	This analysis pertains to the management of National Forest System lands. Management of private lands is outside the scope of this analysis and beyond the purpose & need of this analysis.		Nonsignificant issue (1)
1	Restoration	2. I am in favor of letting the survivor trees that are growing there continue to grow. They seem to be taking advantage of what grows there and they should be left alone. What used to grow there grows there no longer and spending huge sums of tax dollars for that purpose is a waste.	The no action alternative addresses leaving survivor trees alone. Proposed treatment prescriptions in the Stonewall vegetation project include either thinning treatments where many trees that have survived the recent bark beetle epidemic would be retained or regeneration treatments where some live trees would be retained for shelter and as a seed source.		Nonsignificant issue (3)
1	Prescribed Burning Air Quality	3. It isn't the "smoke" which you can see easily, but it is the fine particulate matter which needs a microscope to [s]ee it gets into American citizens bodies and kills and injures them. You are causing health problems when you burn. Stop harming fellow Americans now.	Air quality impacts, including smoke from proposed burn activities, would be analyzed and a summary of the effects anticipated under all alternatives would be included in the DEIS. The no action alternative addresses no prescribed or pile burning. The Montana/Idaho Airshed Group coordinates burning on all forest and range lands. They analyze information for proposed burns, meteorology and air quality and decide if restrictions to burning are needed. The airshed group is comprised of members of regulatory health agencies and those that conduct extensive prescribed burning. Burning would be dependent upon site conditions and weather conditions, and is generally anticipated for fall of the year. Notice of the	Alternative 3 proposes a reduced level of prescribed burning, and therefore reduces total impacts. The no-action alternative would not include prescribed burning.	Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(ies)
			<p>pile and prescribed burning timeframes, or burn windows, would be shared with the public through paper notices and announcements on the Forest website. Local notices would be attempted to ensure people are aware of the burning activities.</p> <p>Smoke sensitive receptors would be identified and modeling outputs will show impacts to these areas. Smoke management techniques such as phase burning and the time of year burns are ignited are designed to reduce smoke impacts.</p>		
2	Support for the Project	1. I do believe with projects like this one, our outcome would be far more positive than doing nothing.	Thank you for your support		Nonsignificant issue (4)
3	Opposing Science	<p>1. To restrain you from ignoring the opposing science attached to this letter, I will educate you on 5 recent court cases dealing with opposing science. I expect you to comply with the precedence set by these cases.</p> <p>As you can see from reading the judge's opinions in the 5 court cases below, you must respond to each scientific statement individually. In doing so you have several choices:</p> <p>1) Tell the public that the opposing science statement does not apply to your project and explain why.</p> <p>2) Tell the public that the science statement is not true and explain why.</p> <p>3) Tell the public that the science statement is true and applies to your project; however you choose to ignore it as you plan your project. If this is the case, you MUST explain why.</p> <p>4) Tell the public that the scientist(s) making statements that oppose your project are not recognized by the USFS as real scientists. If this is the case, you MUST provide the reader with your reasons. I will then email your reasons to the scientist.</p>	Literature submitted in response to scoping would be reviewed and considered by the interdisciplinary team, with other relevant literature for this analysis. The literature review would be available in the project record. The literature review would discuss why literature is relevant or not relevant to the project.		Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(ies)
		<p>5) Tell the public that the science statements have not been peer reviewed. If this is done, the USFS line-officer must omit all references used to support the project that are not peer reviewed.</p> <p>I highly recommend that you read these 5 opinions in their entirety. The links are included after a key quote from the judge's opinion.</p> <p>League of Wilderness Defenders et al. v. Elaine Marquis-Brong. In the United States District Court for the District of Oregon, Judge Ancer L. Haggerty, Civil No. 02-75-HA. April 18, 2003,</p> <p>League of Wilderness Defenders et al. v. United States Forest Service. In the United States District Court for the District of Oregon, Judge Ancer L.Haggerty, Civil No. 04-488-HA. November 19, 2004, and</p> <p>Blue Mountains Biodiversity Project et.al v. Blackwood, 161 F.3d 1208, 1211 (9th Cir.1998). Betty B. Fletcher, circuit Judge. Appeal from the United States District Court for the District of Oregon Ann Aiken, District Judge, Presiding, this direction is clear.</p> <p>Center for Biological Diversity v. U.S. Forest Service, 349 F.3d 1157 (9th Cir. 2003). Donald C. Pogue, circuit court Judge. Appeal from the United States District Court for the District of Arizona, Robert C. Broomfield District Judge Presiding.</p> <p>Friends of the Clearwater et al. v. D. Robert Lohn et al., In the United States District Court for the District of Idaho, Judge Edward J. Lodge, CV04-384-C-EJL, March 31, 2005.</p>			
3	Scoping letter is vague	2. Nowhere does your scoping document tell the public the total acres that would be logged and the total acres that would be burned all in one place. On page 4 the public must struggle with 8 different groups to	The proposed action descriptions would be reviewed and revised, where needed, to better display the proposed harvest and broadcast prescribed burn information. These figures would be clearly displayed in chapter 2 under		Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(ies)
		determine what will really occur in each group in the treatment descriptions. Your proposed action for the timber sale should be obvious to the public!	alternatives comparison section of the DEIS.		
3	Fire behavior	3. To any thinking person, the notion of removing commercial-sized timber to reduce the risk of wildfire is ridiculous. It is the fine fuel that carries a fire. Even more importantly, the weather determines the size, intensity, flame height and rate of spread of a wildfire. In your FEIS please include the science showing that fuels is more important in determining fire behavior than weather. See science attachment # 3.	Effects to fire/fuels would be analyzed in the fire/fuels report and would be summarized in Chapter 3 of the DEIS. Fire models used to analyze potential changes to anticipated fire behavior (e.g., flame length) would be discussed in the DEIS. Existing fire models consider various factors including existing and activity created fuels and the larger dead trees that are anticipated to fall over time. Opening the forest canopy can reduce crown fire potential which would be discussed in Chapter 3 of the DEIS. The no-action alternative and the untreated areas in any action alternative would display the effect of leaving existing trees and the potential crown fire anticipated. Both fuels and weather contribute to fire behavior		Nonsignificant issue (3)
3	Insects	4. Insect activity in a forest is an indicator of a properly functioning forest. The survival of some species of birds is dependent on forest insects. Let Nature play out her cycles that have occurred for thousands of years. This includes insects!	The project area contains areas of mortality that are not proposed for treatment The effects to various bird species including management indicator pileated and hairy woodpeckers along with migratory birds would be analyzed. Untreated areas in the project area would continue to provide habitat for species associated with insect activity.  The activities of insects are a natural process in western forests, and the scale and frequency of insect activity can be an indicator of a properly functioning forest. However, the recent bark beetle epidemic in the western United States is of a magnitude never before recorded, and can be considered an indicator of unhealthy forest conditions created by decades of fire exclusion that resulted in very large expanses of forest becoming high risk at the same time, as stated in the project scoping letter. This subject would be discussed in the		Nonsignificant issue (3)

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			Vegetation section, in chapter 3 of the DEIS.		
3	Wildland Urban Interface	<p>5. Community protection,” give me a break. You are proposing to log 4 miles from the town of Lincoln and you actually think it will reduce the risk of fire damage to homes in and around the city. At the top of page 1 of your scoping document you actually say: “The project encompasses approximately 8,640 acres adjacent to the community of Lincoln.”</p> <p>How do you determine that something 4 miles away from a community is adjacent to the community?</p>	<p>Although the town of Lincoln is 4 miles from the project area, there are subdivisions with private residences located adjacent to the forest boundary and identified in the Tri-County Community Wildfire Protection Plan (CWPP) (2005) as wildland urban interface. The Tri County CWPP identifies subdivisions as “Very High to High Risk” and stands close to the forest boundary are proposed for harvest treatments to reduce potential for crown fire spread into adjacent areas.</p>		Nonsignificant issue (3)
3	Wording of the document	<p>6. Stop using Meaningless Euphemisms to Describe your Project Goals.</p> <p>When you say you will treat the forest, you tell the public nothing!</p> <p>Other ambiguous, meaningless and deceptive terms used so often used by USFS line officers are:</p> <ul style="list-style-type: none"> <li>● Enhance According to Webster, enhance is a verb meaning “to raise to a higher degree; intensify; magnify.”</li> <li>● Mechanical treatment Why is the USFS so frightened of using the word logging? Logging applies to all commercial extraction of trees . . . including “thinning.”</li> <li>● Restoration Once again, sugar-coated words. Webster defines restoration as “a return of something to a former, original, normal, or unimpaired condition.”</li> </ul> <p>Clearly, USFS logging and road construction is the antithesis of restoration.</p> <ul style="list-style-type: none"> <li>● Rehabilitate Once again, sugar-coated words. Webster defines rehabilitate as “to restore to a condition of good health, ability to work, or the like.” Clearly, USFS logging and road construction is the antithesis of rehabilitation.</li> </ul>	<p>Terms would be defined in a glossary as needed and ‘plain’ language would be used where appropriate.</p>		Nonsignificant issue (1)

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		<p>I strongly suggest that you purge your NEPA document of all words shown above in bold type and tell the public what you really intend to do!</p>			
3	Wording of the document	<p>7. How does one enhance a tree species? Enhance what? The USFS is so accustomed to using euphemistic words that are far removed from the issue at hand. What habitats do you want to enhance . . . the tree species habitat or the wildlife habitat that exists in aspen, western larch, and ponderosa pine? The meaning of the term enhance according to Webster is: “to raise to a higher degree; intensify; magnify.” I suggest you read science attachment #1 again and tell me about how logging enhances anything other than a timber corporation’s bottom line.</p>	<p>Enhancing a tree species would be taking actions to increase the presence of that species within the project area. Effects to tree species would be analyzed in the silviculture report and discussed in the Vegetation section in chapter 3 of the DEIS. See also response to letter 3, comment 1 pertaining to submitted literature.</p>		Nonsignificant issue (1,3)
3	Purpose and Need	<p>8. Your Proposed P&amp;N Violates the CEQ Regulations for Implementing NEPA. You have identified 5 reasons for the Stonewall Deuce Fuels Reduction and Vegetation Management Project. You do not indicate which of the 5 is the driving issue for the sale. This means that 4 of your claimed reasons for proposing the project are not reasons for proposing the project, but claimed benefits of the project. Mixing up project benefits with the “underlying purpose and need” violates the CEQ regulations.</p>	<p>In summary, the ‘underlying’ purpose for this proposal is to:          have a desired mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects (FP Goal 4 p. II/1; objective for WL and fish p. II/4);          that retains forest stands that allow fire as a natural process (FP Goals 4 &amp; 14 pp. II/1-2) without risk of catastrophic events;          maintaining desired amounts of aspen, Western Larch, &amp; PP (FP Goal 4 p. II/1) ;          while providing forest products including timber (FP Goals 11, 12 &amp; 16 pp. II1-2);          and integrating with socioeconomic considerations (FP Goals 9, 1, 16 &amp; 12 pp. II/1-2; Objective for visual and Roadless p. II/3).          The purpose and need developed for the project was designed to address the difference</p>		Nonsignificant issue (1)

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			<p>between the existing conditions observed in the Stone Dry Watershed Analysis completed in 2009, and the desired conditions identified in the Forest Plan, while striving towards the goals and objectives identified in the Forest Plan (pp. II/1-6; III/5-7; III/30-52).</p>		
3	The Migratory Bird Treaty Act of 1918	<p>9. On January 10, 2001, President Clinton signed E.O. 13186, which described the responsibilities of federal agencies to protect migratory birds. One of the requirements of E.O. 13186 is that "Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement a Memorandum of Understanding with the Fish and Wildlife Service that shall promote the conservation of migratory bird populations."</p> <p>Clearly your proposal to underburn and pile brush (in which many species of wild birds nest) will result in a take of migratory birds in your project area.</p> <p>Without an MOU from the USFWS approving your destruction of nesting habit, you will clearly violate this law.</p>	<p>Consultation with the USFWS would be completed prior to a decision on this project. This project would follow the Memorandum of Understanding (MOU) with USFWS (FS Agreement # 08-MU-1113-2400-264). In particular the analysis and project design features would address item 3 from the MOU, noted here:</p> <p>"Within the NEPA process, evaluate the effects of agency actions on migratory birds, focusing first on species of management concern along with their priority habitats and key risk factors. To the extent practicable:</p> <ul style="list-style-type: none"> <li>a. Evaluate and balance long-term benefits of projects against any short- or long-term adverse effects when analyzing, disclosing, and mitigating the effects of actions.</li> <li>b. Pursue opportunities to restore or enhance the composition, structure, and juxtaposition of migratory bird habitats in the project area.</li> <li>c. Consider approaches, to the extent practicable, for identifying and minimizing take that is incidental to otherwise lawful activities, including such approaches as:                             <ul style="list-style-type: none"> <li>1. altering the season of activities to minimize disturbances during the breeding season;</li> <li>2. retaining snags for nesting structures where snags are underrepresented;</li> <li>3. retaining the integrity of breeding sites, especially those with long histories of use and;</li> <li>4. giving due consideration to key wintering areas, migration routes, and stopovers."</li> </ul> </li> </ul>	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
3	Lodgepole	10. Your Wishes to Eradicate Lodgepole Pine	Clarification of the proposed actions.		Nonsignificant

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	Pine Treatments	<p>from your District are Unwarranted</p> <p>At the bottom of page 2 you lament the fact that the insect levels in your LPP are infecting the Ponderosa Pine. Why do you not understand that insect attacks on mature LPP (80+ years) is part of the natural cycle of this tree species. Given that LPP has serotinous cones, insect attacks and subsequent fire is the natural mechanism for LPP regeneration. Stands of LPP contain key habitat for a variety of birds and mammals. LPP is a native species in your area. No reasonable management scheme will ever keep insects from invading LPP.</p> <p>I strongly suggest that you stop interfering with Mother Nature motivated by greedy human needs.</p>	<p>The Forest Plan does not include direction to eradicate lodgepole pine. The Stonewall Vegetation Project scoping letter recognized that fire suppression-an unnatural undertaking- has led to a loss in open forest conditions containing ponderosa pine. The proposed action was designed to address the purpose and need to restore ponderosa pine habitats that have been lost and create conditions that allow for the establishment of fire as a natural process, and to develop a mix of vegetation composition and structure that is resilient to wildfire and insects.</p>		issue (2,3)
3	Wording in Document	<p>11. Stop using Meaningless Euphemisms to Describe your Proposed Actions</p> <p>Same as letter 3, comment 6, but adds the word “activities”</p>	<p>Terms would be defined in a glossary as needed and ‘plain’ language would be used where appropriate.</p> <p>See response to letter 3, comment 6 regarding language.</p>		Nonsignificant issue (1)
3	Road Construction	<p>12. The USFS has gone to great lengths to convince the public that the construction of temporary roads and obliterating system roads is ecosystem-benign. Of course this is a lie.</p> <p>See below for the reasons that temp roads have more impacts to the aquatic resources than system roads:</p> <p>1) The earth must be handled twice when constructing and obliterating temp roads.</p> <p>2) Temp roads are "designed" by a logger on a cat with no knowledge of hydrology and the logger is under pressure to work quickly.</p> <p>3) Most temp roads are outsloped, thus, the water on the road drains off the road at random places.</p> <p>4) Temp roads have no surfacing to slow the water velocity. High water velocity picks up</p>	<p>Obliteration of National Forest System roads is not proposed. Effects of roads built then obliterated immediately following timber removal would be analyzed for all affected resources. Proper design features using best management practices would be applied minimizing soil displacement and sediment delivery concerns.</p> <p>See also response to letter 3, comment 1 regarding the literature considered.</p>		Nonsignificant issue (3)

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		<p>more sediment particles.</p> <p>5) Temp roads have no ditch. Ditches adjacent to system roads control the water until the road designer calls for an appropriate outlet culvert location.</p> <p>6) Sediment-laden water leaves the temp road at random locations...often in the streams.</p> <p>Please read “Temporary Roads are Like Low Fat Ice Cream” by George Wuerthner , 3-17-09. The link to this article is at:  <a href="http://www.newwest.net/topic/article/temporary_roads_are_like_low_fat_ice_cream/C564/L564/">http://www.newwest.net/topic/article/temporary_roads_are_like_low_fat_ice_cream/C564/L564/</a></p>			
3	Collaboration	<p>13. Taking whatever actions the local collaborative group wants is not consistent with the requirement to “properly accommodate local participation.” The USFS specialists have the natural resource knowledge and expertise. If the lay members of a local collaborative group propose that the USFS take action that is either illegal, harms the environment or does not maximize the protection of public health or safety, the USFS should educate the public.</p> <p>Best science must drive the programs, projects, and activities to protect public health and safety. If a local collaborative group proposes that the USFS take action that is contrary to best science, the USFS should say no. See:  <a href="http://ceq.hss.doe.gov/nepa/regs/Executive_Order_13352.htm">http://ceq.hss.doe.gov/nepa/regs/Executive_Order_13352.htm</a></p>	<p>During project development, the working group recommendations were reviewed by the Forest Service. The Forest Service modified the group’s recommendations and developed additional treatments that we incorporated into the project proposed actions to meet the purpose and need identified for the Stonewall project while following Forest Plan direction. Chapter 1 of the DEIS would explain the process for development of this project proposal.</p> <p>Relevant literature has been considered in the analysis. See response to letter 3, comment 1 regarding the literature considered.</p>		Nonsignificant issue (3)
4	Support for the Project	1. I support all aspects of the proposed action	Thank you for your support.		Nonsignificant issue (4)
4	WUI	2. Maximize the salvage of infested LPP and fuel reduction treatments on acres located within the Wildland Urban Interface.	During development of the proposed action, we reviewed all stands for appropriate treatments, and while not all WUI acres are proposed for treatment, they were evaluated. Some were not included to ensure consistency		Nonsignificant issue (3)

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			with Forest Plan direction, or to minimize effects to resource areas while meeting Forest Plan direction. The purpose and need for this project includes: "Modify fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape." and "Utilize economic value of trees with economic removal."		
4	Use HFRA to save time. Do not let timber deteriorate	<p>3. Utilize the Healthy Forests Restoration Act to develop the NEP A on this project. This is supported by the Purpose and Need statement and the fact that much of the project is within the WUI. In salvaging high risk and infested LPP and thinning mixed and DF stands, there is very little difference in the on-the-ground treatments for "Restoration" or "Fuel Reduction" activity.</p> <p>4. It is also very important that this proposal moves forward in a timely manner. The value of the timber that makes this project feasible is deteriorating and the longer the analysis takes, the less feasible it becomes. The HFRA requires analysis of the proposed action and the no alternative action. Not having to develop a range of alternatives will save valuable time.</p>	<p>The Healthy Forests Restoration Act (HFRA) process was considered for this analysis.</p> <p>The Forest Service is aware of the need to move this project along in a timely manner. We are evaluating product value and an economic analysis is provided in chapter 3 of the DEIS.</p>		Nonsignificant issue (1, 3)
4	Collaboration	Utilize Stewardship Contracting as the primary method for accomplishing the identified projects.	Stewardship contracting may be considered during implementation; however, this analysis does not specify implementation methods.		Nonsignificant issue (1)
4	Request to be kept informed	Please keep me informed as the proposal is developed.	Commenter would be maintained on the project mailing list.		Nonsignificant issue (1)
5	General Description of the Project	<p>1. The Forest Service must complete a full environmental impact statement (EIS) for this Project because the scope of the Project will likely have a significant individual and cumulative impact on the environment.</p> <p>Following the list of necessary elements, Alliance has also included a general narrative discussion on possible impacts of the Project,</p>	<p>The analysis for this project is an EIS.</p> <p>See response to letter 3, comment 1 regarding the literature considered. The literature review completed for this project would be available in the project record.</p>		Nonsignificant issue (1)

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		with accompanying citations to the relevant scientific literature. These references should be disclosed and discussed in the EIS for the Project. See Letter # 5 for list			
5	Weeds	<p>2. Please provide an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals. Please address the ecological, social and ascetic impact of current noxious weed infestations within the project area. Include an analysis of the impact of the actions proposed by this project on the long and short term spread of current and new noxious weed infestations. What treatment methods would be used to address growing noxious weed problems? What noxious weeds are currently and historically found within the project area? Please include a map of current noxious weed infestations which includes knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue, oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the MONTANA COUNTY NOXIOUS WEED LIST.</p> <p>3. Are yellow and orange hawkweeds present within the project area? Please address the cumulative, direct and indirect effects of the proposed project on weed introduction, spread and persistence that includes how weed infestations have been and would be influenced by the following management actions: road construction including new permanent and temporary roads, and skid trails proposed within this project; opening and decommissioning of roads represented on forest service maps; ground disturbance and traffic on forest service template roads, mining access routes, and private roads; removal of trees through commercial and pre-</p>	<p>The majority of the large prescribed fire units are in the roadless area where roads are lacking.</p> <p>An alternative that eliminated units with noxious weeds present on roads from fire management proposals was considered. Eliminating units with noxious weeds would eliminate fire management treatments in all units in the WUI accessed by existing roads. Not treating areas within the WUI would not enhance community protection. This alternative would not meet the purpose and need for the project of modifying fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape.</p> <p>The no action alternative addresses eliminating units that have noxious weeds present on roads.</p> <p>Noxious weeds, including known occurrences and potential for spread would be analyzed in the noxious weed report and discussed in Chapter 3 of the DEIS.</p> <p>Preventive measures would be incorporated in the project design features including post treatment spraying of landings in year 1 after mechanical treatment, and monitoring at years 3 and 5, with retreatment if needed.</p> <p>The Forest has an active weed treatment program that will continue annual treatment of the known noxious weed infestations along roadways within the analysis area. Management requirements from the Forest Noxious Weed Treatment decision would be incorporated into any action alternative (USDA</p>	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.	Nonsignificant issue (3)

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		<p>commercial logging and understory thinning; and prescribed burns. What open, gated, and decommissioned Forest Service roads within the project area proposed as haul routes have existent noxious weed populations and what methods would be used to assure that noxious weeds are not spread into the proposed action units?</p> <p>4. What commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area? What long term monitoring of weed populations is proposed?</p> <p>What native plant restoration activities would be implemented in areas disturbed by the actions proposed in this project? Will disturbed areas including road corridors, skid trails, and burn units be planted or reseeded with native plant species?</p> <p>5. Which units within the project area currently have no noxious weed populations within their boundaries? What minimum standards are in the Helena National Forest Plan to address noxious weed infestations? Please include an alternative in the DEIS that includes land management standards that will prevent new weed infestations by addressing the causes of weed infestation. The failure to include preventive standards violates NFMA because the Forest Service is not ensuring the protection of soils and native plant communities. Additionally, the omission of an EIS alternative that includes preventive measures would violate NEPA because the Forest Service would fail to consider a reasonable alternative.</p> <p>29. Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.</p>	<p>Forest Service 2006).</p> <p>Winter harvest, where used, could limit spread of weeds and reduce other impacts.</p> <p>See also response to letter 5, comment 6 for effects to rare or sensitive plant species.</p> <p>See the vegetation section in Chapter 3 of the DEIS regarding native forest species discussions.</p>		

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5	Rare Plants	<p>6. What threatened, endangered, rare and sensitive plant species and habitat are located within the proposed project area? What standards would be used to protect threatened, rare, sensitive and culturally important plant species and their habitats from the management actions proposed in this project? Describe the potential direct and indirect effect of the proposed management actions on rare plants and their habitat. Will prescribed burning occur in the spring and early summer; please give justifications for this decision using current scientific studies as reference.</p>	<p>The botany Biological Evaluation (BE) will discuss the known information on rare and sensitive plant species habitat and analyze the effects to known sensitive plant species habitat within the project area. The botany BE would be incorporated by reference and summarized in Chapter 3 of the DEIS. If sensitive plant populations are located within the project area, appropriate mitigation (e.g., site avoidance) would be followed upon consultation with a Forest Service botanist.</p> <p>Prescribed burning effects would be analyzed and disclosed in the specialist's report and summarized in Chapter 3 of the DEIS. The majority of the burns would occur in the fall. We would avoid known locations of rare and sensitive plants if burns occur during spring and early summer.</p>		Nonsignificant issue (3)
5	Whitebark Pine	<p>7. What surveys have been conducted to determine presence and abundance of whitebark pine regeneration? If whitebark pine seedlings and saplings are present, what measures would be taken to protect them? Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method). Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities? Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas?</p>	<p>Whitebark pine in the project area is located within the roadless area. Survey information would be discussed and planting would be evaluated in the Silviculture Report and discussed in the vegetation section of Chapter 3 of the DEIS.</p> <p>The project design features would include hand slashing around whitebark pine seed trees to protect existing seed sources. This practice has been used and found effective in the Alice Creek project area to maintain mature whitebark pine seed sources (J.Kurtz, personal communication).</p> <p>An alternative that excludes burning in the presence of whitebark pine regeneration was considered. This alternative was dropped from detailed analysis since the locations of all whitebark pine regeneration are not known, and may occur in small, isolated, scattered spots. Therefore, avoiding all whitebark pine regeneration areas would not be feasible. This alternative would not address the purpose and need element to Improve the mix of vegetation</p>		Nonsignificant issue (2,3)

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			<p>composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. Health and resiliency of whitebark pine would be discussed in the Silviculture Report in the project record and briefed in Chapter 3 of the DEIS.</p> <p>The no action alternative also addresses no burning in the presence of whitebark pine regeneration.</p>		
5	Safety Map Fuels and Fire Risk	<p>8. Since the project's goals are to reduce the chances that fire will destroy private structures, and harm people, the current fuel/fire hazard situation on land of all ownerships within the WUI (at least the WUI that's relevant to this area) must be displayed on a map. More importantly, the fuel/fire hazard situation post-project on land of all ownerships within the WUI must also be displayed on a map. Based on this mapping of current and projected conditions, please accurately disclose the threats to private structures and people under those scenarios, for all alternatives. It must be discernable why some areas are included for treatment and others are not.</p> <p>9. The FS must have a detailed long-term program for maintaining the allegedly safer conditions, including how areas would be treated in the future following proposed treatments, or how areas not needing treatment now would be treated as the need arises. The public at large and private landowners must know what the scale of the long-term efforts must be, including the amount of funding necessary, and the likelihood based on realistic funding scenarios for such a program to be adequately and timely funded.</p> <p>The FS must assess the fuel and fire risk situation across land ownership boundaries to</p>	<p>Historic fire information was considered. Potential effects to private land and structures would be considered in cumulative analysis for crown fire potential.</p> <p>Developing a detailed long-term program for maintaining the safer conditions, including how areas would be treated in the future following proposed treatments, or how areas not needing treatment now would be treated as the need arises is outside the scope of our analysis. The long-term program at the landscape scale is provided in the Forest Plan, SW crown, Blackfoot landscape assessment, CWPP or other broad-scale analyses.</p> <p>See also response to letter 3, comment 3 regarding analysis that would be included in the fire/fuels report and in Chapter 3 of the DEIS.</p>		Nonsignificant issue (1,3)

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		understand, and disclose to the public, the likely fire scenarios across the area's landscape. Only then can the context of your proposal be adequately weighed on its merits and evaluated on its merits.			
5	Thinning and Fire spread	10. Please consider that thinning can result in faster fire spread than in the unthinned stand. Graham, et al., 1999a. 11. Since the scientific literature suggests that your thinning activities will actually increase the rate of fire spread, you need to reconcile such findings with the contradictory assumptions expressed in your scoping letter.	Slash from thinning may be more susceptible to faster fire spread; however, this activity created fuels would be treated reducing this concern to levels of little risk. See response to letter 3, comment 3 regarding analysis of fire/fuels. Fuels discussion would be discussed in Chapter 3 of the DEIS regarding effects of the proposed actions, including treatment of activity created fuels. See response to Letter 3, comment 1 pertaining to literature review.		Nonsignificant issue (3)
5	Old Growth associated wildlife species	12. The FS must disclose its transparent, well thought-out long-term strategy for old-growth associated wildlife species viability in a properly-defined cumulative effects analysis area.	Old growth management indicator species include pileated woodpecker, northern goshawk, and hairy woodpecker. Hairy woodpeckers are also a snag-associated species. Effects to old-growth associated species, including long-term habitat availability and anticipated effects to local viability would be analyzed in the wildlife report and biological assessment and discussed in the wildlife section of Chapter 3 of the DEIS. Both temporal and spatial analysis boundaries, would be clearly defined for each resource area in their methodology sections and cumulative effects would be disclosed in the specialist's reports and discussed in Chapter 3 of the DEIS.	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
5	Old Growth associated wildlife species Flammulated Owl	18. Please demonstrate that this project will leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks. Loggers are required to follow OSHA safety standards. Will these standards require snags to be cut down? After snags are cut down for safety for OSHA requirements will there still be enough	Snag retention and recruitment would be considered in the analysis and discussed in the wildlife report, biological assessment and biological evaluation and in the wildlife section of Chapter 3 in the DEIS. While snags that pose a safety risk would be removed as suggested, a number of project design features are in place to ensure that adequate snags (both size and amount) are retained to	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects	Significant issue #1

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		snags left for old growth sensitive species? Specifically how will the Stonewall Project affect Flammulated owls, cavity-nesters usually associated with mature stands of ponderosa pine and Douglas-fir? 19. What surveys has the HNF specifically designed to detect flammulated owls?	meet the needs of wildlife, including old growth dependent species. In addition, not all acres are being treated. All completed surveys and data collected are addressed in Chapter 3 of the DEIS. Coordinated flammulated owl surveys were conducted to protocol across various portions of the Forest in 2005, 2008, and 2009 as part of the Northern Region Landbird Monitoring Program.	would be discussed in the DEIS.	
5	Cumulative Effects-Past Management Actions	13. Even though ecological restoration is not the project's priority, the NEPA document must at least identify all the existing ecological liabilities caused by past management actions. This includes poorly located or poorly maintained roads, high-risk fuel situations caused by earlier vegetation manipulation projects, wildlife security problems by open motorized roads and trails plus those that are closed but violated—and include all those impacts in the analyses.	Cumulative effects analyses considered effects from past present foreseeable future actions within and adjacent to the project area. Baseline/existing conditions discussed in Chapter 3 of the DEIS and in the Wildlife Report reflect the outcomes of past actions, including effects of roads on elk security. A listing of the known past, present, and foreseeable future projects that may contribute effects when considered with this project would be included in the DEIS. See response to letter 66, comments 15, 16 and 17 regarding snags.		Nonsignificant issue (3)
5	Roads in WUI	14. Any desire to keep a road in the project area WUI must be in harmony with the alleged priority goals (again, to reduce the chances that fire will destroy private structures and harm people), not driven by timber production goals. The analysis must show how all roads will in fact be in harmony with the priority goals.	This project does not include changing National Forest System roads. The Forest is currently analyzing two travel management planning processes; Blackfoot Winter Travel and Blackfoot Travel Plan (non-winter). Motorized vehicle use and route designations for the permanent Helena National Forest System roads would be addressed in this ongoing analysis and documented in the final decisions issued for the travel management plans. Travel management is outside the scope of this analysis but where appropriate would be addressed in cumulative effects.		Nonsignificant issue (1)
5	Fuels Reduction	15. Proposed activities could artificialize the forest ecosystem. Lodgepole pine is particularly subject to blowdown, once	The project design features would include retaining adequate snags and down woody debris to meet Forest Plan direction.		Nonsignificant issue (3)

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		<p>thinned. And any forest condition that is maintained through mechanical manipulation is not maintaining ecosystem function The proposed management activities would not be integrated well with the processes that naturally shaped the ecosystem and resulted in a range of natural structural conditions. Thus, [there is a] need for standards guiding both the delineation of zones where artificializing fuel reduction actions may take place, and that also set snag and down woody debris retention amounts.</p>	<p>Effects to fuels and the related analysis would be discussed in the relative specialist's reports and summarized Chapter 3 of the DEIS.</p> <p>Proposed activities were designed to allow natural ecosystems to function while providing resource protection.</p> <p>The Tri County Community Wildfire Protection Plan defines WUI boundary as area within 4 miles from communities that possesses a population density exceeding 250 people per square mile.</p>		
5	Fire Policy	<p>16. Since disruption of fire cycles is identified, the HNF needs to take a hard look at its fire policies. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider. Please see Ament (1997) as comments on this proposal, in terms of fire policy and Forest Planning.</p>	<p>This is a programmatic Forest-level issue addressed by the annually updated Forest Plan Fire Management Plan. Forest fire policy is outside the scope of this analysis.</p> <p>The literature review includes a review of Ament (1997).</p>		Nonsignificant issue (1)
5	Monitoring	<p>17. For every project proposal, it is important that the results of past monitoring be incorporated into planning. All Interdisciplinary Team Members should be familiar with the results of all past monitoring pertinent to the project area, and any deficiencies of monitoring that have been previously committed to. For that reason, we expect that the following be included in the NEPA documents or project files:</p> <ul style="list-style-type: none"> <li>• A list of all past projects (completed or ongoing) implemented in the proposed project area watersheds.</li> <li>• The results of all monitoring done in the project area as committed to in the NEPA documents of those past projects.</li> <li>• The results of all monitoring done in the</li> </ul>	<p>Existing monitoring information is being compiled and would be considered with the existing condition for various resources. Project related monitoring is identified and would be included in Chapter 2 of the DEIS. Ongoing forest-level monitoring would continue.</p> <p>The DEIS will include a list of the known past, present, and foreseeable future projects that may contribute effects when considered with this project.</p> <p>The direction in the Forestwide Noxious Weed EIS (USDA Forest Service 2006) would be incorporated</p> <p>Monitoring for weed treatments would be disclosed in Chapter 3 of the DEIS, and in the</p>		Nonsignificant issue (3)

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		<p>proposed project area as a part of the Forest Plan monitoring and evaluation effort.</p> <ul style="list-style-type: none"> <li>• A description of any monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project area, which has yet to be gathered and/or reported.</li> </ul> <p>Please disclose the names of all other past projects (implemented during the life of the Forest Plan) whose analysis area(s) encompass the areas to be “treated” under this proposal. Please disclose if the FS has performed all of the monitoring and mitigation required or recommended in any NEPA documents, and the results of the monitoring.</p> <p>31. Please disclose the results monitoring of weed treatments on the HNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. This is an ongoing issue of land productivity.</p>	specialist's weed report.		
5	Viable populations	<p>20. The FS should firmly establish that the species that exist, or historically are believed to have been present in the analysis area are still part of viable populations. Since Forest Plan monitoring efforts have failed in this regard, it must be a priority for project analyses. Identification of viable populations is something that must be done at a specific geographic scale. The analysis must cover a large enough area to include a cumulative effects analysis area that would include truly viable populations. Analysis must identify viable populations of MIS, TES, at-risk, focal, and demand species of which the individuals in the analysis area are members in order to sustain viable populations.</p>	<p>The wildlife report would include analysis of species most at risk including: threatened, endangered, sensitive, management indicator species, changes in related habitat distribution and use from the specific impacts from the proposed activities, and how the project area contributes to species viability when considered with other past, present and foreseeable actions.</p> <p>Overall, viable populations are evaluated at the Forest or Regional levels, and are outside the scope of this analysis.</p>		Nonsignificant issue (1, 3)
5	Old-growth	<p>21. Please disclose how stands to be treated compare to Forest Plan or Regional old-growth criteria. In order to disclose such information, please provide all the details, in plain language, of these areas' forest</p>	<p>Effects to old growth would be analyzed in the specialist's reports and summarized in Chapter 3 of the DEIS.</p>	<p>A potential alternative 3 was developed to reduce potential impacts to various</p>	<p>Significant issue #1</p>

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		characteristics (the various tree components' species, age and diameter of the various tree components, canopy closure, snag density by size class, amounts of down logs, understory composition, etc.).		wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	
5	ESA, TES, MIS	22. Please examine how this project could affect grizzly bears, lynx and other species listed under the Endangered Species Act. Are you complying with lynx critical habitat requirements? Please examine how this project will affect all MIS and sensitive species.	ESA compliance, including Section 7 consultation with the USFWS would be completed prior to the decision. Anticipated effects on federally listed species would be discussed in detail in the project Biological Assessment and summarized in Chapter 3 of the DEIS.  The wildlife report will analyze effects to MIS and the Biological Evaluation will evaluate effects to sensitive species. These reports would be incorporated by reference and a summary of the analyses would be included in Chapter 3 of the DEIS.	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
5	Roadless Area boundaries and Wilderness designation	24. Please utilize the NEPA process to clarify any roadless boundary issues 25. Please examine if these unroaded areas adjacent to roadless areas have wilderness qualities.	Inventory and evaluation of roadless areas takes place at the Forest Plan level. Unroaded areas adjacent to IRAs that overlap with proposed treatment areas will be evaluated for potential impacts to their roadless and wilderness characteristics.		Nonsignificant issue (1)
5	fisheries, water quality, soil, bull trout	23. We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals. 26. We request a careful analysis of the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperature. Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities. Where livestock are permitted to graze, we ask that	c23: Designing a restoration/access management plan is beyond the scope of this analysis. See response to letter 5 comment 14 regarding travel management. c26, 27, 28, 30: An intricate part of this proposal is the caring for the transportation system needed to implement this project. Proper maintenance and mitigation would be applied. Effects on fish, water and soils would be analyzed, incorporated by reference and summarized in Chapter 3 in the DEIS. Past actions would be reviewed during the evaluation of the existing conditions and cumulative effects analyses. The proper		Nonsignificant issue (1,3)



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		consideration for sustaining long-term soil productivity.			
5	Carbon Storage and Climate Change	<p>33. Published scientific reports indicate that climate change would be exacerbated by logging due to the loss of carbon storage. Additionally, published scientific reports indicate that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Project). The former indicates that the Stonewall Vegetation Project may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Project. Therefore, the Forest Service must candidly disclose, consider, and fully discuss the published scientific papers discussing climate change in these two contexts. At least the Forest Service should discuss the attached following studies:</p> <ul style="list-style-type: none"> <li>• Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008. Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands. <i>Forest Ecology and Management</i> 255: 1122-1134.</li> <li>• Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question. <i>Journal of Forestry</i> 99:4: 24-29.</li> <li>• Harmon, Mark E, William K. Ferrell, and Jerry F. Franklin. 1990. Effects of carbon storage of conversion of old-growth forest to young forests. <i>Science</i> 247: 4943: 699-702</li> <li>• Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model. <i>Canadian Journal of Forest Research</i> 32: 863-877.</li> <li>• Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005.</li> </ul>	<p>Effects of the proposed action and alternatives to atmospheric carbon storage and release would be discussed in the relevant specialist's reports with information to be summarized in Chapter 3 of the DEIS.</p> <p>The effects of a changing climate to current and future conditions of the Helena National Forest are considered and addressed through project objectives and design. See EIS Chapter 1 sections titled "Purpose and Need for Action" and "Proposed Action;" also, "Silviculture Report—Stonewall Desired Condition" (Amell 2012) in the project record.</p> <p>See also, response to letter 3 comment 1 regarding the review of submitted literature.</p>		Nonsignificant issue (3)

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		<p>What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283.</p> <ul style="list-style-type: none"> <li>• McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 -902.</li> </ul>			
5	Costs and Benefits	34. Please evaluate all of the costs and benefits of this project. Please include a detailed list of all the costs to the agency and the public.	An incremental economic analysis would be completed and detailed listing of cost factors considered would be in the report. This analysis would be incorporated by reference and summarized in Chapter 3 of the DEIS. The specialist reports would be available upon request and filed in the project record. A summary of economic analysis, including financial efficiency would be included in Chapter 3 of the DEIS.		Nonsignificant issue (3)
5	Literature Review	35. It is our intention that you include in the record and review all of the literature and other incorporated documents we've cited herein. Please contact us if you have problems locating copies of any of them.	See response to letter 3 comment 1 regarding the review of submitted literature.		Nonsignificant issue (3)
6	Noxious Weeds	1. Noxious Weed management plan-per harvest or work activities and post management plan	See response to letter 5 comments 2,3,4,5 and 29 regarding noxious weeds.		Nonsignificant issue (3)
7	Noxious Weeds	1. Weed management when road is obliterated	See response to letter 5 comments 2,3,4,5 and 29 regarding noxious weeds.		Nonsignificant issue (3)
7	Noxious Weeds	2. Weed management where all the landings are	See response to letter 5 comments 2,3,4,5 and 29 regarding noxious weeds.		Nonsignificant issue (3)
8		1. I would like to be kept informed of any clubs, groups, and organizations etc. that oppose this project.	Table 1 under this section includes a listing of the individuals, clubs, groups, organizations and agencies that responded to scoping. This table lists the contents of the comments received.		Nonsignificant issue (1)
9	Timing of the Project	1. When would this start and is there a proposed completion date for the gulch area?	Implementation of the project would occur after the decision.		Nonsignificant issue (1)
9		2. The area on the east side of the Lincoln	The area noted is included in the proposed		Nonsignificant

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		Gulch Road going north toward the cemetery is in dire need of “cleaning up” underbrush, deadfalls, and beetle killed trees. The area starts at the Forest Line (cattle guard) on Lincoln Gulch Roads and proceeds towards the cemetery.	action (unit 12) for a regeneration harvest with fuels treatments following activities. The Lincoln Gulch Road is included in the Hazard Tree removal decision (August 23, 2010)		issue (3)
11	Support for the project	1. ...I support the effort the Forest Service is (?) to (?) and effectively improve the health and vitality of the forest	Thank you for your support		Nonsignificant issue (4)
14	Support for the Project	1. Overall I feel that the proposed action is sound and should be carried out	Thank you for your support.		Nonsignificant issue (4)
14	Wildlife, cavity nesters	2. The final plan should recognize that not all dead trees should be harvested. A sufficient number of “wildlife” trees should be left standing for cavity nesting species	Forest plan snag requirements would be met on treated areas and additional snag habitat would be provided throughout the project area in untreated areas. Snags would be discussed in the wildlife report and the wildlife section of Chapter 3 of the DEIS.	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
14	Roadless	3. Post-treatment action should guarantee that motorized vehicle use does not increase in roadless areas	No harvest is identified in roadless areas. Stand density may be reduced through prescribed fire in the roadless areas. A project design feature would be included to obliterate the appearance of fire control lines adjacent to or that intersect existing trails, if warranted, to reduce the potential for unauthorized motorized use. The Forest is completing a travel management planning process for winter and non-winter travel. Motorized vehicle use would be addressed in this ongoing analysis. Unauthorized motorized vehicle use in roadless areas is a law enforcement issue and outside the scope of this analysis.		Nonsignificant issue (1,3)

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15	Support for the Project	1. It is good to move forward with this	Thank you for your support.		Nonsignificant issue (4)
15	Treatments	2. The scale of the project should be enlarged (i.e., treat more acres)	Chapter 2 of the DEIS will include a discussions of the alternatives considered in detail and alternatives considered but eliminated from detailed analysis.	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.	Nonsignificant issue (3)
16	Streams and Watersheds	1. When the proposed action is implemented, special care needs to be taken to protect streams/watersheds.	Project design features and BMPs would be incorporated to provide protection of streams and watersheds.		Nonsignificant issue (3)
16	Support for the Project	2. Good job, well presented, hope it soon gets implemented	Thank you for your support.		Nonsignificant issue (4)
17	Support for the Project	1. We need more projects like this one	Thank you for your support.		Nonsignificant issue (4)
19	Support for the Project	1. Good job putting this together	Thank you for your support.		Nonsignificant issue (4)
21	Support for the Project	1. Just wish there wasn't so much red tape and it could start immediately	Thank you for your support.		Nonsignificant issue (4)
21	Jobs	2. Will there be jobs available?	Various portions of the project may be implemented through various methods (e.g., stewardship contract, timber sale, in-house staff). An analysis would be completed to address EO 12898 and the accompanying Presidential Memo regarding "Environmental Justice", which may include possible jobs on minorities, etc. This information would be discussed in Chapter 3.		Nonsignificant issue (3)
22	Support for the Project	1. We strongly support the proposed actions.	Thank you for your support.		Nonsignificant issue (4)
22	Prescribed fire	2. Our only concern is the use of fire. We are not opposed to that but we feel the use of fire is going to require a major educational effort before it is acceptable to many of the residents.	Information sharing regarding use of prescribed fire and development of burn plans is ongoing and would continue on the district.		Nonsignificant issue (3)

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26	Motorized Recreation Opportunities	<p>1. Adequate recreational opportunity for all visitors is the supreme issue that must be addressed by this action.</p> <p>2. Clearly, the public wants and needs adequate recreational opportunity and this should be the over-arching theme of this evaluation and decision.</p> <p>3. Reasonable alternatives to motorized closures must be pursued. The continual loss of motorized recreational opportunities is our primary concern. Because of the significant cumulative effect of motorized closures at this point in time, we feel strongly that there can be “no net loss” of motorized recreational opportunities with the Stonewall Fuel Control Project. We would ask that this project address the attached checklist of issues and address the goals and needs identified.</p> <p>4. We ask that management for sharing of these lands for multiple-use be selected as the preferred alternative. Sharing would include a 50/50 sharing and equal opportunity of non-motorized to motorized trails.</p> <p>5. It seems that both the BLM and Forest Service are using forest planning and travel management planning as an opportunity to close as many motorized recreational opportunities as fast as possible. We are asking that this project establish a baseline evaluation and address this significant impact</p> <p>6. ...we strongly recommend and support the development of a Pro-Recreation Alternative. would include the following characteristics...:</p> <ol style="list-style-type: none"> <li>1. Dispersed camping within 300 feet of all existing routes.</li> <li>2. Use of seasonal closures, where required, to protect the environment and wildlife with the intention of keeping routes open for the summer recreation season.</li> <li>3. All of the existing routes are needed as</li> </ol>	<p>The Forest is completing two travel management planning processes, 'Blackfoot – North Divide Winter Travel Planning' and 'Blackfoot Travel Plan (non-winter)'. Motorized vehicle use and route designations for the permanent Forest System roads would be addressed in those ongoing analysis and documented in the final decisions issued for the travel management plans. Travel management is outside the scope of this analysis and does not address the purpose and need for this project.(Items 3, 4, 5 &amp; 6). Effects of this project on recreation would be addressed in the Recreation Report and summarized in Chapter 3 of the DEIS. (items 1-2)</p> <p>Recreation resources would be addressed in the analysis and project design features would be included to minimize potential impacts to recreation within the project area (item 6).</p> <p>The attachment provides information pertaining to motorized vehicle use trends and discussion of allocations between motorized and non-motorized uses. This information is applicable to the travel management planning process, but since no changes to the forest transportation system or its use, is proposed for this project, it is outside the scope of this analysis but similar concerns are being addressed in both of the Blackfoot Travel Plans.</p>	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.	Nonsignificant issue (1,2,3)

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		<p>OHV routes due to the cumulative effects of all other closures.</p> <p>4. Additional OHV routes are needed to address the growing popularity of OHV recreation and the greater needs of the public for access and motorized recreation...</p> <p>Attachment: "Information and Issues that Support a Pro Motorized Recreation Alternative" January 24, 2010.</p> <p>7. Overall, we are extremely concerned about the unequal allocation of trail resources and we do not see anything that justifies the current imbalance with only 42% motorized trails. The facts presented in our comments clearly supports a motorized trail allocation of 50% or greater.</p>			
27	Motorized Recreation Opportunities	<p>1. Our first concern is that no existing motorized roads and trails should be closed as part of the proposed action.</p> <p>2. Our second concern is that this area is ideal for motorized, multiple-use recreation. To adequately address this issue, we request that an alternative be considered that would provide new OHV routes in the area beyond those currently existing.</p>	See response to letter 26, comments 1 to 7.	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS..	Nonsignificant issue (1)
28	Camping	1. I hope this includes some consideration for camping sites	<p>A project design feature would be included to prioritize treatments adjacent to the Pine Grove campground and trailheads within the project area to avoid high use time periods and limit the time these areas may be closed to the public.</p> <p>Project design features would be included to coordinate project implementation and haul routes with recreation staff to minimize impacts to popular dispersed recreation areas and high use time periods (i.e.: fall hunting season), and to ensure that the public is aware of the scheduled projects.</p> <p>Effects of this project on recreation would be analyzed in the recreation report, incorporated</p>		Nonsignificant issue (3)

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			by reference, and summarized in Chapter 3 of the DEIS.		
28	Support for the Project	2. I really appreciate and support your efforts	Thank you for your support.		Nonsignificant issue (4)
29	Support for the Project	1. We like the proposal. We are private landowners in Lincoln Springs Subdivision, and are interested in fuel reduction in the area.	Thank you for your support.		Nonsignificant issue (4)
31	Archaeological Resources	<p>1. As an archaeologist I am strongly concerned about the possibility of the disturbance/destruction of archaeological resources while completing this project. From what I can discern from studying the map on the website at least part of the area in which the primary townsite of old Lincoln is situated will not have actions performed there. However that area is highly covered with thick brush and blow downs. In order to be able to properly document and preserve historic remains in this area these need to be removed; but with as little actual ground disturbance as possible.</p> <p>3. In addition to the protection of the Old Lincoln townsite those conducting this operation need to be aware of other undocumented historical remains throughout the entire project area; but especially around the old cemetery area and between Moon Lane and the Lincoln Springs Subdivision. A high chance of encountering cultural remains also exists on the west side of Lone Point before Moon Lane.</p> <p>4. An archaeologist should regularly inspect work when the ground is disturbed in order to minimize destruction of resources.</p>	<p>Effects to cultural resources would be analyzed and appropriate protection measure (e.g. avoidance) would be followed.</p> <p>The Forest archaeologist would visit known sites, including the Historic Lincoln Townsite, and identify appropriate project design features for inclusion in Chapter 2 of the DEIS.</p> <p>Project design features would include protection of existing and newly discovered heritage sites, along with appropriate monitoring and would be listed in Chapter 2 in the DEIS.</p>		Nonsignificant issue (3)
31	Support for the Project	2. Overall the project appears to be well planned and is extremely overdue.	Thank you for your support.		Nonsignificant issue (4)
32	Support for the Project	1. I appreciate the Lincoln District moving forward on any management proposal that	Thank you for your support.		Nonsignificant issue (4)

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		includes timber harvest – dead or alive.			
32	General Project Design	2. I would like to voice my concern that the NEPA process for this project seemed to go by the wayside. I saw no announced dates or comments about NEPA.	<p>The notice of intent to prepare an environmental impact statement for the Stonewall Vegetation Project was published in the Federal Register on January 13, 2010. Scoping documents for this project were mailed to known interested and affected parties on January 15, 2010. The scoping documents were also available on the forest website. A press release was issued January 16, 2010 that announced a public meeting on February 3, 2010 and noted the deadline for comments was February 16, 2010.</p> <p>The Stonewall Vegetation Project has been listed on the Forest's schedule of proposed actions since April 2010.</p> <p>Public involvement efforts would be disclosed and discussed in Chapter 1 of the DEIS.</p>		Nonsignificant issue (3)
32	Multiple Use	3. Represent multiple use in an adequate solution for the project	<p>The purpose and need for this project was developed to address fuels and restoration concerns and address the gap between the existing conditions and the desired conditions of the vegetation in the project area. Specialists for various resources reviewed the Forest Plan goals and objectives and developed actions to address the purpose and need for this project. Effects to the various resources would be disclosed in Chapter 3 in the DEIS.</p>		Nonsignificant issue (2,3)
32	Roads	4. The roads established for the project should remain open for recreation, fire suppression, etc.	Changes to the permanent forest transportation system are not proposed with this project. See response to letter 5, comment 14.		Nonsignificant issue (1,3)
33	Ground Disturbance	<p>1. Heavy equipment operations should be conducted at a time that minimizes ground disturbance – frozen and/or snow.</p> <p>2. Seed disturbances (roads, skid roads, burn piles with a cheatgrass and noxious weed free NATIVE GRASS/FORB mix. No fertilizer (native plants won't need it)</p>	<p>Winter operations are an option, and may reduce impacts to soils and related resources. These concerns would be addressed in the Soils Specialist's Report and summarized in Chapter 3 of the DEIS.</p> <p>Seeding would be done with approved seed mixes as noted in the Forest Plan.</p>		Nonsignificant issue (3)

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33	Economics	3. All sales should be conducted with a “no net loss” to the taxpayer.	An incremental economic analysis would be completed and results disclosed in Chapter 3 of the DEIS.		Nonsignificant issue (3)
33	Prescribed Burning Support	4. Conduct as much control/prescribed burning as possible, no mimic natural processes.	Thank you for your support of prescribed burning.		Nonsignificant issue (4)
33	Motorized use	5. Consider how you are going to limit off-road and off-trail O.R.V. use once the forest is “opened up.”	Effects of ORV use would be discussed in Chapter 3 of the DEIS and in the specialist’s Recreation Report.  The Forest is completing a travel management planning process for winter and non-winter travel. Motorized vehicle use would be addressed in those ongoing analysis. Unauthorized off-road motorized vehicle use is a law enforcement issue and an ongoing concern for the Forest.		Nonsignificant issue (3)
34	Mountain Pine Beetle	1. It’s too bad about the Mountain Pine Beetle. The Western larch is a beautiful tree. Its number should be increased.	Any regeneration activities planned would consider appropriate species mix, including western larch to move toward the desired conditions.		Nonsignificant issue (2,3)
34	Prescribed Burning Support	2. I like burning slash piles and prescribed burning.	Thank you for your support		Nonsignificant issue (4)
35	Mountain Pine Beetle	1. What are the time periods, how long to do these projects, could they continue as the beetle-kill continues on?	Project activities would be anticipated to be completed within a ten year time period. Other areas affected by beetle-kill would be analyzed separately.		Nonsignificant issue (3)
36	Roadless	1. You can’t mine it, log it, farm it, ride on it, so yes, burn it.	Comment noted. Support for fire.		Nonsignificant issue (4)
37	Support for the Project	1. I support the actions proposed in the Stonewall Vegetation Project	Thank you for your support		Nonsignificant issue (4)
38	Motorized Recreation Opportunities	1. Our first concern is that no existing motorized roads and trails should be closed as part of the proposed action. 2. Our second concern is that this area is ideal for motorized, multiple-use recreation. To adequately address this issue, we request that an alternative be considered that would	See response to letter 26, comments 1 to 7.	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the	Nonsignificant issue (1,3)

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		provide new OHV routes in the area beyond those currently existing.		DEIS.	
39	Motorized Recreation Opportunities	1. Our first concern is that no existing motorized roads and trails should be closed as part of the proposed action. 2. Our second concern is that this area is ideal for motorized, multiple-use recreation. To adequately address this issue, we request that an alternative be considered that would provide new OHV routes in the area beyond those currently existing.	See response to letter 26, comments 1 to 7.	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.	Nonsignificant issue (1,3)
40	Motorized Recreation Opportunities	1. Our first concern is that no existing motorized roads and trails should be closed as part of the proposed action. 2. Our second concern is that this area is ideal for motorized, multiple-use recreation. To adequately address this issue, we request that an alternative be considered that would provide new OHV routes in the area beyond those currently existing.	See response to letter 26, comments 1 to 7.	Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.	Nonsignificant issue (1,3)
41	Firewood	1. Would it be open for firewood?	Areas would be closed to firewood gathering during harvest implementation. Consistent with the forest plan, slash piles would be made available to the public prior to burning.		Nonsignificant issue (3)
43	Pine Beetle Restore diversified species	1. The proposed thinning and restoration makes perfect sense. Let us get the trees infested with the pine beetle out, to put in diversity only makes sense. Let's get in there, thin out the diseased trees, plan for some viable species, and help our forests to once again regain their beauty for all to enjoy.	Thank you for your support.		Nonsignificant issue (4)
45	Support for the Project	1. I agree with the proposal.	Thank you for your support		Nonsignificant issue (4)
45	Forest Health	2. As much wood as possible should be removed for the health of the forest.	Thank you for your support.		Nonsignificant issue (4)
47	Support for the Project	1. Project sounds like a good plan	Thank you for your support		Nonsignificant issue (4)
48	Forest Health	1. I am not opposed to vegetation	Thank you for your support.		Nonsignificant

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		management in the project area but I want it to be driven by good resource management and within the direction of the Helena National forest Land use Plan and not fire hysteria.			issue (4)
48	Visuals	2. A landscape analyses should be completed to show the changes that would occur from the proposed actions. 3. A feathering of Timber harvest along the existing straight line harvested areas would benefit the existing visual condition. Property lines adjoining private in holdings, state and BLM lands should be considered for this type of timber harvest also.	Design features would be incorporated to reduce the appearance of lines to meet the visual quality objectives for units adjoining private in holdings, state and BLM lands would be displayed in Chapter 2 in the DEIS. Effects to the visual resources would be disclosed in Chapter 3 in the DEIS.		Nonsignificant issue (3)
48	Cultural Resources	4. Lincoln Historical town site and cemetery: These two historical sites are eligible for nomination to the registrar of historical sites; this process should be completed to insure that adequate management, monitoring and protection occur. 5. Immediate restrictions should be implemented to closes these two area to personal fire wood gathering. 6. Other cultural resources that need protection are lower and upper stonewall ditches, and Lincoln ditch from Reservoir Lake to Lincoln Gulch. This project area is rich with early mining history and a cultural inventory is needed.	Project design features would be incorporated to provide appropriate protection for cultural resources. Heritage surveys and anticipated effects to cultural resources would be discussed in Chapter 3 in the DEIS.		Nonsignificant issue (3)
48	Grazing	7. An updated allotment plan would be need to reflect the changes to the grazing patterns associated with the proposed timber harvest.	Adaptive management practices may be incorporated as needed to address grazing patterns affected by the project, which may include measures such as herding or adjusting season of use. No changes to livestock grazing are proposed. The allotment management plan is outside the scope of this analysis.		Nonsignificant issue (1,3)
48	Prescribed Burning	8. The roadless areas within the project area were created by the Rare 2 process identifying possible additions to the	Slashing is proposed in identified prescribed burn units to help achieve desired results (e.g. to help carry the fire across the unit) where	Alternative considered but eliminated from	Nonsignificant issue (2,3)

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	Roadless Areas	<p>wilderness system. Management should reflect this quality. Prescribed fire in these areas should be under a natural prescribed fire plan and no mechanical fuel treatment done in these areas.</p> <p>On June 21, 2010 commenter J. Burns was contacted by J. Kurtz of the Forest Service, resulting in two points of clarification concerning “natural prescribed fire” and “no mechanical fuel treatment done in these areas”.</p> <p>Natural prescribed fire is in reference to the fact that J. Burns would like to see the roadless area within the Stone Dry project area be treated similar to the wilderness, turned into a FMU-3 so the Forest Service can allow natural ignition to take place and managed for resource benefit.</p> <p>Mechanical fuel treatment is in reference to not only mechanized equipment but also hand slashing in road less areas. J. Burns referenced the hand slashing work being done in Alice Creek and does not like what he sees. Also J. Burns does not want to see hand slashing with chainsaw around whitebark for whitebark restoration “the beetles will kill all of them anyway”</p>	<p>adequate fuels may not currently exist on the ground. Hand slashing would also allow areas around individual mature whitebark pine trees to be cleared to encourage seedling establishment. Concentrations of whitebark pine regeneration may be protected through clearing of slash to reduce potential for fire caused mortality. The proposed hand slashing of small diameter trees within roadless areas will be evaluated for potential impacts to roadless and wilderness characteristics.</p> <p>See response to letter 5, comment 7 regarding alternatives considered.</p>	detailed analysis, this would be discussed in Chapter 2 of the DEIS.	
48	Thinning in past timber harvest areas	9. These areas are T-I lands to be managed for timber production. Pre commercial thinning was part of the silvicultural objectives for these areas, but was not done. With the timber maturity of these stands any thinning now should be commercial and the wood products removed used and not burned as slash. If no market exists the thinning should be postponed until a market for these types of products exist.	Meeting the stated purpose and need for the project, as well as stand characteristics such as tree species and size, may be used to determine whether the proposed treatments involve commercial thinning, pre-commercial thinning, or a combination of the two treatments. These assessments would be in the project record.		Nonsignificant issue (3)
48	Cumulative Effects	10. The effect of additional timber harvest that has occurred and will occur on state and private lands bordering this project area should be considered in this analyzes. The	Cumulative effects would be analyzed with the available information on past, present and reasonably foreseeable projects.		Nonsignificant issue (3)

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		Lincoln ranger district is also proposing a hazard tree removal along system forest roads, if this project occurs would this timber harvest be in addition to what is proposed in this project?	The decision was signed on August 23, 2010 for the “Forest-wide Hazardous Tree Removal and Fuels Reduction- Healthy Forests Restoration Act Project.” This project is in addition to this proposal and would be considered in the cumulative effects analyses.		
48	Recreation	11. A recreation activity that has increase in this area is personnel huckleberry picking how will the proposed actions effect huckleberry production, both for people and wildlife?	Recreation opportunities may be enhanced in the burn and harvest areas with a potential increase in huckleberry regeneration. The anticipated vegetative response to the proposed activities would be discussed under soft mast (e.g. berries) in the wildlife report. Short-term loss and long-term enhancement would be evaluated in detail in the wildlife specialist report and summarized in Chapter 3 in the DEIS.		Nonsignificant issue (3)
48	Forest Health	12. Timber harvest will open new areas for snowmobiling. How will this be addressed in winter travel Plan? Past timber harvest areas have become unofficial play areas for snowmobiling this activity has caused some major damage to the leader growth of new plantations.	See response to letter 26, comments 1 to 7.		Nonsignificant issue (3)
48	Wildlife	13. Timing of all these activities would be very important not to interrupt and displace wildlife. If all this occurs at the same time there would be major displacement of wildlife. Critical season, calving, winter ranges, nesting, security during big game hunting, both archery and rifle must be considered.	Project design features would be incorporated to minimize impacts to elk calving and winter range, and ensure, that un-disturbed elk security and hiding cover is available. Project design features would be incorporated, as necessary, to restrict activities within breeding habitat for species with viability concerns (threatened, endangered and sensitive), as well as big game. Forest Plan compliance would be for these concerns would be evaluated. See response to letter 66, comments 6 and 7 regarding big game.	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
48	Economics Low timber market	14. The cost effectiveness of this of this proposed project should be analyzed. 15. With the local timber market very low, will additional timber products bring the market	See response to letter 5 comment 34 regarding economic analysis for this project.		Nonsignificant issue (3)

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		even lower?			
48	Economics Logging Systems and New Roads	16. Five miles of temporary road systems just cannot be justified. Helicopter logging would be cheaper.	See response to letter 5 comment 34 regarding economic analysis for this project.		Nonsignificant issue (3)
48	Economics	17. This project will need ongoing weed control, planting, thinning, monitoring, road maintenance, ECT. The president in his state of the union address said that federal spending would be frozen for three years. How will this affect the needed maintenances of this proposed action?	The President's comments regarding Federal budgets pertain to the overall Federal Budget. Individual forests prioritize implementation of site-specific projects that include the road work, weed control, etc as part of a potential purchaser's contract. The Helena National Forest Plan and management decisions would continue to guide ongoing weed control, planting, thinning, monitoring, road maintenance activities across the Forest. See also the response to letter 5 comment 34 regarding economic analysis for this project.		Nonsignificant issue (3)
49	Haul Route Maintenance	If the roads in Lincoln SP Subdivision are used to facilitate equipment in and out of the area, will they be maintained after the job is finished? or during the process as needed	Haul routes are identified along state, county, or NFS roads. Forest Service use of roads not under FS jurisdiction would require an agreement before use. Road maintenance would be performed in accordance with the terms of these applicable agreements.		Nonsignificant issue (2)
53	Purpose and Need	1. We encourage you, therefore, to consider expanding the project purpose and need to include enhancement of watershed health, fish habitat and water quality.	The decision maker will review the purpose and need to determine if changes are warranted for this project. Project design features and BMPs would be incorporated and evaluated for effectiveness regarding potential effects to soils, water quality and fisheries. Results would be discussed in Chapter 3 in the DEIS.		Nonsignificant issue (1,3)
53	303(d) listed waters	2. It is important that all 303(d) listed waters within the project area be identified. It would appear that activities proposed with the Stonewall Vegetation Project have potential to affect sediment/siltation in the Blackfoot River watershed.	The watershed report will discuss potential effects to 303(d) listed waters as well as evaluate the effectiveness of project design features and BMPs designed to reduce potential effects to watershed resources.		Nonsignificant issue (3)
53	TMDL	3. We recommend that the Helena NF coordinate with MDEQ TMDL program staff to	The watershed report will analyze potential effects to water quality and would be		Nonsignificant issue (3)

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		assure consistency of proposed Stonewall Vegetation management actions with TMDLs and Water Quality Plans prepared by MDEQ	summarized in Chapter 3 in the DEIS.		
53	Roads	4. The NOI states that the proposed action may include five miles of roads. We encourage minimization of new road construction as much as possible, particularly permanent new roads, and location of any needed new roads away from streams and riparian areas.	No new permanent roads are proposed. The new roads proposed in this project would be obliterated following timber harvest.		Nonsignificant issue (3)
53	Logging Systems	5. We also encourage use of timber harvest methods that minimize ground disturbance (e.g., skyline, helicopter, and logging during winter on snow or frozen ground)...	Units proposed for treatment would be evaluated for accessibility for removal method and discussed in the DEIS. Logging during winter on snow or frozen ground may occur. Effects to soils and watershed would be discussed in Chapter 3 in the DEIS.		Nonsignificant issue (3)
53	Restoration	6. ...inclusion of watershed rehabilitation activities such as road obliteration, road BMP upgrades road drainage improvements, revegetation, stream and bank stabilization, and other watershed restoration activities as much as possible.	Project design features would include applicable BMPs to reduce impacts to water quality. Effects to watershed resources would be discussed in Chapter 3 in the DEIS with further detailed analysis available in the watershed and fisheries reports filed in the project record.		Nonsignificant issue (3)
53	Vegetation Management	7. EPA generally favor understory thinning from below, slashing and prescribed fire treatments for managing vegetation to reduce fuels and fire intensity, as well as address forest insect, disease and other forest health issues, with retention of large, healthy, fire resistant trees, particularly retention of declining tree species (e.g., Ponderosa pine, whitebark pine, aspen), and retention of adequate snags and woody debris to maintain wildlife habitat and soil productivity.	Thank you for your support.		Nonsignificant issue (4)
53	Fuels Reduction in the WUI	8. We are supportive of efforts to reduce hazardous fuels and fire risks in Wildland Urban Interface (WUI) areas near homes and structures where there is high fire risk, and to reduce wildfire intensity.	Thank you for your support.		Nonsignificant issue (4)

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53	Maps	9. A good watershed map showing streams, lakes, wetlands and other surface waters in the project area in relation to proposed actions should be included in the DEIS to allow clear understanding of water quality impacts.	The proposed action maps included watershed features. The project design features would include applicable BMPs to reduce impacts to water quality. Effects to watershed resources would be discussed in Chapter 3 of the DEIS.		Nonsignificant issue (3)
53	Adaptive Management	10. We particularly support the need for monitoring and evaluation and incorporation of principles of adaptive management in the alternatives, and highly support strategies that maintain and/or restore watershed condition and water quality to fully support beneficial uses.	Monitoring expectations would be discussed in Chapter 2 of the DEIS.		Nonsignificant issue (3)
53	Collaboration	11. If there are local groups focusing on watershed/ecosystem recovery, we encourage the Forest Service to consider including a watershed or ecosystem restoration alternative for detailed evaluation, or at least to include watershed/ecosystem restoration elements in the reasonable alternatives.	The Stone Dry watershed assessment was considered when developing the proposed action for the project. The purpose and need includes a restoration element. The proposed action addresses restoration of vegetative composition and structural diversity elements. Effects to vegetation and watershed resources would be analyzed in the silviculture and watershed specialist reports and would be summarized in Chapter 3 of the DEIS.		Nonsignificant issue (3)
53	Connected Actions	12. Also, if there are any proposed nearby actions or adjacent developments that are closely related to the proposed action it would be appropriate to analyze and discuss those related developments as a connected action (40 CFR 1508.25).	See response to letter 5 comment 13 regarding consideration of cumulative effects.		Nonsignificant issue (3)
53	Mitigation	13. Mitigation measures should be discussed in sufficient detail, rather than merely listed, in order to ensure that potential detrimental environmental effects and measures to mitigate those effects have been fairly evaluated.	The project design features would be discussed in Chapter 2 of the DEIS and the effects considered in the various resource discussions in Chapter 3 of the DEIS. Effectiveness of design and mitigation would be evaluated.		Nonsignificant issue (3)
53	Monitoring	14. Monitoring plans are also needed for measuring the effectiveness of the mitigation measures (quantitatively-if possible, and/or a qualitatively), and determining the need for	Monitoring would be discussed in Chapter 2 of the DEIS and anticipated results a discussed in Chapter 3.		Nonsignificant issue (3)

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		modifying mitigation.			
53	Cumulative Effects	15. NEPA requires that cumulative impacts be addressed as a summary of the individual impacts of this and all other past, present, and "reasonably foreseeable" future projects, including activities on private adjacent land irrespective of what agency/entity has decision-making authority or analysis responsibility.	See response to letter 5 comment 13 regarding consideration of cumulative effects.		Nonsignificant issue (3)
54	Fuels Reduction in the WUI	1. The trees above Lincoln Springs on Lone Point Road are also dead and need logging to prevent burning homes.	These would be included to the extent possible.		Nonsignificant issue (3)
55	Haul Route	1. I am all for this project; but wonder if we will see haul trucks in Lincoln Gulch using our roads. My concern would be dust, speed of trucks, and general concern for our kids.	Thank you for your support of the project. Project design features include safety signing of roads when trucks are hauling and dust abatement measures, as needed, for air quality and public safety.		Nonsignificant issue (3)
57	Prescribed Burning Safety	1. Concerned about the close proximity to private property of at least one of the prescribed burn areas. Quite close to private residences.	<p>A prescribed fire burn plan would be prepared for all burn units prior to burning and would identify the range of conditions appropriate for implementing the burn.</p> <p>Risk management is a foundation for all prescribed fire activities. Risk and uncertainties relating to prescribed fire activities are analyzed, communicated and managed as they relate to conducting or not conducting the activity. A complexity analysis is done for each prescribed fire plan. Identified risk are analyzed and then mitigated. If risks factors are identified with a "high" rating, they would be documented and discussed in the Complexity Rating Rationale of the fire plan.</p> <p>Prescribed fire prescriptions would be defined showing a range of conditions during which a prescribed fire may be ignited. The plan prescription will describe a range of low to high limits for the environmental parameters (weather, topography, fuels, fire behavior (flame length, rate of spread, spotting)) are required to meet the RX fire plan objectives</p>		Nonsignificant issue (3)

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			while also meeting smoke and control objectives. Additional elements included in prescribed fire plans: (list is not all inclusive) contingency resources are identified, expected weather and fire behavior, ignition plan for the burn unit as well as a plan for holding the fire once ignited.		
58	Motorized Recreation Opportunities	1. Our first concern is that no existing motorized roads and trails should be closed as part of the proposed action. 2. Our second concern is that this area is ideal for motorized, multiple-use recreation. To adequately address this issue, we request that an alternative be considered that would provide new OHV routes in the area beyond those currently existing.	See response to letter 26, comments 1 to 7.		Nonsignificant issue (1)
59	Support for the project	1. The sooner this gets taken care of the safer the valley and town of Lincoln would be	Thank you for your support		Nonsignificant issue (4)
62	Noxious Weeds	1. I would like to make sure that with the entire Stonewall Vegetation Project a weed control plan would be in place for the entire area after the project.	See response to letter 5 comments 2 through 5 and 29 regarding noxious weeds.		Nonsignificant issue (3)
63	Firewood	1. Firewood access?	The project design features include forest-wide standard for firewood (Forest Plan p. 11/24).		Nonsignificant issue (2)
63	Recreation Facilities	2. Money left over to improve roads and trails and establish campgrounds	Allocation of 'left over' funds to improve facilities is outside the scope of this analysis. Some of these suggestions are already incorporated into the design of this proposal e.g. road improvements for haul.		Nonsignificant issue (1)
64	Project Design	1. No trespassing on private property. Respect fences for livestock containment. No damage to, or repair if damaged	Project design features would include measures to protect existing livestock management fencing, or repair if damaged during operations.		Nonsignificant issue (3)
66	Forest Plan Amendment	1. It seems like extensive Forest Plan amendments would be required to implement the project, amendments that were not identified in the scoping notice.	The Forest Plan direction was considered when developing the proposed action. Design features would be incorporated to meet or move towards Forest Plan desired conditions. Upon review of updated information it was determined a site-specific forest plan		Nonsignificant issue (2,3)

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			amendment is needed to address noncompliance with elk habitat standards.		
66	Lynx Habitat	<p>2. There is no discussion as to why this project will restore habitat for the lynx, so the purpose of the project is quite confusing. The agency needs to define what the current problem is with lynx habitat, and why logging and burning will improve and/or restore its value to the lynx.</p> <p>27. This project will result in extensive destruction of lynx habitat, from burning to commercial harvest to pre commercial thinning. Please complete formal consultation with the USFWS.</p> <p>28. The Forest Plan Amendment for lynx prohibits thinning of structurally diverse lynx habitat, as well as young plantations that provide hare habitat. Is the Forest Service planning on completing Forest Plan amendments to allow this project?</p>	<p>The proposed action includes a mix of treatments designed to: reduce the risk of wildfire, restore Forest System Land that has been affected by large-scale insect-caused mortality, and improve forest sustainability by increasing species diversity and promoting fire tolerant species/communities.</p> <p>Potential impacts to lynx would be identified and evaluated in the BA. All activities would be consistent with the 2007 Northern Rockies Lynx Management Direction (USDA Forest Service 2007), which ensures that the conservation and recovery of lynx in the Northern Rockies ecosystem is maintained, that all activities comply with applicable laws and policy and that standards and guidelines are in place that reduce impacts, while maintaining lynx habitat. Further, Section 7 consultation with the USFWS would be completed prior to any decision. Effects to lynx habitat would be analyzed in the biological assessment and would be disclosed in Chapter 3 of the DEIS.</p>	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
66	Wildlife: Road Density and Forest Plan Direction specifically regarding Grizzly Bear Habitat. Elk is mentioned.	<p>3. In particular, what are the goals for open and total road densities during project implementation, in order to avoid displacement of any bears using this habitat?</p> <p>4. Please include a discussion in the draft NEPA document regarding how the Forest Plan direction for the grizzly bear, which originated in 1986, or over 20 years ago, has been evaluated as per effectiveness and relevance. It seems like some updating may be needed for management of this threatened species.</p> <p>5. Please include a description of open road densities DURING project implementation, and define how this will affect habitat effectiveness levels of wildlife, from elk to the</p>	<p>Potential effects to grizzly bear and other threatened, endangered and sensitive species were considered early during project design. Effects of roads on grizzly bears, including definitions of and an assessment of total and open road densities and effects to bears and their habitat, including whitebark pine, would be fully evaluated in the Biological Assessment and summarized in Chapter 3 of the DEIS.</p> <p>Open and total road density during implementation and post implementation would be analyzed. New roads would be obliterated immediately following timber harvest and all roads that are currently closed would remain closed to general traffic during project implementation.</p>	Alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue 1

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		<p>grizzly bear.</p> <p>38. Please define what condition new roads will have to be in order not to count towards the total motorized access route density for grizzly bear habitat</p> <p>6. Please map all current hiding cover and thermal cover for both the current and proposed levels, and define what percentage of the landscape these currently and will comprise in the future.</p> <p>7. Please evaluate and map elk security cover as per the Hillis et al. (1991) criteria, which includes both cover and motorized routes, and discuss how this project will affect elk and deer vulnerability.</p>	<p>The amount and location of and effects to elk hiding, thermal and security cover would be analyzed and discussed under the wildlife section in Chapter 3 of the DEIS.</p> <p>Upon review of updated information it was determined a site-specific forest plan amendment is needed to address noncompliance with elk habitat standards. Roads are managed in a manner to maintain big game capability and hunting opportunity. Elk security per the Hillis et al. criteria would be analyzed and discussed under the wildlife section in Chapter 3 of the DEIS</p>		
66	Old Growth	<p>8. Please provide an inventory for old growth habitat as per Green et al. (1992), and define how the Forest Plan direction would be met.</p> <p>9. Please define how the old growth plan for this landscape will ensure viability of associated species, including the goshawk, pine marten, and various bird species of conservation concern as per the Montana Natural Heritage Program.</p>	<p>Old growth would be discussed in the vegetation and wildlife specialist reports and would be summarized in the respective sections in Chapter 3 of the DEIS. The silviculture and wildlife reports will clarify and describe how and what information would be used under their respective methodology sections.</p>	<p>A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.</p>	<p>Significant issue #1</p>
66	Migratory Songbirds	<p>10. Please define how this project will incorporate the Chiefs directive on conservation of migratory songbirds.</p>	<p>Effects to migratory birds would be analyzed in the wildlife specialist report and would be summarized in Chapter 3 of the DEIS.</p>	<p>A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.</p>	<p>Significant issue #1</p>
66	Restoration:	<p>11. It is not clear why the agency has</p>	<p>Support for the purpose and need, including</p>		<p>Nonsignificant</p>

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	Fire and Wildlife	<p>determined that fire has been excluded from this landscape, and that logging and burning will constitute "restoration." Please provide the current science that both supports and refutes this contention, as it is clearly a controversial assumption upon which the entire project is based.</p> <p>12. Please refer to the recent publication by Baker, 2009, regarding fire ecology of the Northern Rocky Mountains, in your discussion on the restoration needs of your project.</p> <p>18. What data did the working group use to determine that wildlife habitat problems exist that would be corrected with logging and burning?</p> <p>19. It seems like the restoration efforts do not specifically address wildlife habitat. Why is this?</p>	<p>that of restoration would be discussed and displayed in project specialist reports and other associated documents. The Fire Regime Condition Class (FRCC) analysis provides reference and desired conditions for vegetation in terms of fire return intervals and composition. The Forest Plan standards are the basis of wildlife desired habitat needs as compared to the habitat existing condition. Methodology and assumptions used in this analysis and used in the development of the proposal would be clarified in the wildlife methodology section in the specialist's report and would be summarized in Chapter 3 of the DEIS.</p>		issue (3)
66	Management Indicator Species	<p>13. Please define the conservation strategies that would be implemented for Helena Forest management indicator species, including the goshawk, pine marten, and pileated and hairy woodpeckers.</p>	<p>Effects to these species, including conservation strategies and project design features would be discussed in detail in the Biological Evaluation (BE) (goshawk, pine marten, etc.) and would be summarized in the wildlife section of Chapter 3 in the DEIS.</p>	<p>A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.</p>	Significant issue #1
66	Wildlife Surveys	<p>14. Please define the level of wildlife inventories that would be completed for this project, as well as their reliability in locating occupied breeding habitat for MIS, sensitive species, and species of special concern.</p>	<p>The wildlife analysis process, including inventories and monitoring would be discussed in the wildlife report, BA and BE, and summarized in the wildlife section of Chapter 3 of the DEIS.</p>		Nonsignificant issue (3)
66	Snag Management	<p>15. Please define the specific snag management strategy for each treatment type, including post-logging snags immediately after logging, and how long-term</p>	<p>Stand and landscape level changes to dead wood, including snag retention and recruitment of future snags and applicable snag management protocols would be discussed in</p>		Nonsignificant issue (3)

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		<p>recruitment of snags would be maintained</p> <p>16. Please define what the management strategy would be for snags, whether it is the Helena Forest Plan or the Northern Region Snag Management Protocol.</p> <p>17. Please define why snag habitat needs to be restored in this landscape, and how this would be accomplished.</p>	<p>the wildlife report and summarized in the wildlife section of Chapter 3 of the DEIS.</p> <p>Project design features would be incorporated to ensure activities are consistent with Forest Plan direction related to snags and downed woody debris.</p>		
66	WUI	<p>20. Please map the wildland-urban interface area, and include the occupied structures that lie within this.</p> <p>33. Please discuss Jack Cohen's work regarding the use of small fuels buffers to protect structures, and how this science would be applied to the current project.</p>	<p>The Wildland Urban Interface was mapped during development of the Tri-County Community Wildfire Protection Plan (CWPP) and is in the project file.</p> <p>Structures are located on private lands, whose management is outside the scope of this project.</p> <p>There are subdivisions with private residences located adjacent to the forest boundary and identified in the "Tri-County Community Wildfire Protection Plan" (CWPP) as wildland urban interface. The stands in close proximity to the forest boundary are proposed harvest treatments. Subdivisions adjacent to the project are categorized as "Very High to High Risk" as identified in the Tri County CWPP.</p> <p>Treatments adjacent to private land are designed to remove dead material to reduce fuel loading on National Forest System lands. The fire/fuels analysis will include a map and discussion of wildland-urban interface. See response to letter 3 comment 3 regarding the fire/fuels analysis.</p> <p>The Forestwide Hazardous Tree Removal and Fuels Reduction Project is being implemented to remove dead trees that pose a hazard along Forest System Roads to provide safer access routes within the project area.</p> <p>A literature review of Jack Cohen's work would be completed and considered during analysis for this project.</p>		Nonsignificant issue (1,3)
66	Forest Health	21. What specific information is available to	The Stone Dry watershed analysis (USDA		Nonsignificant

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		<p>demonstrate that the current watershed conditions are "unhealthy?"</p> <p>22. Please define how forest health is being measured. What are the specific criteria used to define health, and what is the rating system used. Is a forest rated as either "healthy" or "unhealthy," or is there a sliding scale of health? Please identify the health level of each unit that is planned for treatment.</p>	<p>Forest Service 2009) reviewed the existing conditions and the desired conditions identified in the Forest Plan.</p> <p>Existing condition of the vegetation and effects from proposed actions would be discussed in Chapters 1 and 3 of the DEIS. The silviculturist would analyze and discuss the anticipated effects of insect activity in relation to natural endemic levels of insect activity.</p>		issue (3)
66	Roadless Areas	<p>23. There is no map of the inventoried roadless area boundaries. This should be clearly defined.</p> <p>24. If fire has to be restored to roadless lands, it must be demonstrated that fire has been eliminated. Please provide the current best science that demonstrates that the lack of fire in the roadless lands has resulted in a disturbed ecosystem, as define what particular portions of the ecosystem, including wildlife such as the lynx, have been harmed as a result.</p>	<p>The proposed action map would be edited to depict the inventoried roadless boundaries.</p> <p>Past fires and effects to fire/fuels and effects to wildlife would be discussed under silviculture, fuels, and wildlife section in Chapter 3 of the DEIS as well as additional detailed discussions in the respective specialist reports filed in the project record.</p>		Nonsignificant issue (3)
66	Aspen	<p>25. What are the indicator species that are going to be used to define the need for aspen treatments? If no wildlife species are going to be used to justify needs for treatment of aspen, what criteria are these treatments being based?</p> <p>26. Some current science has concluded that aspen are in a natural cycle of conifer encroachment from the last fire cycle, and that a decline in aspen is natural. What information in the project area is being used to suggest that aspen conditions are unnatural at this time, and that treatment is needed for restoration?</p>	<p>Effects to vegetation, including aspen management, and effects to wildlife, including management indicator species would be discussed in the respective specialist reports (silviculture, wildlife) and summarized in Chapter 3 of the DEIS.</p>		Nonsignificant issue (3)
66	Timber Harvest and Past Harvest	<p>29. Please identify all clearcuts, and what their size would be.</p> <p>30. Please map and define the areas of past harvest.</p>	<p>A listing of silvicultural prescriptions and a map of areas of known past harvest recorded in the forest database would be developed and provided in the DEIS. The eight groups of</p>		Nonsignificant issue (3)

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			treatments would be described in Chapter 2 of the DEIS. Exact locations of small clearcuts (under 40 acres in size) would be determined based on actual ground conditions (e.g., mortality present, topography) and would follow treatment prescriptions.		
66	Wildlife regarding bark beetle	<p>31. Please discuss the significant values of bark beetle infestations and spruce budworm infestations to wildlife.</p> <p>32. Please discuss the differences between habitat conditions for wildlife if the beetle-infested forests are left undisturbed, versus if they are clearcut, for both the short and long term.</p>	<p>Effects to wildlife species are discussed in Chapter 3 of the DEIS and further explored in the wildlife report and subsequent BE &amp; BA. Untreated portions of the project area would provide undisturbed habitat for species associated with bark beetle-killed trees (e.g., hairy woodpeckers).</p>	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
66	Roads	<p>34. Please provide a complete inventory of ALL roads in the analysis area, from nonsystem roads, to system roads, to motorized trails, to proposed new temporary roads; include information on how these roads are individually identified (a number), the length of the road/trail in mileage, its current management, whether the road would be opened for the proposed project, whether any roads would be used for public firewood harvest, and the specific time when temporary roads would be closed after project completion.</p> <p>35. Please define the long-term need for the temporary roads that would be constructed for this project.</p> <p>36. Please identify what the difference would be between new temporary roads constructed for this project, versus old logging roads that are still in use or would be used for this project. Why won't new roads also be needed for future management?</p> <p>37. Please address the fragmentation</p>	<p>The existing road information and roads needed for the proposal would be discussed in Chapters 1 and 3 in the DEIS.</p> <p>Existing routes would be used wherever possible to minimize additional impacts. New roads that would be obliterated following timber harvest were identified by forest specialists where needed to support the actions proposed with this project. The new roads that would be obliterated immediately following timber harvest are not anticipated to be needed for management actions after this project. No change to the permanent forest transportation system is proposed with this project. Effects from new roads that would be obliterated following timber harvest would be considered in the resource analyses in their individual reports and summarized Chapter 3 of the DEIS, including fragmentation impacts on wildlife species.</p>		Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(les)
		impacts of any new roads.			
67	Support for the Project	1. I believe this to be a great idea	Thank you for your support.		Nonsignificant issue (4)
67	Prescribed Burning Safety	2. I do have a concern about controlled burns...I would appreciate see more firefighters present at the time of burn as assurance of a containable situation should sudden winds or other agents cause spread in a dangerous way. 3. Ensure that all structures are insured to full replacement if anything should go wrong.	Burn plans would be prepared for each proposed unit and would be designed to be consistent with the Forest Plan. Insuring structures for full replacement is outside the scope of this analysis.		Nonsignificant issue (1,2)
68	Support for the Project	1. The LWG and FS have done a great job in addressing all of the issues and concerns. The EIS should be comprehensive and easily implemented as a result.	Thank you for your support		Nonsignificant issue (4)
68	Willow in Riparian	2. Willows were not indicated by name as seral species. If they are, and would be replanted where burned or in any [ripped or riparian] areas, may I suggest the use of a [stinger or auger?] mounted on the front of a backhoe. This would be quick, successful and inexpensive and allow planting of rootless willow slips up to 6-feet-long.	The effects of the proposed treatments on willow would be discussed in the silviculture and botany specialist reports. The project would follow Forest Plan guidelines for riparian protection. At this time, no treatments are proposed in riparian areas with willow, and no planting of "upland" willow is proposed.		Nonsignificant issue (3)
69	Prescribed Burning Safety	1. Ms Kamps, my name is Greg Brittain. I own the cabin and 40 acres just off Sucker Creek Road that is in sector 6 on your map. I am just below Doc Shields place. I am currently serving overseas and am unable to get to Lincoln until summer. Will precautions be taken to ensure that these burns do not spread beyond their intended areas? Thanks a lot!!	Mr. Brittain was contacted to clarify that precautions would take place to keep the prescribed fire where proposed. Additional information was provided and Mr. Brittain is on the mailing list to receive more project information.		Nonsignificant issue (3)
70	Prescribed Burning Safety	1. Could be dangerous to those living in the Lincoln Gulch area if there are not enough people at the prescribed burns with enough fire suppression equipment.	See response to letter 57, comment 1 pertaining to burn plans.		Nonsignificant issue (3)
70	Economics	2. I don't see how you are going to get much from large commercial harvest sales. ...open the sales to small loggers in 10-20-acre	An incremental economic analysis would be completed and would be discussed in Chapter 3 of the DEIS.		Nonsignificant issue (1,3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(les)
		sales. Large companies can bid more than one sale. ...this would allow all local loggers to bid. Most of the timber slated for removal is not economically or commercially valuable, especially to big logging operators.	Designating contract type is outside the scope of this analysis and combinations of "Sale" packages would be evaluated if an action decision is made.		
71	Project Design	1. First, we respectfully request that the Stonewall Vegetation Project be designed and implemented consistent with the MFRC Principles as well as all existing environmental laws and regulations including the Roadless Area Conservation Rule. Second, we ask that this project be designed consistent with the requirements of the National Forest Management Act, the Forest Landscape Restoration Act and the Collaborative Forest Landscape Restoration Program (CFLRP) Field Guide to ensure maximum eligibility for forest restoration funding.	This project has been designed to comply with the Forest Plan, applicable laws, regulation and policy. Funding of implementation is outside the scope of the environmental analysis, but is considered in the economic analysis discussed in Chapter 3 and other laws and regulations sections of the DEIS.		Nonsignificant issue (2,3)
71	Project Design	2. For each stand that is proposed for treatment, either by USFS or LRC, please describe the agency's perspective on current stand condition, the stand's specific restoration need(s), how the proposed treatment meets these needs, the ecological basis for each treatment, the desired restoration outcome(s) and what monitoring measure(s) you will employ to determine whether and to what extent the restoration needs have been met.	Information for each proposed treatment unit has been collected. A series of formal stand exam plots has been established to be used in characterizing the current condition and would be used to estimate expected changes due to treatments using the Forest Vegetation Simulator, a forest modeling program.		Nonsignificant issue (3)
71	Monitoring	3. We would also like to see both implementation and effectiveness monitoring with a defensible statistical design including repeated sampling of plots or transects before and after treatment applications. This type of monitoring is laid out in the MFRC principles (principles 2 and 4).	Monitoring would be discussed in chapter 2 of the DEIS.		Nonsignificant issue (3)
71	Collaboration	4. We strongly encourage you to explore the possibility of a monitoring partnership between the Lincoln Ranger District and the	Partnerships for monitoring would be considered as opportunities arise for the forest. Developing these partnerships is		Nonsignificant issue (1)

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		University of Montana’s College of Forestry and Conservation.	outside the scope of this analysis.		
71	Restoration	5. To ensure maximum consistency with the Montana Forest Restoration Principles, please explain how each of the proposed silvicultural treatments qualify as “restoration” with respect to the MFRC principles	The effects of silvicultural treatments and how they would be accomplishing the purpose and need for the project, which includes restoration objectives would be discussed in the silviculture specialist report and summarized in Chapter 3 of the DEIS. This discussion would include MFRC principles.		Nonsignificant issue (3)
71	Silviculture	6. Regarding the regeneration harvests of Project 1, it does not appear that these treatments are consistent with either the MFRC principles or the requirements of CFLRP. Please describe the specific goals of regeneration treatments described in Groups 3 and 4 and their relevance to the Montana Forest Restoration Principles. Assuming these treatments are designed to enhance stand replacement, please explain what the expected or desired species composition of the next stand would be, how this is consistent with the Montana Forest Restoration Principles and how the next stands would be managed.	The effects of regeneration treatments and how they would be accomplishing the purpose and need for the project, which includes restoration objectives would be discussed in the silviculture specialist report and would be summarized in chapter 3 of the DEIS. This discussion would include MFRC principles.		Nonsignificant issue (3)
71.	Silviculture Mountain Pine Beetle Adaptive Management	7. ...we would like to know whether it is possible to leave large patches (1 to 5 acres) of uncut forests within the regeneration harvests. Through rigorous monitoring efforts, these patches could be used to monitor how stands regenerate following MPB mortality compared to regeneration harvests. While there is much area with MPB mortality in the surrounding areas, a robust design could be used as part of understanding species responses to treatments. We believe that this type of study is consistent with the ‘adaptive management’ principle adopted by MFRC and with language in the CFLRP Field Guide.	Effects to vegetation, including proposed reforestation planting, would be analyzed in the silviculture specialists report and summarized in Chapter 3 of the DEIS.		Nonsignificant issue (3)
71	Silviculture Reforestation	8. At sites where trees would be planted, what species of trees would be planted, at	Effects to vegetation, including proposed reforestation planting, would be analyzed in		Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(les)
		what density, and from what population or nursery will the seedlings originate? Please explain why the chosen mix of seedlings is used and how the chosen mix will facilitate meeting future stand conditions that fit our restoration principles.	the silviculture specialists report and discussed in Chapter 3 of the DEIS.		
71	Roads	9. Please explain how, when and to what standard the temporary roads would be decommissioned and restored, and how this would be monitored.	See response to letter 3 comment 12 regarding new roads that would be obliterated immediately following timber harvest.		Nonsignificant issue (3)
71	Noxious Weeds	10. Please explain how invasive plant species would be managed should they invade the temporary roads or treatment areas following implementation, and how invasive species would be monitored.	See response to letter 5 comments 2,3,4,5 and 29 regarding noxious weeds.		Nonsignificant issue (3)
71	Prescribed Burning Slashing	11. Please explain and clarify the use of “slashing” with prescribed burning activities, and explain what slashing prior to prescribed burning achieves.	In prescribed burn units, slashing (cutting of small diameter material and spreading it on the ground), is identified in areas to help achieve desired results where adequate fuels may not currently exist on the ground.		Nonsignificant issue (3)
71	Prescribed Burning Severity	12. Please use and reference appropriate fire models to analyze treatments, and then clearly state how treatments would change fire behavior across the Stonewall Vegetation Project area. Utilize a fire severity description for each habitat to be treated in these proposals that describe how the treatments will mimic the natural fire impacts for low, mixed and lethal fire regimes.	See response to letter 3 comment 3 regarding fire/fuels analysis.		Nonsignificant issue (3)
71	Prescribed Burning and Silviculture Fire Intensity	13. Identify stands or treatment areas that can be brought back into the naturally projected fire intensity levels either by using silvicultural treatments or prescribed fire.	The effects of stand treatments on proposed treatment units and how those effects relate to achieving the stated purpose and need, which includes “creating conditions that allow the reestablishment of fire as a natural process on the landscape” would be discussed in the silviculture and fuels specialists’ and would be summarized in Chapter 3 of the DEIS.		Nonsignificant issue (3)
71	Prescribed Burning	14. Please outline the steps you will take to ensure that prescribed burning does not	Project design features identify measures to be taken to ensure conifer mortality is within		Nonsignificant issue (3)

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	Mortality of large trees	increase mortality of large trees in the project area. For example, if duff is thick and roots are shallow, even low severity fire can kill large trees and you might consider timing burning to ensure that only the top of the duff is burned, slash pull back or even raking the duff from away from the bole root collar.	an acceptable range. Individual trees may be protected by clearing brush and slash around the base of selected trees.		
71	Restoration	15. Given that many of the large trees are missing, take into account the need to restore the large Ponderosa pine population.	Part of purpose and need is to “enhance & restore aspen, western larch, and ponderosa pine species and habitats.” The silviculture specialist report will discuss forest type and stand conditions and other project records will identify stands that have lost their large ponderosa pine component due to recent bark beetle mortality and how proposed treatments are anticipated to push the stands toward restoring that component.		Nonsignificant issue (3)
71	Prescribed Burning “Prescribed Mixed Severity Fire”	16. Regarding “Prescribed Mixed Severity Fire” we request the development of clear objectives for achieving a mixed severity fire. We would like you to describe what response you expect in terms of post-fire stand structure and landscape structure.	Treatment objectives would be discussed in the Silviculture and fuels specialist and summarized in Chapter 3 of the DEIS. The objectives of the mixed severity units are to create openings between 10-75 acres resulting in the breakup of continuous vegetation in higher elevations, promote age class diversity and enhance white bark pine habitat by creating openings suitable for regeneration.		Nonsignificant issue (3)
71	Stone Dry	17. ...regarding the Stone Dry portion of the project as described in your recent scoping notice, we believe that the activities you envision for this area could be consistent with the Montana Forest Restoration Principles, especially Principles 5 and 6 which are included here for your reference: <i>5) Reestablish fire as a natural process on the landscape</i> <i>6) Consider social constraints and seek public support for reintroducing fire on the landscape</i>	Thank you for your support.		Nonsignificant issue (4)
72	Native Fish	1. ...it is unclear if the project would	Effects to fisheries would be discussed in the		Nonsignificant

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	Habitat	adversely influence cutthroat trout (and bull trout) habitat; however, the project appears to have this potential given the scale and nature of the project. As the project moves forward, it would be important to ensure that special riparian protection measures are appropriate to protect riparian values associated with native fish habitat.  This would include maintaining appropriate riparian buffers as part of the larger project, to offset potential effects from possible upland disturbance. There may also be opportunities to correct historical problems--related to streams--within the footprint of the project (e.g., replacing undersized culverts). If so, perhaps this project could provide a mechanism to correct any such problem.	fisheries report and in Chapter 3 of the DEIS. Project design features would include INFISH direction to provide appropriate resource protection. INFISH direction would be met.		issue (3)
73	Support for the Project	1. The Tri-County Fire Safe Working Group supports the Stonewall Vegetation Project because it will reduce the risk of a catastrophic wildfire in the Lincoln area.	Thank you for your support.		Nonsignificant issue (4)
74	Big Game	1. How will big game winter range be affected?	Effects to big game winter range would be analyzed in the wildlife report and summarized in Chapter 3 of the DEIS.	A potential alternative 3 was developed to reduce potential impacts to various wildlife habitat elements. This alternative and anticipated effects would be discussed in the DEIS.	Significant issue #1
74	Grazing	2. How will livestock grazing be managed?	There are no changes proposed to the existing livestock management. Effects to livestock grazing would be discussed in chapter 3 of the DEIS with more detailed discussion in the range specialist report.		Nonsignificant issue (3)
74	Harvest	3. How many green trees would be removed?	Effects to vegetation would be discussed in Chapter 3 of the DEIS. Providing an estimate		Nonsignificant issue (3)

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			of green trees to be removed is not anticipated to be specifically identified, particularly with the ongoing insect mortality.		
74	Economics	4. What will this cost the taxpayers?	The results of an incremental economic analysis would be disclosed in Chapter 3 of the DEIS.		Nonsignificant issue (3)
74	Noxious Weeds	5. Do you have a plan to deal with weeds?	Noxious weed treatments are ongoing across the Forest. Noxious weed treatments would continue with this project. Project design features would be incorporated to reduce potential for spread of noxious weeds.		Nonsignificant issue (2,3)
74	Visuals	6. What are the visual impacts?	Effects to visual resources would be analyzed and VQO forest plan compliance would be disclosed in chapter 3 of the DEIS.		Nonsignificant issue (3)
74	Private lands	7. What are the private landowners doing to make their property more firesafe?	Management of private lands is beyond the scope of this project. However, any identified private land activities would be accounted for in cumulative effects analysis in the affected resource(s).  Private landowners are working in cooperation with Federal and State agencies in managing lands to move toward the goals identified the Community Wildfire Protection Plan and the goals for the Southwest Crown of the Continent areas.		Nonsignificant issue (1)
75	General Project Design	1. I have nothing to add to the proposal. I agree with the practices being discussed to use on this project, as long as they are used wisely and not to the extreme-the most minimum effective way to get the job done, leaving as much authentic beauty around Lincoln. Heavy on conservation and restoration.	Thank you for your support.		Nonsignificant issue (4)
75	Timber Harvest	2. I'm worried about how much timber is cut out and where. The last time they cut around us it created a severe wind tunnel, blowing down dozens of my trees ...	Proposed treatments would be discussed in Chapters 1 and 2 in the DEIS. Proposed action treatments were developed following Forest Plan and regional guides to ensure treatments are appropriate for the stand types and conditions present. The project design features		Nonsignificant issue (1, 3)

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			<p>may include feathering along private lands to blend with the vegetation to avoid creating abrupt visual lines.</p> <p>Thinning of any kind would increase air movement through forest canopies. In units where trees are proposed to be “thinned” the increase wind movement would be relatively moderate due to the remaining tree canopies. The greatest increases would be in regeneration units, however even in the regeneration units trees would remain to provide shelter and seed, moderating winds. Also, regeneration units would be patchy, with patches of heavy mortality being regenerated and patches of healthy trees of a desirable species being retained and thinned as needed. Any modifications of treatments to prevent wind impacts on concerned landowners can be discussed, as long as the locations where the concerns are known. The effects of those medications on achieving the purpose and need could then be discussed.</p>		
75	Prescribed Burning Safety	3. The wind problem also concerns me in the burning process of this project; it is very gusty around us and unpredictable. How well will the burning be managed is a concern.	<p>A prescribed fire burn plan would be prepared for all burn units prior to burning and would identify the range of conditions appropriate for implementing the burn.</p> <p>Risk management is a foundation for all prescribed fire activities. Risk and uncertainties relating to prescribed fire activities are analyzed, communicated and managed as they relate to conducting or not conducting the activity. A complexity analysis is done for each prescribed fire plan. Identified risk are analyzed and then mitigated. If risks factors are identified with a “high” rating, they would be documented and discussed in the Complexity Rating Rationale of the fire plan.</p> <p>Prescribed fire prescriptions would be defined showing a range of conditions during which a prescribed fire may be ignited. The plan prescription will describe a range of low to high</p>		Nonsignificant issue (3)

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			limits for the environmental parameters (weather, topography, fuels, fire behavior (flame length, rate of spread, spotting)) are required to meet the prescribed fire plan objectives while also meeting smoke and control objectives. Additional elements included in prescribed fire plans: (list is not all inclusive) contingency resources are identified, expected weather and fire behavior, ignition plan for the burn unit as well as a plan for holding the fire once ignited.		
75	Prescribed Burning Air Quality	4. The extent of the burning, when and where and how long could cause heavy smoke creating breathing problems for the nearby residence.	See response to letter 1 comment 3 pertaining to air quality.		Nonsignificant issue (3)
75	Restoration	5. Conservation and restoration need to play a big part in this project. The steep hillsides need great consideration and the streams and springs. We rely on Stonewall Creek for irrigation and a spring for a source of water to the cabins. These sources would have to be protected from damage or change.	Project design features and applicable best management practices would be listed in the DEIS.		Nonsignificant issue (3)
76	General Design of the Project	1. More details on what you are going to do	The proposed actions and alternatives, including project design features, would be discussed in chapters 1 and 2 of the DEIS. The applicable BMPs would be included in the DEIS,		Nonsignificant issue (3)
77	Identify the Project Area	1. Based on the maps provided in the scoping package, it is difficult to determine if this project lies near the CDNST or any of the project activities would be visible from the CDNST in the area. CDTA requests that the CDNST proximity to or location within the project area be identified.	The project vicinity map has been revised to include the CDNST for reference. There are no activities proposed from this project within a 5 mile radius of the CDNST (CDNST Plan 2009)		Nonsignificant issue (1)
77	Visuals	2. ... activities should only take place within the CDNST corridor in a manner that is consistent with Trail values expressed in the CDNST Comprehensive Plan and when they are consistent with the Scenery Management System Objectives for the CDNST. Therefore,	There are no activities proposed from this project within a 5 mile radius of the CDNST. (CDNST Plan 2009) VQO compliance is addressed using VMS and summarized in chapter 3.		Nonsignificant issue (3)

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		CDTA recommends the use of the Scenery Management System and the consultation of the CDNST Comprehensive Plan direction (2009) for assessing impacts of the Stonewall Vegetative Management Project on the CDNST.	A crosswalk between the VMS and SMS would be included in the visual resource report that would be available in the project record.		
77	Visuals	3. Specifically, CDT A requests that if the Trail lies within the project area, that careful attention be paid to the foreground zone (or Trail Corridor) and activities that may be seen from the Trail have the potential to negatively impact the Trail Users experience. We suggest the use of small group selections/thinning activities, and/or feathering of vegetation to soften the edges of any management activities that remove vegetation from the area. We would also like to discourage the any commercial harvesting activities within the CDNST corridor. For activities that occur beyond the Trail corridor, but are visible from the Trail. We request that careful attention be paid to minimize impacts to the visual aesthetic of the area. Again we suggest the use of feathering, small group selections/thinning, and careful use of fire in these areas to address management concerns.	There are no activities proposed from this project within a 5 mile radius of the CDNST. Forest plan compliance would be determined using VMS per forest plan direction. VQO forest plan compliance of the project area from the CDNST would be addressed in the visual resource report and summarized in chapter 3 of the DEIS.		Nonsignificant issue (3)
78	Timber Harvest	1. We believe the mature timber should be logged. Also, the beetle infested timber needs to be salvaged rather than left to waste and catch fire causing more problems.	Thank you for your support of the proposal.		Nonsignificant issue (4)
78	Roadless	2. We would like to see more roadless areas.	See response to letter 5 comments 24 and 25 regarding roadless.		Nonsignificant issue (1)
78	Roads	3. We support closing more roads on public land in an effort to control damage to both public and private deeded lands.	See response to letter 5 comment 14 regarding the ongoing travel management analysis.		Nonsignificant issue (1)
79	Prescribed Burning	1. Air quality for the Lincoln community from prescribed burning.	See response to letter 1 comment 3 regarding air quality impacts.		Nonsignificant issue (3)

Letter #	Topic	Comment	Response	Alternative	Issue # Or Category(ies)
	Air Quality				
79	Loss of value from wood products	<p>2. Loss of value from burning wood products.</p> <p>3. Would request that no control burning take place. Chip only, lop and scatter limbs where equipment depressions are left and terraced for rain runoff and quicker nutrient base for remaining trees. Trees that are not sold should be stored on ranger district property for proposals to use for pellet startup company, firewood sales or siding production.</p>	<p>The no action alternative would include no controlled burning.</p> <p>The forest plan identifies prescribed burning as an appropriate tool for vegetation and fuels management (pages 11/33 – 34), and burn proposals would be completed following the Forest Plan Fire Management Plan direction in place at the time of implementation.</p> <p>Many of the proposed prescribed fire units are located in the Inventoried Roadless Areas (IRAs) where timber management is currently uneconomical or environmentally infeasible. Timber harvest is not proposed in the IRAs (management area M1).</p> <p>Forest Plan standard Firewood 2. Logging areas would be open to public firewood gathering after the sale is closed and prior to burning logging debris and closing roads, if wood is available and other resource values, such as wildlife snags, down logs, and soils, can be protected.</p> <p>An alternative was considered that would not use prescribed fire in management areas T1 through T5. This alternative would not address the purpose and need to modify fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape. Due to not addressing this purpose and need this alternative was eliminated from detailed analysis. This would be disclosed in Chapter 2 of the DEIS.</p>	<p>Alternative considered but eliminated from detailed analysis, this would be discussed in Chapter 2 of the DEIS.</p>	<p>Nonsignificant issue (2),3</p>
80	Support for the Project	<p>1. Do what is needed</p>	<p>Thank you for your support</p>		<p>Nonsignificant issue (4)</p>

## **Appendix B – Proposed Treatment Descriptions and Silviculture Summary**

## Treatment Type and Prescription Descriptions

**Improvement Cut, Underburn** - An improvement cut is an intermediate harvest that removes the less desirable trees of any species in a stand of poles or larger trees, primarily to improve the composition and quality. These treatments would generally be ‘from below’ to favor retaining larger trees over smaller trees, however, thinning regimes would favor retaining smaller trees of a more desirable species over larger trees of a less desirable species, and would favor keeping smaller, healthier trees over larger, damaged or diseased trees. The species preference for retention would be aspen, western larch, ponderosa pine, Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir in descending order. Trees would be thinned to an average spacing of 20 to 40 feet (109 to 27 TPA), but spacing could vary widely. Thinning would be by hand and/or machine. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns (e.g., snag and downed large woody debris requirements) would be removed for utilization. Following thinning, the units would be underburned, which are “Prescribed burns of low intensity covering a majority of the burn unit consuming surface fuels, but not the overstory canopy.”

**Improvement Cut, Jackpot burn** – The improvement cut would be as described previously. The thinning would be followed by a jackpot burn, which is “prescribed burning of fuels in scattered concentrations” and in addition does not cover a majority of the unit.

**Precommercial Thin, Handpiling, Burn Piles** – These treatments involve cutting small trees of little to no merchantable value to decrease stocking and reduce fuels. Trees would be thinned by hand or by machine. Post-thinning average tree spacing would range from 12 to 20 feet (109 to 303 TPA). Thinning debris in several units would be piled by hand and the handpiles would be burned to reduce fuels. See the fuels report for handpile and burning specifications.

**Precommercial Thin** – These treatments involve cutting small trees of little to no merchantable value to decrease stocking and reduce fuels. Trees would be thinned by hand or by machine. Post-thinning average tree spacing would range from 12 to 20 feet (109 to 303 TPA).

**Shelterwood (Group) with Reserves, Site Prep Burn** – These treatments involve removing all trees except for those needed for shelter and seed production. Leave trees would be grouped, and would be aspen, ponderosa pine, Douglas-fir, Engelmann spruce, or subalpine fir, in descending order of preference. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns may be removed for utilization. Following cutting and removal, the units would be burned to prepare sites for natural regeneration. Expected natural regeneration species are Douglas-fir and lodgepole pine. Areas may be planted with ponderosa pine and western larch to achieve the desired species composition. The leave trees would be retained following regeneration.

**Low Severity Fire, Openings less than 5 acres** – These treatments would involve cutting of small trees (slashing) to create fuel beds in areas less than 5 acres in size, and underburning to reduce fuels, cause additional mortality of undesirable trees, and prepare sites for natural regeneration. Desired natural regeneration species are Douglas-fir, ponderosa pine, and lodgepole pine depending upon the unit.

**Low Severity Fire, Openings less than 10 acres** – These treatments would involve cutting of small trees (slashing) to create fuel beds in areas less than 10 acres in size, and underburning to reduce fuels, cause additional mortality of undesirable trees, and prepare sites for natural regeneration. Desired natural regeneration species are Douglas-fir, whitebark pine, and lodgepole pine.

**Seedtree with Reserves, Slashing, Handpiling, Burn Piles** – These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be Douglas-fir. All dead and

live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Undesirable, damaged, or diseased small trees would be cut (slashed), handpiled and burned. Leave trees would be retained following regeneration. Regeneration is expected to be Douglas-fir and lodgepole pine.

**Shelterwood (Group) with Reserves, Jackpot Burn** – The shelterwood treatment would be as described previously. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, concentrations of fuels involving less than a majority of the unit area would be burned. Expected regeneration would be some combination of Douglas-fir, lodgepole pine, Engelmann spruce, and aspen. Some combination of ponderosa pine, western larch, and Douglas-fir may be planted.

**Seedtree with Reserves, Jackpot Burn** - These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be mainly Douglas-fir with ponderosa pine, Engelmann spruce, and aspen depending on unit. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, units would be jackpot burned. In some units, ponderosa pine and Douglas-fir may be planted.

**Seedtree with Reserves, Broadcast Burn** - These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be Douglas-fir. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, units would be broadcast burned. Ponderosa pine and Douglas-fir may be planted.

**Shelterwood with Reserves, Site Prep Burn** - These treatments involve removing all trees except for those needed for shelter or seed production. Leave trees would be relatively uniformly spaced and would be Douglas-fir, western larch, ponderosa pine, and aspen at about 30-40 BA. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following removal, the area would be prescribed burned for site preparation. Expected regeneration would be Douglas-fir and lodgepole pine.

**Shelterwood (Group) with Reserves, Slashing, Handpile/Burn** – The shelterwood treatment would be as described previously for group shelterwoods with reserves. Leave trees are expected to be Douglas-fir. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, undesirable small trees would be cut, handpiled and burned. Expected regeneration would be Douglas-fir and lodgepole pine.

**Shelterwood (Group) with Reserves** - The shelterwood treatment would be as described previously for group shelterwoods with reserves. Expected natural regeneration would be Douglas-fir and lodgepole pine. Ponderosa pine may be planted. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. These units do include some area of ponderosa pine plantation that would be thinned.

**Clearcut with Reserves, Jackpot Burn** – These treatments involve removing all trees except for scattered Douglas-fir and ponderosa pine. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Natural regeneration of Douglas-fir and lodgepole pine is expected. Ponderosa pine may be planted. Following cutting and removal, units would be jackpot burned.

**Clearcut with Reserves, Site Preparation Burn** – These treatments involve removing all trees except for scattered clumps of Douglas-fir, ponderosa pine and western larch. All dead and live cut trees

considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Natural regeneration of Douglas-fir and lodgepole pine is expected. Ponderosa pine, Douglas-fir, and western larch may be planted. Following cutting and removal, units would be prescribed burned to prepare sites for regeneration.

**Clearcut with Reserves, Broadcast Burn** - These treatments involve removing all trees except scattered clumps or individual Douglas-fir for structure. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting, the area would be broadcast burned for fuels reduction and site preparation. Natural regeneration of lodgepole pine is expected. Douglas-fir and western larch may be planted.

**Sanitation, Slashing, Handpiling, Burn Piles** – These treatments involve removing trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and disease. In these units, all dead and dying trees considered merchantable would be cut and removed except as needed to meet other resource concerns. No additional live trees would be cut. Small, undesirable, damaged, or diseased trees would be cut, handpiled and burned. Following treatment, trees would average 10- to 15-foot spacing (194 to 436 TPA).

**Mixed Severity Fire, Openings** – These treatments would be burned with a mixed-severity fire, creating various sizes of openings depending upon forest type and site factors. Patches of trees may be cut in the units to facilitate burning as well as to enhance regeneration of whitebark pine and other species.

## Proposed Treatments by Group and Unit

**Table B- 1. Alternative 2 proposed treatments by group and unit**

Group	Unit	Treatment Type	Prescription	Acres
1	6	Intermediate Harvest	Improvement Cut, Underburn	14
1	7	Intermediate Harvest	Improvement Cut, Underburn	17
1	8	Intermediate Harvest	Improvement Cut, Underburn	62
1	15	Intermediate Harvest	Improvement Cut, Underburn	15
1	23	Intermediate Harvest	Improvement Cut, Underburn	29
1	24	Intermediate Harvest	Improvement Cut, Underburn	5
1	26	Intermediate Harvest	Improvement Cut, Underburn	65
1	28	Intermediate Harvest	Improvement Cut, Underburn	22
1	30	Intermediate Harvest	Improvement Cut, Underburn	14
1	31	Intermediate Harvest	Improvement Cut, Underburn	16
1	32	Intermediate Harvest	Improvement Cut, Underburn	45
1	33	Intermediate Harvest	Improvement Cut, Jackpot Burn	17
1	44	Intermediate Harvest	Improvement Cut, Underburn	97
1	45	Intermediate Harvest	Improvement Cut, Underburn	38
1	46	Intermediate Harvest	Improvement Cut, Jackpot Burn	251
1	47	Intermediate Harvest	Improvement Cut, Jackpot Burn	220
1	54	Intermediate Harvest	Improvement Cut, Jackpot Burn	20
1	55	Intermediate Harvest	Improvement Cut, Underburn	29
2	3	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	37
2	14	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	11

Group	Unit	Treatment Type	Prescription	Acres
2	16	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	3
2	18	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	21
2	21	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	6
2	48	Intermediate Harvest	Precommercial Thin	141
2	49	Intermediate Harvest	Precommercial Thin	49
2	50	Intermediate Harvest	Precommercial Thin	49
2	51	Intermediate Harvest	Precommercial Thin	193
2	59	Intermediate Harvest	Precommercial Thin	16
2	60	Intermediate Harvest	Precommercial Thin	25
2	61	Intermediate Harvest	Precommercial Thin	34
2	62	Intermediate Harvest	Precommercial Thin	37
2	63	Intermediate Harvest	Precommercial Thin	17
2	64	Intermediate Harvest	Precommercial Thin	30
2	65	Intermediate Harvest	Precommercial Thin	25
2	66	Intermediate Harvest	Precommercial Thin	26
2	67	Intermediate Harvest	Precommercial Thin	20
2	68	Intermediate Harvest	Precommercial Thin	15
2	69	Intermediate Harvest	Precommercial Thin	31
2	70	Intermediate Harvest	Precommercial Thin	39
2	71	Intermediate Harvest	Precommercial Thin	40
2	72	Intermediate Harvest	Precommercial Thin	85
2	73	Intermediate Harvest	Precommercial Thin	33
2	75	Intermediate Harvest	Precommercial Thin	148
3	1	Regeneration Harvest	Shelterwood (Group) with Reserves, Site Prep Burn	96
3	2	Prescribed Fire	Low Severity Fire, Openings <5 Acres	146
3	9	Regeneration Harvest	Seedtree with Reserves, Slashing, Handpiling, Burn Piles	18
3	11	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	23
3	12	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	80
3	13	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	41
3	20	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	32
3	22	Regeneration Harvest	Shelterwood with Reserves, Site Prep Burn	30
3	25	Regeneration Harvest	Seedtree with Reserves, Broadcast Burn	29
3	29	Regeneration Harvest	Shelterwood (Group) with Reserves, Slashing, Handpile/Burn	25
3	34	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	39	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	42
3	40	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	11
3	41	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	42	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	65
3	43	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	104
3	53	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	17

Group	Unit	Treatment Type	Prescription	Acres
3	57	Regeneration Harvest	Shelterwood (Group) with Reserves	93
3	58	Regeneration Harvest	Shelterwood (Group) with Reserves	15
4	10	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	18
4	17	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	38
4	19	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	15
4	27	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	31
4	35	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	24
4	36	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	20
4	37	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	8
4	38	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	7
4	52	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	22
4	56	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	17
4	74	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	23
5	4	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	7
5	5	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	18
6	76	Prescribed Fire	Low Severity Fire, Openings <10 acres	123
6	78	Prescribed Fire	Low Severity Fire, Openings <5 acres	38
6	85	Prescribed Fire	Low Severity Fire, Openings <5 acres	143
7	80	Prescribed Fire	Mixed Severity Fire, Openings <20 acres	326
7	86	Prescribed Fire	Mixed Severity Fire, Openings <10 acres	47
7	87	Prescribed Fire	Mixed Severity Fire, Openings <5 acres	36
8	77	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	736
8	79	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	337
8	81	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	629
8	82	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	776
8	83	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	457
8	84	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	831
8	88	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	892

**Table B- 2. Alternative 3 proposed treatments by group and unit**

Group	Unit	Treatment Type	Prescription	Acres
1	15	Intermediate Harvest	Improvement Cut, Underburn	15
1	23	Intermediate Harvest	Improvement Cut, Underburn	29
1	24	Intermediate Harvest	Improvement Cut, Underburn	5
1	28	Intermediate Harvest	Improvement Cut, Underburn	22
1	46b	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	27
1	47b	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	9
1	47c	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	31
1	6	Intermediate Harvest	Improvement Cut, Underburn	14

Group	Unit	Treatment Type	Prescription	Acres
1	7	Intermediate Harvest	Improvement Cut, Underburn	17
1	8	Intermediate Harvest	Improvement Cut, Underburn	62
2	14	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	11
2	16	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	3
2	3	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	37
2	48	Intermediate Harvest	Precommercial Thin, Underburn	141
2	50	Intermediate Harvest	Precommercial Thin	49
2	51	Intermediate Harvest	Precommercial Thin, Underburn or Slash Treatment along PVT	193
2	59	Intermediate Harvest	Precommercial Thin	16
2	61a	Intermediate Harvest	Precommercial Thin, Handpile Underburn	9
2	62	Intermediate Harvest	Precommercial Thin	37
2	63	Intermediate Harvest	Precommercial Thin	17
2	66	Intermediate Harvest	Precommercial Thin	26
2	67	Intermediate Harvest	Precommercial Thin	20
2	68	Intermediate Harvest	Precommercial Thin	15
2	69	Intermediate Harvest	Precommercial Thin	31
2	70	Intermediate Harvest	Precommercial Thin	39
2	71	Intermediate Harvest	Precommercial Thin	40
2	72	Intermediate Harvest	Precommercial Thin	85
2	73	Intermediate Harvest	Precommercial Thin	33
2	75b	Intermediate Harvest	Precommercial Thin, Jackpot Burn, Handpiling, Burn Piles	20
3	1	Regeneration Harvest	Shelterwood (Group) with Reserves, Site Prep Burn	96
3	11	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	23
3	12	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	80
3	13	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	41
3	22a	Regeneration Harvest	Shelterwood with Reserves, Site Prep Burn	22
3	25	Regeneration Harvest	Seedtree with Reserves, Broadcast Burn	29
3	34	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	39	Regeneration Harvest	Seedtree with Reserves, Underburn	26
3	40	Regeneration Harvest	Seedtree with Reserves, Underburn	11
3	41	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	12
3	42	Regeneration Harvest	Seedtree with Reserves, Underburn	65
3	43	Regeneration Harvest	Seedtree with Reserves, Underburn	104
3	53	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	17
3	57	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	93
3	58	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	15
3	9	Regeneration Harvest	Seedtree with Reserves, Slashing, Handpiling, Burn Piles	18
4	10	Regeneration Harvest	Clearcut with Reserves, Underburn	18

Group	Unit	Treatment Type	Prescription	Acres
4	27	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	31
4	35	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	24
4	36	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	20
4	37	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	8
4	38	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	7
4	52	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	22
4	74	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	23
5	4	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	7
5	5	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	18
6	2	Prescribed Fire	Low Severity Fire, Openings <5 acres	146
6	78	Prescribed Fire	Low Severity Fire, Openings <5 acres	38
6	85	Prescribed Fire	Low Severity Fire, Openings <5 acres	143
7	87	Prescribed Fire	Mixed Severity Fire, Openings <5 acres	36
8	79	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	337
8	82	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	776
8	83	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	457
8	84	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	831
8	88	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	865
9	17a	Prescribed Fire	Underburn	38
9	19a	Prescribed Fire	Underburn	15
9	20a	Prescribed Fire	Underburn	24
9	29a	Prescribed Fire	Underburn	25
9	30a	Prescribed Fire	Underburn	14
9	31a	Prescribed Fire	Underburn	16
9	32a	Prescribed Fire	Underburn	45
9	44a	Prescribed Fire	Underburn	97
9	45a	Prescribed Fire	Underburn	38
9	80a	Prescribed Fire	Jackpot Burn	326
10	46a	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	223
10	47a	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	180

**Table B- 3. Treatment unit management area acreages**

Unit	MA	Acres	Unit	MA	Acres	Unit	MA	Acres
1	T4	96	37	T3	8	63	T3	17
2	T4	146	38	T3	7	64	T3	30
3	T4	37	39	T3	42	65	T3	25
4	T4	7	40	T3	11	66	T3	26
5	T4	18	41	T3	11	67	T3	20

Unit	MA	Acres	Unit	MA	Acres	Unit	MA	Acres
6	T4	14	42	T2	39	68	T3	15
7	T4	17	42	T3	26	69	T3	31
8	T4	62	43	T2	104	70	T3	39
9	T4	18	44	T1	93	71	T3	40
10	T1	1	44	T3	4	72	T2	85
10	T3	5	45	T1	26	73	T4	33
10	T4	12	45	T3	12	74	T3	23
11	T1	22	46	T2	248	75	T2	148
12	T1	80	46	T3	3	76	T3	99
13	T1	7	47	M1	2	76	W1	24
13	T3	34	47	T2	218	77	T1	90
14	T1	10	48	M1	56	77	T3	619
15	T1	15	48	T2	85	78	T1	38
16	T1	3	49	M1	13	79	M1	267
17	T1	38	49	T2	37	79	T1	59
18	T1	21	50	M1	48	79	T3	7
19	T1	15	51	M1	19	79	W1	3
20	T1	32	51	T1	173	80	M1	318
21	T1	6	52	T3	22	80	W1	8
22	T3	30	53	T3	17	81	M1	583
23	T3	29	54	T3	20	81	T1	6
24	T3	5	55	T3	29	81	W1	40
25	T3	29	56	T3	17	82	M1	13
26	T3	65	57	T1	92	82	W1	763
27	T3	31	58	M1	6	83	M1	201
28	T3	17	58	T1	9	83	W1	256
28	T4	5	59	T3	16	84	M1	795
29	T4	25	60	T1	1	84	T1	28
30	T4	14	60	T3	22	84	T2	7
31	T4	16	60	T4	2	85	M1	143
32	T4	45	61	T3	21	86	M1	47
33	T3	17	61	T4	12	87	M1	25
34	T3	12	62	T3	21	87	T1	12
35	T3	24	62	T4	16	88	M1	740
36	T3	20				88	W1	124

## Fuels Treatments

The MRFC discusses Forest Types and Fire Regimes and is quoted below:

The following briefly describes major forest ecotypes in Montana and ascribes to each an approximate historical fire regime and a very general picture of historical stand structure. Because there is overlap between each ecotype and no black and white distinctions in historical fire regimes or stand structures, these elements should be considered in the planning and design of restoration projects.

### Restoration by Forest Type

Low-to-mid elevation ponderosa pine, Douglas-fir, and western larch forests typify the low- and mixed-severity fire regime with average fire return intervals of 5 to 30 years.

- Pure ponderosa pine experienced frequent, low-severity fires and primarily exhibited an open stand structure across the landscape.
- Mixed ponderosa pine/Douglas-fir/western Larch (in all combinations) forests exhibited less frequent fire, more variable stand structures across the landscape, and variable fire intensity and severity.
- Historically, these low elevation forests were subject to the greatest amount of timber management and fire suppression activities and thus are likely the furthest from their natural range of variability.
- These forest types are the most likely and appropriate candidates for restoration activities to re-establish natural fire return intervals, but especially in the case of mid-elevation mixed-fire severity forests, restoration activities should be taken on a case-by-case basis.

Mid-elevation lodgepole pine, Douglas-fir, and subalpine fir forests exhibit dense stand structures and historically experienced mixed and stand replacing fire regimes.

- Mixed fire regimes may be more widespread than stand replacement regimes in the Inland Northwest and have fire intervals averaging between 30 and 100 years. Stand replacement regimes have average natural return intervals of about 100 – 200 years.
- Mixed severity forest types were likely historically dominant and may not require any specific management activity to allow them to maintain function within their historic range of variability, but again they would have to be considered on a case by case basis.

High-elevation subalpine fir, lodgepole pine and Engelmann spruce forests historically experienced fire on a 200- to 300- year fire return interval where subalpine forests of whitebark pine historically experienced fire on a mean fire return interval of 50 – 300 years. These forest ecotypes are likely the closest to their natural range of variability and likely require minimal restoration efforts.

The treatment groups include both timber management and fuels management treatments. Treatment descriptions for the fuels management treatments are as follows:

**Low-Severity Fire-** is applied to meet fuel reduction objectives and reintroduce fire to the landscape. Low severity fire would topkill some of the understory vegetation, effects to soils would be minimal. Some over story canopy openings of less than 5 acres may be created with this treatment. Small diameter trees may be cut in areas to create a continuous fuel bed to carry the fire (included in treatment groups 6 and 9).

**Mixed Severity Fire-** is applied to meet fuel reduction objectives and reintroduce fire to the landscape. Mixed severity fire would exhibit a wide range of effects on the vegetation. Some areas would result in

low severity fire effects; other areas would exhibit moderate fire severity with some over story mortality but not complete replacement; and yet other areas would result in higher severity fire resulting in complete over story mortality. Overstory canopy openings of various sizes would be created with this treatment. Small diameter trees may be cut in areas to create a continuous fuel bed to carry the fire (included in treatment group 8).

**Hand pile/pile burning**—fuels would be piled by hand and piles would be burned when burning conditions are favorable (included in treatment groups 2, 3, 5, 9, and 10).

**Jackpot Burning**—burning of concentrations of fuels within the unit. These concentrations occur from harvest operations, insect and disease activity or natural forest succession. This does not include burning of hand and machine piles included in treatment groups 1, 3, 4, 9, and 10).

**Machine pile/pile burning**—natural and residual activity generated fuels are piled using equipment to reduce fuel accumulations and preparesites for planting (where necessary). Piles are generally burned during the fall/winter when burning conditions are favorable and risk of escape is low. Sufficient down woody material is retained onsite to meet objectives for soil nutrient and habitat needs included in treatment groups 2, 3, and 5).

**Prescribed Under Burning-** consists of controlled burning with flame lengths generally 3 feet or less and would be utilized as a stand-alone treatment or following thinning. Under burning would be used to reduce natural and activity fuels and shrubs and prepare sites for planning. Cutting and piling of ladder fuels may occur to reduce potential fire behavior and scorch to residual trees (included in treatment groups 1, 3, 4, and 9).

**Site Prep Burn** – Following harvest activity designated units would be under burned prior to tree planting (included in treatment groups 3 and 4).

**Slashing**—Cutting of small diameter conifers (less than 6 inches in diameter) using chainsaws. The treatment is conducted prior to burning to ensure there are sufficient surface fuels to carry the fire (included in treatment groups 3, 6, 7, and 8).

## Silviculture Summary

### *Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans*

#### Alternative 1

Compliance of alternative 1 (no action) with Forest Plan forestwide standards pertinent to this discussion is displayed in Table B- 4. Note that forestwide standard statements refer to appendices in the Forest Plan and not of this document.

**Table B- 4. Alternative 1 compliance with Forest Plan forestwide standards**

	FORESTWIDE STANDARDS	COMPLIANCE
Timber	1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral	No timber manipulation or silvicultural treatment other than ongoing activities would take place under this alternative.

<b>FORESTWIDE STANDARDS</b>		<b>COMPLIANCE</b>
	development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site-specific analysis will determine the appropriate even or uneven age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	
	2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.	No tree improvement activities would be conducted under this alternative.
	4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	No timber stand openings would be created by even-aged silvicultural systems under this alternative.
Protection Insect and Disease	1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	No silvicultural systems would be proposed under this alternative.
	2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	No activities would be proposed under this alternative.
	3. Biological practices will be considered in controlling insect and disease infestations.	No activities would be proposed under this alternative.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	No activities would be proposed under this alternative.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	No timber sales would be proposed under this alternative.
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Tree mortality and potential snag tree species would continue as is under this alternative.

Compliance of alternative 1 (no action) with Forest Plan management area standards pertinent to this discussion are displayed in Table B- 5.

**Table B- 5. Alternative 1 compliance with management area standards**

MANAGEMENT AREA STANDARDS		COMPLIANCE
M-1	<p><b>Timber</b> - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.</p>	No timber harvest is proposed.
	<p><b>Protection</b> - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R.</li> <li>-Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.</li> </ul>	<p>No actions are taken to prevent disease and insect population build-up.</p> <p>No prescribed fire is proposed for the enhancement and maintenance of resources.</p> <p>No areas are evaluated for insect and disease problems.</p>
T-1	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.)</li> <li>- As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives.</li> <li>- Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration.</li> <li>- Project level planning will provide for stand regeneration within five years of final harvest.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> </ul>	No timber harvest activities are proposed.
	<p><b>Protection</b></p> <ul style="list-style-type: none"> <li>- Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at</li> </ul>	No forest protection measures are proposed.

MANAGEMENT AREA STANDARDS		COMPLIANCE
	<p>times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.</li> </ul>	
T-2	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.)</li> <li>- Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested.</li> <li>- Schedule sale activities outside winter periods (December 1 to May 15).</li> <li>- No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> </ul>	No timber harvest activities are proposed.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	No forest protection measures are proposed.
T-3	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes may be modified as necessary to achieve the management area goals.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H. Appendix M provides guidance for various vegetative management practices by habitat group.</li> <li>- Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist.</li> <li>- Vegetative diversity will be encouraged.</li> <li>- Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.</li> </ul>	No timber harvest activities are proposed.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management</li> </ul>	No forest protection measures are proposed.

MANAGEMENT AREA STANDARDS		COMPLIANCE
	<p>area, for the enhancement and maintenance of resources.</p> <ul style="list-style-type: none"> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	
T-4	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> <li>- Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Appendices H and M provide broad guidelines for various habitat groups.)</li> <li>- Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area.</li> <li>- Use timber harvest to rehabilitate existing harvest units, to improve the VQO.</li> <li>- Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.</li> </ul>	No timber harvest activities are proposed.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	No forest protection measures are proposed.
W-1	<p><b>Timber</b> - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management</p>	No timber harvest activities are proposed.
	<p><b>Protection</b> - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R.</li> <li>- Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.</li> </ul>	No forest protection measures are proposed.

Table B- 6 below displays this alternatives compliance with Forest Service management direction for regeneration harvest.

**Table B- 6. Alternative 1 compliance with other Forest Service management direction**

Management Direction	Compliance
Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).	No timber harvests are proposed.
Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).	No regeneration harvest is proposed.
The size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: "Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred" (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).	No regeneration harvest is proposed.
Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan." "Clearcutting will be used only where it is the optimum method" (Helena Forest Plan, USDA Forest Service 1986).	No regeneration harvest is proposed.

### Alternative 2

Compliance of alternative 2 with Forest Plan Forest-wide standards pertinent to this discussion are displayed in Table B- 7. Note that the forestwide standard statements refer to appendices in the Forest Plan and not in this document.

**Table B- 7. Alternative 2 compliance with Forest Plan forestwide standards**

Forestwide Standards		Compliance
Timber	1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site-specific analysis will determine the appropriate even or uneven-age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even-aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	Silvicultural exams and prescriptions would have been done and approved by a certified silviculturist. Site-specific analysis has been done to determine the optimum method of treatment. Clearcutting is being used where it is the optimum method. See project records.
	2. Tree improvement will be conducted in accordance with the current Regional and	Tree improvement would be conducted following the applicable Regional and

Forestwide Standards		Compliance
	Forest level tree improvement plans.	Forest direction.
	4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	Proposed regeneration harvest units exceed 40 acres in seven units (appendix L). All of the units have been severely impacted by recent mountain pine beetle mortality and can be excepted from 60-day review and Regional Forester approval. The Stonewall Vegetation Project EIS process serves to notify the public and document the need for the unit size.
Protection Insect and Disease	1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	Silvicultural systems are proposed in this alternative to meet the project purpose and need which includes species diversity, growth, and vigor for stands and size diversity and class diversity between stands.
	2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	Silvicultural practices are proposed to address recent past, ongoing, and future insect and disease concerns. No insect and disease chemical controls are proposed.
	3. Biological practices will be considered in controlling insect and disease infestations.	No biological practices are being considered beyond vegetation management.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	Proposed timber harvests addressed recently impacted and high risk stands as well as those where treatment was considered necessary to meet the purpose and need for the project.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	Cutting units were located to reduce current and potential fuels created as a result of the MPB epidemic and modify fuels to meet the purpose and need to modify fire behavior for community protection and to allow for the reestablishment of fire as a natural process on the landscape
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Treatment design includes artificial and natural regeneration of ponderosa pine and western larch as well as retaining these species over several others in thinning operations. Larch and ponderosa pine would increase due to the treatments.

Compliance of alternative 2 with Forest Plan Management Area standards pertinent to this discussion are displayed in Table B- 8.

**Table B- 8. Alternative 2 compliance with management area standards**

Management Area Standards		Compliance
M-1	<p><b>Timber</b> - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.</p>	<p>Six acres of Unit 58 is proposed for a regeneration harvest due to high mortality. Slash would be treated through jackpot burning.</p>
	<p><b>Protection</b> - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R.</li> <li>- Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.</li> </ul>	<p>The proposed regeneration harvest and jackpot burning is consistent with the removal of dead, dying or high-hazard trees and prescribed burning.</p>
T-1	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.)</li> <li>- As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives.</li> <li>- Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration.</li> <li>- Project level planning will provide for stand regeneration within five years of final harvest.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> </ul>	<p>Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation. See table 25 below for regeneration and CMAI consistency.</p>
	<p><b>Protection</b></p> <ul style="list-style-type: none"> <li>- Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</li> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.</li> </ul>	<p>The project purpose and need and proposed treatments address creating a landscape that is diverse, resilient and sustainable to</p>

Management Area Standards		Compliance
		wildfire and insects.
T-2	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.)</li> <li>- Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested.</li> <li>- Schedule sale activities outside winter periods (December 1 to May 15).</li> <li>- No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> </ul>	Treatments would be adjusted to meet wildlife needs see wildlife design criteria (appendix P), and wildlife report.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>-- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	See T-1 above.
T-3	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes may be modified as necessary to achieve the management area goals.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H of the Forest Plan. Forest Plan Appendix M provides guidance for various vegetative management practices by habitat group.</li> <li>- Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist.</li> <li>- Vegetative diversity will be encouraged.</li> <li>- Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.</li> </ul>	Proposed treatments are modified to meet wildlife needs. See the see wildlife design criteria (appendix P), and wildlife report. The project purpose and need and proposed treatments address increasing vegetative diversity. See below for CMAI consistency.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal</li> </ul>	See T-1 above.

Management Area Standards		Compliance
	activities will meet visual quality objectives.	
T-4	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H.</li> <li>- Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Forest Plan Appendices H and M provide broad guidelines for various habitat groups.)</li> <li>- Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area.</li> <li>- Use timber harvest to rehabilitate existing harvest units, to improve the VQO.</li> <li>- Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.</li> </ul>	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	See T-1 above.
W-1	<p><b>Timber</b> - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management</p>	No timber harvest is proposed in W-1.
	<p><b>Protection</b> - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R.</li> <li>- Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.</li> </ul>	Prescribed fire is proposed to meet purpose and need to increase species and structural diversity and landscape resilience to wildfire and insects. See wildlife design criteria in table 9, chapter 2 for additional information.

Table B- 9 that follows displays compliance with Forest Service management direction for regeneration harvest for alternative 2.

**Table B- 9. Alternative 2 compliance with Forest Service regeneration harvest direction**

Management Direction	Compliance
<p>Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).</p>	<p>All timber harvest would take place in land classified as suitable for timber harvest under the Helena Forest Plan (MA T-1, T-2, T-3, T-4) with the exception of six acres in Unit 58 which is in MA M-1 (appendix J). All proposed treatments involving timber harvest are designed to meet the project purpose and need (stated above) and are not designed for timber production other than salvage. Timber harvest may occur in M-1 where access exists.</p>
<p>Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).</p>	<p>Average CMAI for forests in the area ranges from 100 to 120 years (USDA Forest Service 1986 appendix H). Trees in most of the suitable units are of an age where they probably had reached CMAI (appendix K) however, the question of culmination of mean annual increment of growth in these units has been rendered moot by the severe levels of mortality. The units are not proposed for treatment for timber production purposes, but to restore the forests, modify fire behavior, and capture economic value of timber and so the CMAI growth requirement would not apply as stated above.</p>
<p>The size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: “Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred” (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).</p>	<p>Proposed regeneration harvest units exceed 40 acres in seven units (appendix L). All of the units have been severely impacted by recent mountain pine beetle mortality and are exempt from 60-day review and Regional Forester approval as described in FSM 1900-2006-2. FSM R1 Supplement 2400-2001-2. The Stonewall Vegetation Project EIS 45-day comment period serves to notify the public and is sufficient in documenting the need for the unit size.</p>
<p>Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan.” “Clearcutting will be used only where it is the optimum method” (Helena Forest Plan, USDA Forest Service 1986).</p>	<p>Proposed regeneration treatments utilize clearcutting with reserve trees in 11 units with severe mortality and few remaining live trees. Clearcutting has been determined to be the optimal method for regenerating these units to the desired seral species in order to meet the project purpose and need as documented in project records.</p>
<p>There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii); FSM 1921.12g).</p>	<p>Each regeneration harvest treatment area has been field reviewed by a certified silviculturist and treatment designed to ensure that the stands can be adequately stocked following final harvest. Restocking would be through natural and artificial methods to levels established for each unit. As displayed in appendix G table 35, 3,842 acres regeneration harvest are recorded to have taken place in the project area. Examination of these past regeneration harvest units shows that regeneration success in the project area is very good. Stocking criteria would be established for each unit based upon site conditions, treatment objectives, and Forest Plan direction and would be documented in silvicultural prescriptions developed for the project. Regeneration treatments would be monitored (FSM 2472.4) to access treatment success and schedule additional corrective work if</p>

Management Direction	Compliance
	the units are not adequately proceeding toward desired stocking guidelines.

Compliance of alternative 3 with Forest Plan Forestwide standards pertinent to this discussion is displayed in Table B- 10.

**Table B- 10. Alternative 3 compliance with Forest Plan forestwide standards**

	Forestwide Standards	Compliance
Timber	<p>1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site-specific analysis will determine the appropriate even or uneven-age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even-aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.</p>	<p>Silvicultural exams and prescriptions would have been done and approved by a certified silviculturist. Site-specific analysis has been done to determine the optimum method of treatment. Clearcutting is being used where it is the optimum method. See project records.</p>
	<p>2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.</p>	<p>Tree improvement would be conducted following the applicable Regional and Forest direction.</p>
	<p>4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.</p>	<p>Proposed regeneration harvest units exceed 40 acres in six units (appendix M). All of the units have been severely impacted by recent mountain pine beetle mortality and can be excepted from 60-day review and Regional Forester approval. The Stonewall Vegetation Project EIS process serves to notify the public and document the need for the unit size.</p>
Protection Insect and Disease	<p>1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.</p>	<p>Silvicultural systems are proposed in this alternative to meet the project purpose and need which includes species diversity, growth, and vigor for stands and size diversity and class diversity between stands.</p>
	<p>2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale</p>	<p>Silvicultural practices are proposed to address recent past, ongoing, and future insect and disease concerns. No insect and disease chemical controls</p>

Forestwide Standards		Compliance
	only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	are proposed.
	3. Biological practices will be considered in controlling insect and disease infestations.	No biological practices are being considered beyond vegetation management.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	Proposed timber harvests addressed recently impacted and high risk stands as well as those where treatment was considered necessary to meet the purpose and need for the project.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	Cutting units were located to reduce current and potential fuels created as a result of the MPB epidemic and modify fuels to meet the purpose and need to modify fire behavior for community protection and to allow for the reestablishment of fire as a natural process on the landscape
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Treatment design includes artificial and natural regeneration of ponderosa pine and western larch as well as retaining these species over several others in thinning operations. Larch and ponderosa pine would increase due to the treatments.

Compliance of alternative 3 with Forest Plan management area standards pertinent to this discussion are displayed in Table B- 11.

**Table B- 11. Alternative 3 compliance with management area standards**

Management Area Standards		Compliance
M-1	<p><b>Timber</b> - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.</p>	Six acres of Unit 58 is proposed for a regeneration harvest due to high mortality. Slash would be treated through jackpot burning.
	<p><b>Protection</b> - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R.</li> <li>-Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on</li> </ul>	The proposed regeneration harvest and jackpot burning is consistent with the removal of dead, dying or high-hazard trees and prescribed burning.

Management Area Standards		Compliance
	watershed and other resource values.	
T-1	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.)</li> <li>- As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives.</li> <li>- Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration.</li> <li>- Project level planning will provide for stand regeneration within five years of final harvest.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.</li> </ul>	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation.
	<p><b>Protection</b></p> <ul style="list-style-type: none"> <li>- Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</li> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.</li> </ul>	The project purpose and need and proposed treatments address creating a landscape that is diverse, resilient and sustainable to wildfire and insects.
T-2	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.)</li> <li>- Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested.</li> <li>- Schedule sale activities outside winter periods (December 1 to May 15).</li> <li>- No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H.</li> </ul>	Treatments would be adjusted to meet wildlife needs see wildlife design criteria in table 9, chapter 2.

	<b>Management Area Standards</b>	<b>Compliance</b>
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>-- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	See T-1 above.
T-3	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Timber harvest methods and volumes may be modified as necessary to achieve the management area goals.</li> <li>- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H of the Forest Plan. Forest Plan Appendix M provides guidance for various vegetative management practices by habitat group.</li> <li>- Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist.</li> <li>- Vegetative diversity will be encouraged.</li> <li>- Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.</li> </ul>	Proposed treatments are modified to meet wildlife needs. See the see wildlife design criteria in table 9, chapter 2. The project purpose and need and proposed treatments address increasing vegetative diversity. See below for CMAI consistency.
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	See T-1 above.
T-4	<p><b>Timber</b> - This management area is suitable for timber management activities.</p> <ul style="list-style-type: none"> <li>- Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H.</li> <li>- Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Forest Plan Appendices H and M provide broad guidelines for various habitat groups.)</li> <li>- Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area.</li> <li>- Use timber harvest to rehabilitate existing harvest units, to improve the</li> </ul>	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation.

Management Area Standards		Compliance
	<p>VQO.</p> <ul style="list-style-type: none"> <li>- Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.</li> </ul>	
	<p><b>Protection</b> - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.</li> </ul>	See T-1 above.
W-1	<p><b>Timber</b> - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management</p>	No timber harvest is proposed in W-1.
	<p><b>Protection</b> - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values.</p> <ul style="list-style-type: none"> <li>- Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources.</li> <li>- Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R.</li> <li>- Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.</li> </ul>	Prescribed fire is proposed to meet purpose and need to increase species and structural diversity and landscape resilience to wildfire and insects. See wildlife design criteria in table 9, chapter 2 for additional information.

Table B- 12 below displays compliance with Forest Service management direction for regeneration harvest for alternative 3.

**Table B- 12. Alternative 3 compliance with Forest Service regeneration harvest direction**

Management Direction	Compliance
Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).	All timber harvest would take place in land classified as suitable for timber harvest under the Helena Forest Plan (MA T-1, T-2, T-3, T-4) with the exception of six acres in Unit 58 which is in MA M-1 (appendix J). All proposed treatments involving timber harvest are designed to meet the project purpose and need (stated above) and are not designed for timber production other than salvage. Timber harvest may occur in M-1 where access exists.
Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).	Average CMAI for forests in the area ranges from 100 to 120 years (USDA Forest Service 1986 appendix H). Trees in most of the suitable units are of an age where they probably had reached CMAI (appendix K) however, the question of culmination of mean annual increment of growth in these units has been rendered moot by the severe levels of mortality. The units are not proposed for treatment for timber production purposes, but to restore the forests, modify fire

Management Direction	Compliance
	behavior, and capture economic value of timber and so the CMAI growth requirement would not apply as stated above.
The size of harvest openings created by even-aged silviculture in the Northern Region will normally be 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: “Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred” (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).	Proposed regeneration harvest units exceed 40 acres in seven units. All of the units have been severely impacted by recent mountain pine beetle mortality and are exempt from 60-day review and Regional Forester approval as described in FSM 1900-2006-2. FSM R1 Supplement 2400-2001-2. The Stonewall Vegetation Project EIS 45-day comment period serves to notify the public and is suffice in documenting the need for the unit size.
Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan.” “Clearcutting will be used only where it is the optimum method” (Helena Forest Plan, USDA Forest Service 1986).	Proposed regeneration treatments utilize clearcutting with reserve trees in 8 units with severe mortality and few remaining live trees. Clearcutting has been determined to be the optimal method for regenerating these units to the desired seral species in order to meet the project purpose and need as documented in project records.
There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii); FSM 1921.12g).	Each regeneration harvest treatment area has been field reviewed by a certified silviculturist and treatment designed to ensure that the stands can be adequately stocked following final harvest. Restocking would be through natural and artificial methods to levels established for each unit. As displayed, 3,842 acres of regeneration harvest is recorded to have taken place in the project area. Examination of these past regeneration harvest units shows that regeneration success in the project area is very good. Stocking criteria would be established for each unit based upon site conditions, treatment objectives, and Forest Plan direction and would be documented in silvicultural prescriptions developed for the project. Regeneration treatments would be monitored (FSM 2472.4) to assess treatment success and schedule additional corrective work if the units are not adequately proceeding toward desired stocking guidelines

### Data Sources

The following are short discussions of data sources used for this analysis.

#### Aerial Insect and Disease Detection Survey (ADS)

Aerial Insect and Disease Detection Survey (ADS) data for Region 1 is collected annually by the USDA Forest Service Region 1 and 4 Forest Health Protection Aviation Program (USDA Forest Service 2011). The purpose of the ADS program is to:

Detect new outbreaks or identify previously undetected outbreaks of forest pests

- Monitor existing outbreaks
- Provide timely information for management planning
- Provide information for forest health assessments and project plans.

The surveys are conducted primarily using fixed-wing aircraft that fly patterns over survey areas beginning in the first part of July and continue through the end of September and often into October. During the flights, personnel sketches the observed insect and disease damage and mortality spatial locations and estimates the degree of the damage (trees per acre affected), the insect or disease causing the damage or mortality, and the tree species being affected.

The ADS is conducted according to well-established and documented survey standards (USDA Forest Service 1999). The results of the survey are digitized into GIS layers following established procedures (USDA Forest Service 2005). The GIS layers produced from the surveys are used in this analysis.

Because the ADS data relies on ocularly estimated insect and disease damaging agent, degree of damage or mortality, and spatial location, the information is useful for detecting, describing and analyzing insect and disease damage and establishing trends on a landscape over time. However, due to limitations in the ocular estimation process, care should be taken in applying the ADS at a stand, or smaller, degree of resolution.

### Northern Region Vegetation Map (R1 VMap)

Region 1, Northern Region Vegetation Map (R1 VMap) data is derived from satellite imagery, and provides consistent and continuous data at several levels of accuracy and utility as part of the R1 Multi-level Vegetation Classification, Mapping, Inventory, and Analysis System (R1-CMIA, Berglund et al. 2009). The R1-CMIA data collection program meets the requirements of the Existing Vegetation Classification and Mapping Technical Guide, which describes agency data needs, vegetation classification standards, and mapping standards (Brohman and Bryant 2005). Levels of accuracy in the VMap data include: (1) broad-level data used for forest, multi-forest, and regional-level assessments, (2) mid-level data which is intended to support forest and district integrated vegetation treatment plans, and (3) base-level data which is meant to be used for stand-level analysis purposes (Berglund et al. 2009). The VMap data used in the Stone-Dry EWAS (Milburn et al. 2006) and the Stonewall project is mid-level data that has been edited in 2010 and 2011 to reflect changes in vegetation attributes due to (1) recent wildfires, (2) site- and stand-specific data, and (3) the recent bark beetle epidemic (USDA Forest Service 2011). Attributes in the VMap data used in this analysis includes tree dominance type, tree canopy cover class, tree size class.

### National Agriculture Imagery Program (NAIP)

The National Agriculture Imagery Program (NAIP) acquires aerial imagery during the agricultural growing seasons in the continental U.S. NAIP imagery used in the Stonewall Vegetation Project was acquired in 2009, and is 1-meter resolution available in color or infrared.

### Fire Regime Condition Class (FRCC)

Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels and disturbance regimes (FRCC 2005). Helena NF personnel classified vegetation and analyzed FRCC for the Stone Dry EWAS (Milburn et al. 2006, 2009). VMap data served as the spatial database for the FRCC analysis. The spatial data and FRCC analysis was updated for the Stonewall project analysis (Olsen 2010). For the Stonewall Vegetation Project, we used attributes from the updated FRCC analysis spatial data for biophysical setting.

### Stand Data and Silvicultural Diagnoses

Individual stand attributes and detailed silvicultural diagnoses were done in the field in 2008, and updated in 2009 for proposed treatment units. Information collected for each includes: tree species composition, tree stocking levels, understory species compositions and coverage, insect activity, disease presence,

vigor, mortality, past harvest, snag availability, and other pertinent information. Personnel measured and recorded selected stand attributes in informal plots (non-statistical). The Forest silviculturist performed most diagnoses in person, although several were done by another certified silviculturist and a forester, under the direction of the Forest silviculturist. Diagnoses represent the most current on-the-ground assessment of all proposed units.

### Forest Inventory and Analysis (FIA) and FIA Intensification Plots

The Forest Inventory and Analysis (FIA) Program of the USDA Forest Service serves as the Nation's continuous forest census (USDA Forest Service 2011b). The program has established a set of permanent plots on a national grid that can be measured to characterize changes in forest attributes over time. Forest Inventory and Analysis plots are used at the Forest and landscape scales to set the context for forest conditions and effects, and assessments of insect hazard. Forest Inventory and Analysis plots are maintained at the National level on a periodic remeasurement schedule. In Region 1, FIA plots have been used to estimate the amount of old growth forest and snag density (Czaplewski 2004). The R1 Summary Database, using the NRIS Access Tool, was used to summarize Forest and landscape FIA and grid intensification data. This database is continually updated and was used to derive estimates of snags, old growth habitat types, and insect hazard ratings and forest structure characteristics. The use and limitations of this database is documented (USDA Forest Service 2008).

### *Models and Assumptions*

#### Forest Vegetative Simulator

The Forest Vegetation Simulator (FVS) was developed in the early 1970's as the "Prognosis" model (Stage 1973). Since that time, FVS has undergone continual and continuing research and development efforts to expand FVS's range and capabilities, validate, update, and modify FVS's predictions, and increase the FVS program's usefulness and usability. Over the last three decades, the USDA Forest Service has invested a substantial amount annually on research and development of FVS, and are continuing to do so within the Forest Service and through partnerships with educational institutions, other government agencies, and other countries (USDA 2011c).

Currently, the FVS is used almost exclusively by the USDA Forest Service, and is used heavily by other US government agencies such as the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, Natural Resource Conservation Service, Army Corps of Engineers, Fish and Wildlife Service, Department of Defense, and Department of Energy. At least five state forestry agencies utilize FVS and it is heavily used in the private forestry sector. Most major university forestry programs in the US teach the use of FVS.

International use of FVS includes use in the Canadian provinces of British Columbia, Ontario, Alberta and Nova Scotia. FVS is also being used, or variants are being developed for use in Russia, China, Austria, South Korea, Japan, Costa Rica, Portugal, Indonesia, and the United Kingdom as well as other European countries.

Over the last several decades, the Forest Vegetation Simulator has become the most used forest vegetation modeling program in the United States and the world.

The Forest Vegetation Simulator is the product of hundreds of contributors over the past three decades (Dixon 2010). It is not a single growth and yield "model" but consists of a number of integrated models including those for predicting large-tree height and diameter increment, small-tree height and diameter increment, tree mortality, crown change, tree regeneration establishment, shrub development, shrub and tree vertical canopy distribution, mountain pine beetle risk, Douglas-fir tussock moth hazard and impacts,

economic analysis, western spruce budworm hazard and impacts, western root disease impacts, dwarf mistletoe impacts, white pine blister rust impacts, and fire effects.

The Forest Vegetation Simulator has expanded its range of applicability from its original Northwest US roots through the creation of “geographic variants” that utilize research from various geographic regions of the US to tailor equations such as those for tree growth, mortality and volume to those regions. There are currently over 20 variants representing forests within the US. In developing some the variants, the Forest Vegetation Simulator has evolved from a growth and yield model into a framework supporting regional models such as TWIGS (Miner et al. 1988) and GENGYM (Edminster et al. 1991) further incorporating the extensive research undertaken in developing these models into FVS.

Since FVS uses stand exam data, geographical variant equations for growth are further calibrated using the stand data. This calibration process, coupled with the use of site variables such as slope, aspect, elevation, habitat type, plant association or ecoclass code, location (nearest National Forest, and in some cases Ranger District), site index, and stand density index maximums or basal area maximums, and tree measurements such as species, diameter-at-breast-height, total tree height, tree height to a dead or broken top, diameter increment, age, crown ratio, and damages or diseases, enables FVS to make very accurate individual tree and stand-level growth and yield predictions.

Dixon (2010) describes FVS as “a semi-distant-independent individual tree growth and yield model”. He considers it semi-distant-independent because certain parts of FVS localize competition and site variables to a plot (or point) basis within a stand where other parts do not. Because FVS uses stand exam data, it keeps track of the plot on which trees are located enabling the user to simulate group selection or differentially treat a stand based on density within a stand. One must realize when one is modeling treatment simulations based upon plots that although the plots may be modeled independently in FVS, the FVS outputs will still be showing the *average of all trees on all plots*. Portions of the FVS that do not model on a plot basis are the VSS classification module and the Fire and Fuels Extension.

### Fire Fuels Extension

Fire behavior and effects are modeled in FVS through the Fire and Fuels Extension (FFE) which simulates fuel dynamics and potential fire behavior over time in the context of stand development and management (Reinhardt and Crookston 2003). The Fire and Fuels Extension models changes to surface and crown fuels over time due to treatments. Surface fuels attributes include tons-per-acre of fuels by fuels size class. Crown fuels attributes modeled include crown bulk density (CBD) and canopy base height (CBH). The FFE uses existing fire fuel models for fire behavior and effects and adds new submodels for snag and fuel dynamics. The FFE uses Rothermel’s (1972) fire behavior model as implemented by Albin (1976) in FIREMOD and subsequently by Andrews (1986) in Behave to predict fire intensity, approaches developed by Van Wagner (1973, 1977) and Scott and Reinhardt (2001) to predict the onset of crowning, and methods from FOFEM (Reinhardt et al. 1997) for predicting tree mortality, fuel consumption and smoke production.

### Limitations of the Models

“It should be noted a model is a simplification or approximation of reality and hence will not reflect all of reality” (Stratton 2006). The use of models such as FVS depends upon sample data, validity of the model itself and assumptions made by the modeler. All three affect the results. The use of FVS in this analysis is to generally characterize and display existing conditions and the nature and magnitude of treatment effects to inform decisions to be made. The modeling results are not to be taken as reality.

### *Historic Stand Conditions*

Historic stand structures and species compositions were shaped by a number of factors including climate/weather, site conditions, and the historic fire regime. These factors determined whether any one

fire, whether naturally or artificially ignited, would burn any particular forested patch and how severe the fire would be when it burned the patch. Drier sites such as south-facing slopes tended to burn more frequently which resulted in lower downed woody fuel loads, a higher occurrence of herbaceous understory vegetation, and forests dominated by trees that are relatively resistant to fire, such as ponderosa pine and larger Douglas-fir (Wright and Bailey 1982, Agee 1993, Arno 2000, Beaty and Taylor 2001, Beaty and Taylor 2007). Moister sites tended to burn less frequently in what can be called “mixed-severity” fire regimes which may consist of a combination of understory and stand-replacement fires such as the seral ponderosa pine-western larch forests in western Montana that were burned with stand-replacement fires at long intervals (150+ years) with nonlethal fires at short intervals (20 to 30 years average (Arno 2000) or mixed-severity fire regimes could consist of fires that tended to burn with a fine-grained pattern, killing a large portion of the fire-susceptible species but sparing many of the fire-resistant trees (Arno 2000). The coolest and moistest sites tended to burn with stand-replacing fire regimes.

A number of studies have displayed stand structures and species compositions in terms of diameter distribution charts. Available studies include:

- In western Montana, Arno et al. (1995) found that most old growth ponderosa pine/Douglas-fir plots sampled had burned with frequent (13 to 50 year intervals) non-lethal underburns prior to 1900. They attributed the fire regime to having maintained open, nearly all-aged stands (Arno et al. 1995). Tree species composition and diameter distribution charts for these plots show mixed-species stands dominated by ponderosa pine with western larch and Douglas-fir as a co-dominant in lesser and varying presence, and lodgepole as a minor species with stand diameter distributions being very flat except for the smaller size classes which displayed increased tree numbers due to fire exclusion. They did find one plot containing even-aged ponderosa pine and western larch which they related to a pre-1900 fire history characterized by patchy stand-replacing events at intervals of 150 or more years. Tree species composition and diameter distribution chart for this plot shows a mixed-species stand dominated by ponderosa pine with western larch and Douglas-fir as co-dominants, and lodgepole as a minor species with a diameter distributions having a prominent “peak” at 16-18 inches d.b.h., characteristic of an even-aged stand. Arno et al. (1995) in their western Montana study found that in recent years, all stands had developed an understory of Douglas-fir which they related to fire exclusion.
- Holden et al. (2007) in studying tree density, diameter-class distribution, and stocking levels among areas that had burned under two different fire frequencies since 1972 in New Mexico stands found that more frequent burns resulted in more open stands with fewer small trees. They display tree diameter distributions that are almost flat compared to the unburned control stand diameter distributions in which TPA increases greatly with decreasing tree diameter.
- Fulé and Covington (1997) studied fires regimes and forest structures in the Sierra Madre occidental and displayed diameter distributions showing almost flat distributions for burned sites as opposed to increasing numbers of small trees and increases in fire-susceptible species at unburned sites.
- Minnich et al. (2000) displays diameter distributions for six forest types in the Sierra San Pedro Martir under un-managed fire regimes, showing flat diameter distributions for all forest types and dominance by fire-resistant species.
- Minnich et al. (1995) studied forest stem densities from data collected on plots in 1932 and 1992 and displayed diameter distributions for the historic measurements to be relatively flat and from the 1992 measurements to have substantial numbers of small trees, which he attributed to forest densification due to fire exclusion. They also displayed increases in understory shade tolerant and fire-susceptible trees over time.

As the studies above indicate, for any combination of fire-resistant and fire-susceptible tree species, frequent fire regimes will result in stands that tend to be uneven-aged, multi-story with open understories and slightly sloping to flat diameter distributions.

### ***Bark Beetles and Fires***

Work in a variety of forest systems has generally shown that measures of fire intensity and severity are positively associated with tree susceptibility to bark beetle attack (Ryan and Amman 1996, Bradley and Tueller 2001, Sullivan et al. 2003, McHugh et al 2003, Wallin et al. 2003, Six and Skov 2009). Factors most mentioned in these studies include: crown scorch volume, cambial damage (bole char), root damage, stocking level, and tree size.

Fire damage to trees is determined by characteristics of the fire and of the trees. The height of crown scorch is determined by fire-line intensity, wind speed, and air temperature (Van Wagner 1973) as well as tree characteristics such as needle size, bud mass, and crown volume. Tree bole cambial and root damage by fires is related to the intensity and duration of heat on tree bases and roots and tree bark thickness and root depth (Ryan and Reinhardt 1988). Tree characteristics tend to be linked, with shallow-rooted conifers tending to have thin bark and conversely deeper-rooted trees tending to have thicker bark. Younger trees tend to have both thinner bark, and lower crowns. Young Douglas-fir tend to have relatively thin bark and small thin needles with compact crowns that are heated quickly and so are less fire-tolerant than small ponderosa pine with their thicker, platy bark, thicker, longer needles and open crown structures. Larger Douglas-fir are relatively fire resistant with thick bark.

In this discussion, we will address the effects of burning by wildfires and controlled prescribed burns on Douglas-fir beetle (DFB) and mountain pine beetle (MPB) mortality.

### **Mountain Pine Beetle**

Elkin and Reid (2004) studied attack and reproductive success of MPB in fire-damaged lodgepole pines and found that beetle attack preference or reproductive success was not affected by fire damage. They suggested that fire damage only affects mountain pine beetle reproduction and population growth in areas where attack densities are low otherwise fire damage will have negligible effects on beetle attack and reproductive success.

In western Montana, Six and Skov (2009) studied the response of bark beetles and their natural enemies to prescribed burning-only, thinning-only, and thinning-and-prescribed-burning treatments in mixed-conifer forests in western Montana. They observed no increase in MPB due to the treatments. They attributed that to mountain pine beetles preference for relatively vigorous trees and its ability to maintain outbreaks in such, reflected in avoidance of burned trees

### **Douglas-fir Beetle**

The link between fire damage and Douglas-fir beetle attack has been identified for many years, and there are a number of studies concerning DFB increases following wildfires but the number concerning DFB increases following low-intensity and severity prescribed burns is limited.

Furniss (1965) examined the susceptibility of fire-injured Douglas-fir to bark beetle attack in Southern Idaho following the Poverty Flat Fire (920 acres). The Poverty Flat Fire burned as a relatively intense fire during dry weather on steep slopes. He found that 70 percent of the trees in his plots had been attacked by the Douglas-fir beetle one year after the fire. Even small or lightly burned trees were being attacked and the incidence of attack increased with the size of tree and severity of crown and cambium fire injury. He mentioned that due to the nature of the burn the number attractive, fire-damaged trees were plentiful.

Ryan and Amman (1996) found that the relationship between bark beetle attack and tree damage in areas affected by the 1988 Yellowstone Fire indicated that stress resulting from fire injury led to increased bark beetle activity. They observed that bark beetle populations appeared to have increased in fire-injured trees and then infested uninjured trees. The 1988 Yellowstone fire was a fall wildfire that burned under relatively severe fire conditions, the result being a large fire and an abundance of fire-injured trees. They also suggested that droughty conditions prior to the fire had resulted in relatively stressed trees and high Douglas-fir populations prior to the fire which contributed to the post-fire population increases.

Cunningham et al. (2005) studied Douglas-fir beetle attack on a range of fire-injured Douglas-fir and found that one year after the fire event the DFB selected and attacked large-diameter Douglas-fir with 60-80 percent bole char and 60-80 percent crown volume scorch. The following year beetle preference shifted to smaller trees with lighter fire injury because most of the larger trees had already been colonized the previous year. In the third year host selection shifted to green trees along the burn perimeter but beetle populations did not reach outbreak levels. The burn was an August wildfire.

Hood and Bentz (2007) found in their study of post-fire Douglas-fir beetle attacks and tree mortality that beetles attacked trees with greater crown scorch, but that beetle attack and mortality was also related to cambium damage and stand stocking. They noted that trees within their Yellowstone data set that died within 4 years after the Yellowstone wildfire had greater crown scorch (52 percent versus 22 percent) and cambium damage (2.9 versus 2.2 tree base quadrants damaged) than live trees.

Hood and Bentz (2007) also included in their study data from a prescribed fire in Western Montana. In that data they found that dead trees had greater crown scorch (68 percent versus 15 percent) and cambium injury (2.9 versus 0.5 quadrants damaged). They also noted that only 2 percent of the trees in the prescribed burn were attacked by Douglas-fir beetles.

In western Montana, Six and Skov (2009) studied the response of bark beetles and their natural enemies to prescribed-burning-only, thinning-only, and thinning-and-prescribed-burning treatments in mixed-conifer forests. They describe their burns as being in late spring with relative humidities of 20-48 percent and flame lengths of 0.2 to 1.2 m (0.7-3.9 feet) in the burn-only treatment and 0.2 to 2.7 m (0.7-8.9 feet) in the thin-and-burn treatment. Their fires were relatively patchy with some areas burning fairly hot resulting in considerable mortality of small diameter trees, while other areas remained relatively untouched. The thin-and-burn treatments were less patchy in nature than the burn-only treatment. They observed that Douglas-fir beetle activity increased following the treatments but decreased the following year. During the four years studied, they recorded that 20 percent of the trees attacked in the thin-and-burn treatment were attacked successfully and 6 percent of the attacked trees in the burn-only treatment were attacked successfully. They observed that mean crown scorch height, percent circumference charred, ground charring, and d.b.h. were higher in the attacked trees than in the un-attacked trees. They concluded that the increase in Douglas-fir beetle was short lived, and occurred on fire-weakened trees with the beetle unable to successfully move to residual green trees. They stated a mean crown scorch height of 11.59 m in the thin-and-burn treatment and a mean flame length of 7.98 in the burn-only treatment.

In Oregon, Youngblood et al. (2009) studied delayed mortality in ponderosa pine and Douglas-fir following thinning, thinning and burning and burning only treatments. They found that bark beetle mortality was low overall with only 0.03 percent across all species, but was higher in the treatments involving prescribed burning.

## Summary

Of the two bark beetles we are concerned with and addressing in this report, we can conclude that prescribed burning in the project area would not increase MPB, would likely increase DFB to a small

degree for a short time, and would decrease the potential for wildfires in the future to cause an increase in DFB.

Mountain pine beetle risk is now low in the project due to the recent outbreak, and damage by fires does not appear to substantially increase MPB activity.

Douglas-fir beetle can increase following fires, with the beetles initially targeting the largest, moderately to highly damaged Douglas-fir, and when they are depleted would turn toward smaller diameter trees, trees with light damage, and eventually green trees. The impacts from DFB following wildfires can be substantial. The impacts from DFB following prescribed burning would be much lower because of the substantially lower tree crown, bole, and root damage caused by the prescribed burn.

### *Thinning Effects on Bark Beetle Risk*

Bark beetles are characterized by foresters as primary and secondary. Aggressive bark beetles thought of as primary killers of trees are those that attack and kill apparently healthy trees. These primary killers include Douglas-fir beetle (*Dendroctonus pseudotsugae*), mountain pine beetle (*Dendroctonus ponderosae*), western pine beetle (*Dendroctonus brevicomis*), pinyon engraver (*Ips confusus*), roundheaded pine beetle (*Dendroctonus adjunctus*), spruce beetle (*Dendroctonus rufipennis*), and fir engraver (*Scolytus ventralis*). Secondary bark beetles infest severely stressed, dying, or freshly dead trees as well as stressed tree tops and branches. Pine engraver (*Ips pini*), red turpentine beetle (*Dendroctonus valens*) and striped ambrosia beetle (*Trypodendron lineatum*) are mostly considered secondary bark beetles. Depending upon stand conditions and beetle population levels, some bark beetles that typically act in a secondary role can act as a primary killer of trees. Pine engraver, for example, normally reproduces in logging slash, wind-blown trees, broken limbs, and severely stressed trees like other secondary bark beetles, but when populations increase due to an abundance of host material, it frequently invades and kills small live trees or the tops of larger trees. Bark beetle risk concerns in the project area involve primary bark beetles, not secondary, and the following discussion addresses only those listed above as primary bark beetles.

Researchers began to recognize the importance of tree stocking control to reduce bark beetle activity in about 1941 (Eaton 1941). In 1953, Clements recognized the relationship between stand density and mountain pine beetle activity in sugar pine in 1953 (Clements 1953 in Oliver 1995). Since then, Sartwell and Stevens (1975) worked to further establish the links between tree stocking levels and bark beetle activity. Based upon the works of Sartwell and others, Oliver (1995) investigated the relationship between the stand density index (SDI) threshold of self-thinning mortality due to competition and SDI thresholds for mortality due to bark beetles. Oliver (1995) concluded that stand density for ponderosa pine stands was limited by *Dendroctonus* bark beetles to lower levels than the level of self-thinning. He found that there appears to be a “limiting stand density index” of 365, and stands approaching that limiting SDI usually suffered large losses from bark beetle epidemics that equal or exceed periodic growth for the stands experiencing the bark beetle mortality. He suggests that endemic levels of bark beetle mortality could start in stands when they reached an SDI of 230. The 230 SDI level could be considered a “zone of imminent bark beetle mortality.”

Within the last several decades, a number of studies examined the relationships between tree thinning to reduce bark beetle activity and risk. Many of the studies observed decreased bark beetle activity with decreased tree stocking levels. These studies include: (1) observations of low bark beetle activity within thinned stands during long term stocking studies (Cochran and Barrett 1995, Cochran and Barrett 1999a, Cochran and Barrett 1999b, Cochran and Dahms 2000), (2) control studies measuring bark beetle mortality within pine stands thinned to various stocking levels and un-thinned areas (Amman 1988a, Amman 1988b, Amman et al. 1988a, Amman et al. 1988b, Cole and McGregor 1985, Cole et al. 1983,

Fiedler and Morgan 2002, Fiddler et al. 1995, McGregor et al. 1987, Mitchell et al. 1983, Safranyik et al. 2004, Schmid and Mata 2005, Whitehead and Russo 2005) and (3) control studies measuring bark beetle activity as a function of the number of beetles trapped in stands thinned to various stocking levels as well as unthinned stands (Bartos and Booth 1994, Sanchez-Martinez and Wagner 2001, Schmitz et al. 1981, Zausen et al. 2005). Of the mortality studies, only Mitchell et al. (1983) did not demonstrate a difference in mortality between lightly thinned stands and unthinned controls, but they did observe that the heavily thinned stands had no mortality. Only one trapping study, Sanchez-Martinez and Wagner (2001), did not observe fewer trapped beetles in thinned stands compared to unthinned. Sanchez-Martinez and Wagner's (2001) measurements found no significant difference between bark beetles trapped in thinned and unthinned ponderosa pine stands on the Coconino plateau in Arizona. However, their data was collected during low levels of bark beetle activity (endemic) in the area and they observed that the average tree size within the unthinned stands was very small, (22.2 cm) making the trees undesirable habitat for the most aggressive bark beetles found in the area--western pine beetle and mountain pine beetle. Given the results all studies mentioned above, we conclude that available research provides overwhelming evidence for the utility of thinning to reduce tree stocking and therefore the level of bark beetle mortality and the risk of epidemic levels of mortality.

## *Restoration*

### Whitebark Pine Restoration

Whitebark pine (*Pinus albicaulis*) is a subalpine conifer that is relatively slow growing, intolerant of shade, and tolerant of poor soils, steep slopes, windy exposures, and cold environments (Arno and Hoff 1990). Whitebark pine cones are indehiscent, that is, they do not open sufficiently to release the seeds when ripe but they may be shed from the tree and decay on the ground, releasing the seeds (Arno and Hoff 1990, Owens et al. 2008). Seeds are large and wingless. The combination of indehiscent cones and large wingless seeds limits unaided dispersal of seeds. The major mechanisms for dispersing whitebark pine seed depends primarily upon the seed-harvesting and caching behavior of Clark's nutcracker (*Nucifraga columbiana*) (Tomback 1982, Hutchins and Lanner 1982), although a number of other birds and small mammals take the seeds for eating and for storage as winter food. Wildlife species that eat whitebark pine seeds include woodpeckers, jays, ravens, chickadees, nuthatches, finches, chipmunks, ground squirrels, bears and probably mice (Hutchins and Lanner 1982, Tomback 2001). Pine squirrels (*Tamiasciurus* spp.) harvest and cache whitebark pine cones in middens (Hutchins and Lanner 1982, Kendall 1983). Whitebark pine seeds serve as an important food source for grizzly bears (*Ursus arctos*) and black bears (*U. americanus*) which raid the middens (Kendall 1983).

Whitebark pine grows in a wide range of plant communities. It can be found in pure stands as the climax species on the coldest and driest sites where harsh growing conditions keep out the less hardy species (Pfister et al. 1977). At the highest elevations, it can be found growing as small stands of short, shrublike trees (krummholz) mixed in with alpine herblands; but on less harsh sites, it achieves larger size and straighter form. Whitebark pine grows as a co-climax species on sites capable of supporting shade-tolerant tree species such as subalpine fir, but on which they are unable to grow vigorously enough to replace the whitebark pine. These are described as whitebark pine-subalpine fir (*Abies lasiocarpa*) habitat types (Pfister et al. 1977) and whitebark pine phases of subalpine fir habitat types (Steele et al. 1983). On moister subalpine fir habitat types within the analysis area, whitebark pine can be present as a major seral species stand component, and on dryer subalpine fir habitat types as a minor seral species stand component.

Whitebark pine's presence as a seral species in subalpine fir habitat types is maintained by disturbances, mainly fires (Arno 2001). Prior to 1900, fires burned through whitebark pine forests at average intervals

ranging from about 30 to and 400 years, usually with mixed-severity (Arno and Peterson 1983, Morgan and Bunting 1990, Barrett 1994, Brown et al. 1994, Keane et al. 1994, Tomback et al. 2001, Murray 2008, Larson et al. 2009), although the longest fire return intervals were associated with a stand-replacing fire regime (Romme 1982). Some of the seral whitebark pine stands have been perpetuated by low-intensity fires that kill understory fir and spruce (Arno 1986, Arno 1976, Fisher and Bradley 1987, Arno and Hoff 1990, Bradley et al. 1992). Severely burned patches within mixed-severity fires create openings that are used by nutcrackers for caching seeds, resulting in even-aged, whitebark pine stands.

Whitebark pine has been declining throughout major portions of its range for the last 50 years due to the effects of diseases, insects, and succession (Kendall and Keane 2001) with a rapid decline since the 1960s (Keane et al. 1996). White pine blister rust (*Cronartium ribicola*) has led to the most rapid and precipitous decline in whitebark pine. Impacts from the disease have been highest in the more mesic parts of whitebark pine range, but although the coldest and driest whitebark pine stands have been impacted to a lesser degree, all whitebark pine can be considered at risk. White pine blister rust (WPBR) enters trees through tree needles and grows from the infected needles through branches to the main stem. Smaller trees die more quickly than larger trees. Although larger trees take longer to die, the ends of branches can be killed long before the tree dies, which reduces or eliminates cone production since whitebark pine cones are produced at the ends of branches in the upper portion of the tree crown.

During the last 100 years, the area of whitebark pine cover type in the interior Columbia River Basin and the Bob Marshall Wilderness Complex in Montana is estimated to have declined 45 percent with the whitebark pine in areas where it is a major seral species declining by 98 percent (Keane et al. 1996). In a disease study of white pines (*Pinus albicaulis* and *P. flexilis*) of the Intermountain West, Smith and Hoffman (2000) found the incidence (present within the sampled stands) of WPBR to be 55 percent in the middle Rocky Mountains. In the Bob Marshall Wilderness Complex of Montana, Keane et al. (1994) reported an 83 percent infection intensity (percentage of live trees infected) with a 33 percent average crown kill in 1990. They found that snags were common, ranging from 0 to 123 trees/ha and attributed most of the whitebark pine mortality to blister rust because they found no evidence of extensive bark beetle mortality. South of the project area in the Grand Teton National Park, Kendall et al. (1996a) found an average of 7 percent dead (ranging from 0 to 50 percent), and in Yellowstone National Park found an average of 7 percent dead (ranging from 0 to 64 percent). Kendall et al. (1996b) on the Gallatin National Forest found 10 percent dead (ranging from 0 to 43 percent). These mortality values have almost certainly increased within the last 15 years due to additional WPBR-related mortality and due to the recent mountain pine beetle epidemic. Blister rust surveys of whitebark pine in two stands south of the Stonewall project area on the Helena National Forest done in 2007 and 2009 found 74 and 97 percent WPBR infection levels (see WBP Survey\_granite.xls and WBP Survey\_redmtn6253.xls in project records).

Whitebark pine in the Northern Rocky Mountains depends upon fire to maintain its dominance or presence on sites where it is a successional species (Arno 2001, Keane 2001, Kendall and Keane 2001, Morgan and Murray 2001). It often can survive low-severity fires that kill its competitors. Many fires can kill most fir, spruce, and young whitebark pine, but few larger whitebark pines. Fire frequency has decreased in many whitebark pine forests since the late 1880s, with the greatest change in the last 60 years (Brown 1994, Murray et al. 1998, Rollins et al. 2000). This fire exclusion has allowed an increase in competition from shade-tolerant and fire-intolerant species and advanced the age of whitebark pine stands (Arno 1986, Kendall and Keane 2001, Keane et al. 1994) making whitebark pine trees more susceptible to WPBR and mountain pine beetle. Keane et al. (1994) reported that in the Bob Marshall Wilderness Complex, their sampled stands typically consisted of an overstory of old whitebark pine and spruce with an understory of almost exclusively subalpine fir (8 to 1500+ trees/ha, 30 to 250 years of age). They found whitebark pine regeneration in only about 9 percent of their sample plots. The number and size of

forest openings suitable for nutcracker caching and whitebark seedling growth has declined. Increases in fuel loads as stands transition to dominance by subalpine fir and Engelmann spruce has led to increases in fire-severity, which threatens the survival of even the largest and most fire resistant whitebark pine trees (Morgan and Bunting 1990).

Mountain pine beetle attacks whitebark pine in addition to lodgepole pine. Increases in stand age, average tree size, and competition, increases whitebark pine tree and stand susceptibility to attack from mountain pine beetle as it does with lodgepole pine. White pine blister rust infection also stresses whitebark pine trees, making them more attractive or susceptible to mountain pine beetles (Keane et al. 1994). The recent mountain pine beetle epidemic has killed whitebark pine, along with lodgepole and ponderosa pine.

Restoring whitebark pine must address the major factors causing its decline; competition, succession and white pine blister rust (Tomback et al. 2001). To be successful in the long term, restoration should emphasize the return of ecosystem processes rather than simply historic stand conditions (Keane and Arno 2001). The primary ecosystem process that should be returned is fire.

Techniques that can be used to restore whitebark pine (Keane and Arno 1996, Keane and Arno 2001, Tomback et al. 2001) include:

- Planting rust-resistant whitebark pine seedlings
- Release cuttings
- Thinning
- Tree understory removal
- Selective tree removal
- Cutting small openings (50 m diameter) for caching by Clark's nutcracker
- Natural stand-replacement fire
- Prescribed stand-replacement fire with or without cutting for fuel enhancement
- Variable intensity prescribed burning in natural fuels
- Variable intensity prescribed burning with cutting for fuel enhancement
- Underburning

Keane and Parsons (2010a) describe the results of a study to restore white pine ecosystems using treatments that emulate the historic fire regime—primarily combinations of prescribed fire, silvicultural cuttings, and fuel enhancement cuttings. They found that all treatments that included prescribed burning created suitable nutcracker caching habitat, and many birds were observed caching seeds in the burned areas. After 5 years, however, they had not found a significant increase in regeneration of whitebark pine. They attributed the lack of regeneration to the high level of blister rust in the surrounding area that had reduced available seed and forced the nutcrackers to reclaim most of the cached seed, as well as site severity, a lack of plant cover, and a relatively short time since disturbance. Keane and Parsons (2010b) recommended that an evaluation of natural regeneration in the treatments must be made at least a decade after burning. In four of the five study sites, they recorded 88 to 95 percent mortality from blister rust, with less than 1 percent mortality on the fifth study site. Based upon their findings, their recommendations included:

- Emulating historical fire regimes
- Using prescribed burning and augmenting fuelbeds by cutting trees where necessary
- Letting wildland fires burn under acceptable conditions

· Planting potentially rust-resistant trees where whitebark pine blister rust-caused mortality was above 20 percent, rust infection levels were above 50 percent, or bark beetle mortality levels were high

Treatment Groups 7 and 8 in the Stonewall project would be prescribed burned with mixed-severity fires. The treatments in Group 7 would create mortality patches less than 5, 10, or 20 acres depending upon the unit and in Group 8 would create mortality patches less than 30 or 75 acres depending upon the unit. Where necessary, the treatments would involve cutting trees with chainsaws prior to burning to enhance increase surface fuel loadings. During cutting operations, individuals and patches of whitebark pine would be thinned around where available to reduce competition and to protect them from the prescribed burn. The result of the treatments would be to create a mosaic of lightly burned timbered areas and more severely burned patches. The patches would provide areas for nutcracker caching and for whitebark pine to establish and grow. These practices are consistent with recommendations stated above by Keane and Parsons (2010a), Keane and Arno (1996), Keane and Arno (2001), and Tomback et al. (2001) to emulate historical fire regimes, use variable intensity prescribed burning, augmenting fuels where necessary, thin to release whitebark pine trees, remove understories, and create small openings.

### Aspen Restoration

Quaking aspen (*Populus tremuloides*) is the most widely distributed tree in North America (Perala 2004). It is a fast-growing, short-lived, deciduous tree that reproduces by seed and vegetatively. Although aspen can produce an abundance of highly viable seeds, few aspen seedlings survive in nature due to the short period of seed viability (2-4 weeks following maturity under favorable conditions and perhaps much less under unfavorable), unfavorable moisture during seed dispersal, high soil surface temperatures, fungi, adverse diurnal temperature fluctuations during initial seedling growth, and the unfavorable chemical balance of some seedbeds (Maini and Cayford 1968, Meyer and Fechner 1980). Aspen forms clones, which are aggregations of stems mainly produced asexually from a single sexually produced individual through root suckers, although some root collar and stump sprouts can be produced (Perala 2004). Aspen clones typically produce root suckers in response to a disturbance, for example fires, that affect the clone and produce changes in the production of growth regulators (i.e. auxin and cytokinin) soil temperatures, and available moisture. In general, the greater the disturbance the greater the number of suckers produced due to increases in cytokinin-to-auxin ratios in the root systems, increases in soil temperatures, and increases in available site resources such as water and light. Root system carbohydrate reserves are also involved. Carbohydrate reserves provide the suckers with energy until they can provide their own through photosynthesis, and so the density of aspen regeneration following disturbance depends upon the level of those reserves. Although aspen stems are short-lived relative to other trees, aspen can reproduce through suckering following disturbance and so aspen clones can be quite old.

Aspen can grow on site conditions that preclude the establishment of conifers but which have adequate subsurface moisture for a long-lived aspen clone to survive (Jones and DeByle 1985, Mueggler 1988). These self-perpetuating clones can be considered “stable” and “climax” and are not seral to a conifer species (Pfister et al. 1977). Most, if not all, of the aspen clones within the Stonewall Project area are growing within conifer stands and can be considered a seral species to a conifer species, either subalpine fir or Douglas-fir. They are usually small and have apparently been perpetuated by periodic wildfires (Pfister et al. 1977). As a seral species, without disturbance, over time the aspen can be expected to be overtopped by taller conifers and outcompeted for site resources.

Thinning within and around aspen clones has been shown to be an effective treatment for increasing aspen regeneration and restoring aspen (Arikian et al. 1999, Huffman et al. 1999, Shepperd 2001, Prévost and Pothier 2002, Jones et al. 2005, Groot et al. 2009, Lennie et al. 2009). The heavier the thinning, the greater the number of aspen suckers produced (Huffman et al 1999, Prévost and Pothier 2002) and removing all competing trees from within and around aspen has been shown to produce the greatest

increase in aspen suckering (Stone et al. 2001, Groot et al. 2009, Lennie et al. 2009, Prévost and Pothier 2002). Prescribed burning has also been shown effective at promoting aspen regeneration (Brown and DeByle 1987, Bartos et al. 1991, Kay 2001, Shepperd 2001, Durham 2008, Paragi and Haggstrom 2007). The effects of prescribed burning on aspen vary because fuels and flammability vary considerably within the aspen and mixed aspen-conifer overstory types (Brown and Simmerman 1986, Brown and DeByle 1987). In general, the fuel types in order from high potential fire intensity and rate of spread to low are: mixed conifer-aspen/shrub, aspen/shrub, mixed conifer-aspen/forb, aspen tall forb, and aspen low forb (Brown and Simmerman 1986). Brown and Simmerman (1986) rate the probability of successfully applying prescribed fire to aspen forests as moderate to high in the aspen/shrub, aspen/tall forb and mixed aspen-conifer fuel types. The aspen within the Stonewall area is present in mixed aspen-conifer fuel type.

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## **Appendix C – Cumulative Effects**

## Stonewall Vegetation Project Cumulative Effects Activities

The area analyzed in cumulative effects analysis is usually not limited to the project area, and it varies with the resource or species analyzed. Each resource has different “boundaries” for its effects analysis. Quantified, detailed information regarding effects, leading to specific reasoned conclusions can be found in the cumulative effects section of each specialist report located in the project record.

Available information was reviewed. Many fires in the affected watersheds had no accompanying written information; however, fire occurrence data provides a glimpse of the fire suppression history in the project area. Fire information within all ownerships in the Stonewall Vegetation Project area and adjacent areas was considered. Records note there were 188 fires reported from 1920 till 2009. Acreage for fire size classes are as follows: (A) less than 0.25 acres, (B) 0.26-9.9 acres, (C) 10-99 acres, (D) 100 – 299 acres, (E) 300-999, (F) greater than 1,000 acres.

**Table C- 1. Number of fires in the Stonewall watersheds by decade and size class**

DECADE	A	B	C	D	E	F	TOTAL
1920-1929	2						2
1930-1939	12	1					13
1940-1949	14				1		15
1950-1959	9	2	1				12
1960-1969	20		1				21
1970-1979	9	6	1				16
1980-1989	15	5	1				21
1990-1999	40	9	1	1			51
2000-2009	27	8	1		1		37
2010-2012		1	1			1	3
Total number of fires	148	31	6	1	2	1	191

(Kurtz 2009; updates L.Burns *personal communication*)

Fires that escaped detection are not included. Fire occurrence data was digitized as point source data from historical maps that portrayed fires by year, size class, and cause for 1920 to 1969 (Kurtz 2009). For 1920 to 1969, no more than 1,243 acres on all ownerships have burned based on the maximum acreage per size class and the number of fires that occurred in that size class. For the period from 1970 to 2009, fire occurrence information was developed from Kansas City fire database (KCFast). The records from this period have detailed information including acreage, cost, and physical location. During the period from 1970 to 2009, 125 fires burned approximately 531 acres within the watershed area. Therefore, no more than 1,774 acres have burned across all ownerships since 1920, or less than 4 percent of the project area. The Snow/Talon fire burned 37,905 acres adjacent to the project area in 2003, approximately 87 acres burned within the project boundary. The Keep Cool Fire burned 302 acres within and adjacent to the project area in 2006, approximately 261 acres burned within the project boundary. In 2007, the Bull Mountain Fire burned 30 acres.

The following tables of past, present, and reasonably foreseeable activities have been used by the interdisciplinary team members in determining the cumulative effects for their respective resource. Each resource specialist has determined which of the following activities are applicable to their analysis, depending on their cumulative effects boundary.

Areas considered in the tables below include the Stonewall Vegetation project area (Stonewall), watersheds (6th Code HUCs) in and adjacent to the project area, and Stonewall project area and combined boundary (Stonewall Combined Boundary) (used for selected specific species). These represent the

cumulative effects areas required for most resources, except for the Inventoried Roadless area. Activities are sorted by decade. Information on past activities beyond the HUC areas is available from the Forest-wide Hazardous Tree Removal and Fuels Reduction – Healthy Forests Restoration Act Project analysis. Harvest/fire records prior to 1950 are not available. Harvest and fuel treatments are noted in the table below by the respective boundaries. Harvest activities are sorted by intermediate and regeneration treatments (see definitions). “Fuels activities” includes prescribed fire (including hand slashing), pile burning and jackpot burning. Timber harvest and/or fuel treatment acres could overlap on the same piece of ground so total acres reflected in the table may double count some parcels of ground; refer to Figure C-1 for clarification. Current stand conditions as a result of past disturbances are reflected in existing condition reports by resource area. Present or ongoing projects are those projects in the implementation phase. Reasonably foreseeable projects are in the planning phase, which means there is potential for change due to public input, changed conditions, etc. In addition, natural processes such as succession and natural events such as droughts are always occurring.

## Past Activities

**Table C- 2. Acres of past fire and fuels activities in the project area\***

<b>Row Labels</b>	<b>1950s</b>	<b>1960s</b>	<b>1970s</b>	<b>1980s</b>	<b>1990s</b>	<b>2000s</b>	<b>Grand Total Acres</b>
Fuels treatments	25	1,751	1,097	1,569	2,460	1,020	<b>7,922</b>
Prescribed burns						2,841	<b>2,841</b>
Other						382**	<b>382</b>
<b>Grand Total</b>	<b>25</b>	<b>1,751</b>	<b>1,097</b>	<b>1,569</b>	<b>2,460</b>	<b>4,243</b>	<b>11,145</b>

\* Past fire and fuels management activities obtained from Helena National Forest GIS spatial and tabular databases.

\*\*Forestwide Hazardous Tree Removal and unspecified amount of public fire wood

**Table C- 3. Past activities**

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
<b>1950- 1959</b>				
Forest Service Timber Harvest	Pre 1960	See GIS Map	<p>Timber harvest primarily tractor logging, use of skid trails and haul use of local roads.</p> <p>Stonewall Regeneration harvest: 198 acres by HUCs</p> <p>Beaver Creek: Regeneration harvest: 199 acres</p> <p>Humbug Creek, Keep Cool Creek, Lincoln Creek No records</p> <p>Stonewall Combined Boundary Regeneration harvest: 305 acres</p>	<p>Harvest/regeneration treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.</p>
Fire/Fuels	pre 1960	multiple	<p>Stonewall Fuels treatments: 25 acres by HUCs</p> <p>Beaver Creek: Fuels treatments: 25 acres</p> <p>Humbug Creek, Keep Cool Creek, Lincoln Creek: No records</p> <p>Stonewall Combined Boundary Fuels treatments: 25 acres</p>	<p>Effects included a short-term (&lt;10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances on vegetation are reflected in the existing condition.</p>
Mining	1950s	Multiple	Small scale hard rock mining	Small localized temporary disturbance to soils and streamside banks.
Private and State lands Timber harvest	1950s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
<b>1960 - 1969</b>				
Forest Service Timber Harvest	1960 - 1969	See GIS Map	<p>Stonewall Regeneration harvest: 1,608 acres; Sanitation harvest: 37 acres; Intermediate: 254 acres; Reforestation: 1,144 acres</p> <p>By HUCs: Beaver Creek: Regen harvest: 589 acres; Intermediate harvest. 126 acres Humbug Creek: No records Keep Cool Creek: Regen harvest: 1,241 acres; Intermediate harvest. 1 53 acres: Lincoln Creek: Regen harvest: 258 acres; Sanitation harvest: 37 acres Stonewall Combined Boundary Regeneration Harvest: 3,535 acres; Intermediate Harvest: 254 acres; Sanitation Harvest: 60 acres; Reforestation: 2,340 acres</p>	Regeneration and salvage treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. Intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1960-1969	See GIS Map and table 1	<p>Stonewall Fuels treatments: 1,751 acres</p> <p>By HUCs Beaver Creek: Fuels treatments: 729 acres; Humbug Creek: Fuels treatments: 11 acres; Keep Cool Creek: Fuels treatments: 1,633 acres; Lincoln Creek: Fuels treatments: 78 acres</p>	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.
Livestock Grazing on federal and private lands	1960-1969	Multiple	Stonewall, HUC and Stonewall combined boundary: Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				disturbances on vegetation are reflected in the existing condition.
Mining	1960s	Multiple	Small scale hard rock mining	Small localized temporary disturbance to soils and streamside banks.
Private and State lands Timber harvest	1960s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
<b>1970 - 1979</b>				
Forest Service Timber Harvest	1970 - 1979	See GIS Map	<p>Stonewall:                      Regeneration harvest: 502 acres                      Sanitation harvest: 82 acres</p> <p>By HUCs                      Beaver Creek: Regeneration harvest: 388 acres; Sanitation harvest: 21 acres                      Humbug Creek: Regeneration harvest: 37 acres                      Keep Cool Creek: Regeneration harvest: 116 ac.; Sanitation harvest: 24 ac.                      Lincoln Creek: Regeneration harvest: 116 acres; Sanitation harvest: 61 acres</p>	Regeneration and salvage treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. Intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
Fire/Fuels	1970-1979	See GIS Map and table 1	Stonewall Fuels activities 1,097 acres By HUCs Beaver Creek: Fuels treatments: 875acres Humbug Creek: Fuels treatments: 49acres Keep Cool Creek: Fuels treatments : 524 acres Lincoln Creek: Fuels treatments: 161 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.
Livestock Grazing on federal and private lands	1970-1979	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.
Mining	1970s	Multiple	Small scale hard rock mining	Small localized temporary disturbance to soils and streamside banks.
<b>1980 - 1989</b>				
Forest Service Timber Harvest	1980 - 1989	See GIS Map	Stonewall: Regeneration harvest: 575 acres Sanitation harvest: 17 acres By HUCs Beaver Creek: Regeneration harvest: 371 acres Keep Cool Creek: Regeneration harvest: 8 acres Lincoln Creek: Regeneration harvest: 205 acres Sanitation harvest: 17acres	Regeneration treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1980-1989	See GIS Map and table 1	Stonewall Fuels activities 1,569 acres By HUC's Beaver Creek: Fuels treatments: 791 acres Humbug Creek: Fuels treatments:11 acres Keep Cool Creek: Fuels treatments: 141 acres Lincoln Creek: Fuels treatments: 780 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.
Livestock Grazing on federal and private lands	1980-1989	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.
Private and State lands Timber harvest	1980s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
Mining	1980s	Multiple	Small scale hard rock mining	Small localized temporary disturbance to soils and streamside banks.
<b>1990 - 1999</b>				

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
Forest Service Timber Harvest	1990 – 1999	See GIS Map	<p>Stonewall  Regeneration harvest: 787 acres  Sanitation harvest: 220 acres  Intermediate harvest: 17 acres  By HUCs  Beaver Creek  Regeneration harvest: 275 acres  Intermediate harvest: 16 acres  Sanitation harvest: 186 acres  Humbug Creek  Intermediate harvest: 49 acres  Keep Cool Creek  Regeneration harvest: 393 acres  Intermediate harvest: 78 acres  Sanitation harvest: 279 acres  Lincoln Creek  Regeneration harvest: 432 acres  Intermediate harvest: 17 acres  Sanitation harvest: 28 acres</p>	<p>Regeneration treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.</p>
Fire/Fuels	1990-1999	See GIS Map and table 1	<p>Stonewall  Fuels activities: 2,460 acres  By HUCs  Beaver Creek: Fuels treatments: 1,196 acres  Humbug Creek: Fuels treatments: 1,145 acres  Keep Cool Creek: Fuels treatments: 1,957 acres  Lincoln Creek: Fuels treatments: 779 acres</p>	<p>Effects included a short-term (&lt;10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.</p>
Livestock Grazing on federal and private lands	1990-1999	Multiple	Grazing of cattle, sheep and horses.	<p>Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.</p>
Private and	1990s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live and dead and dying

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
State lands Timber harvest				trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity
Mining	1990s	Multiple	Small hand-scale placer mining	Small localized temporary disturbance to soils and streamside banks.
<b>2000 - 2010</b>				
Forest Service Timber Harvest	2000-2010	See GIS Map	Stonewall Regeneration harvest: 154 acres By HUCs: Beaver Creek: No records; Humbug Creek: Intermediate harvest: 60 acres; Keep Cool Creek: Regeneration harvest: 5 acres; Lincoln Creek: Regeneration harvest: 154 acres Sanitation harvest. 16 acres	Regeneration treatments created an early-seral stage following the treatment and of which a few are still providing most of the early-seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	2000 to 2010	See GIS map and table 1	Stonewall Fuels activities: 1,020_acres By HUCs Beaver Creek: Fuels treatments: 181 acres Humbug Creek: Fuels treatments: 166 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, some which may have since been restored. Effects of these disturbances are reflected in the existing condition.

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
			Keep Cool Creek: Fuels treatments: 285 acres Lincoln Creek: Fuels treatments: 571 acres	
Pheromone Control	2002	Lincoln Gulch	Placement of MCH caps, occurred just w/in Stonewall Vegetation area.	Small localized temporary disturbance from site visits
Livestock Grazing on federal and private lands	2000-2010	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. Effects of these disturbances on vegetation are reflected in the existing condition.
Mining	2000s	Multiple	Small hand-scale placer mining	Small localized temporary disturbance to soils and streamside banks.

## Ongoing Activities

**Table C- 4. Ongoing Activities 2010-present**

ACTIVITY/NAM E	DECADE/YEA R	DRAINAG E	SCOPE OF ACTIVITY	RESOURCE EFFECTS
Pine Grove Campground Fencing	2011	Beaver Creek	Fence enclosure of 8 acres to keep livestock out of the developed campground area.	Removed impact from livestock use
Alice Creek, Hogum Creek, and Poorman prescribed burns	2010-present		BMSS IRA 2,841 acres Specimen Creek IRA 793 acres Hand pile, hand slashing, pile burning and prescribed burns for wildlife habitat improvement.	Temporary localized disturbance during operations. Some felling of small diameter trees and reduction in fuels. Short-term increase in growth of shrubs and forbs. Potential for weed persistence or spread.
Forest-wide Hazardous Tree Removal and Fuels Reduction HFRA Project	Ongoing	Forest wide	Stonewall: 382 acres BMSS IRA: 82 acres By HUCs: total 568 acres Beaver Creek: 172 acres Keep Cool Creek: 270 acres Lincoln Creek: 127 acres	Temporary localized disturbance during operations. Felling and removal of dead and damaged "hazardous" trees from roadsides. Very minor effects on live tree stocking, stand structures, and species compositions. Potential for weed persistence or spread.
Pine Grove Campground	Ongoing annual use &	Upper Beaver	Developed recreation site, overnight use (free-use facility). Season of use 5/15 – 11/15.	Localized noise disturbance, road use.

ACTIVITY/NAM E	DECADE/YEA R	DRAINAG E	SCOPE OF ACTIVITY	RESOURCE EFFECTS
	maintenance	Creek		
Livestock Grazing Permits	Ongoing		<p>The Stone Dry area includes 3 allotments; 1 sheep and two cattle (see Stone Dry NFMA Report for more detail – pp. 1-3).                      Keep Cool Liverpool allotment: project area 3,171 acres                      Stonewall allotment: project area 2,000 acres                      By HUCs: total 4,486 acres                      Beaver Creek 3,510 acres; Keep Cool Creek HUC 785 acres; Lincoln Creek HUC 191 acres                      Portions of several allotments overlap the Bear-Marshal-Scapegoat-Swan (BMSS) IRA.                      Keep Cool Liverpool allotment: BMSS IRA 4,344 acres, Keep Cool Creek 7,500 acres                      Stonewall allotment: BMSS IRA 203 acres, LG IRA 124 acres                      Arrastra allotment: LG IRA 202 acres                      Alice Creek allotment: BMSS IRA 12,963 acres</p>	<p>Potential impacts on aspen and conifer regeneration in proposed treatment units analyzed. Proposed Unit 57 (93 acres) and most of Unit 43 (about 80 acres) are within livestock allotments. Grazing removes wildlife cover and forage on the site, and reduces species. Potential for spread of existing weed populations as well as introduce new populations, but with implementation of BMPs populations should not expand substantially. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.</p>
Livestock Grazing on private lands	Ongoing	Multiple	<p>Grazing of cattle, sheep and horses. May result in riparian vegetation, stream bank and upland impacts.</p>	<p>Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity. Potential for spread of existing weed populations as well as introduce new populations. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.</p>
Mining Activity	Ongoing	Multiple	<p>Overall, permitted mining activity on the Lincoln Ranger District in recent years has been limited to small operations with mainly hand work.</p>	<p>Small localized temporary disturbance to vegetation, soils and streamside banks.</p>
Noxious Weed Treatment	Ongoing	Multiple	<p>Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment, and backpack/horsepack equipment; some biocontrol treatment (insects), grazing control (sheep), and mechanical.</p>	<p>Potential impacts to small trees along roadsides and in proposed regeneration units. Of the 1,111 acres within the project</p>

ACTIVITY/NAM E	DECADE/YEA R	DRAINAG E	SCOPE OF ACTIVITY	RESOURCE EFFECTS
			Stonewall Vegetation Project area 1,111 acres Bear-Marshall-Scapegoat-Swan IRA 386 acres Lincoln Gulch IRA 261 acres	area, 443 acres are within intermediate treatment units, 50 acres are in prescribed burn units, and 492 are on roadsides. Applying herbicides for control of noxious weeds would have little potential impact to desirable tree stocking in these areas. 126 acres are within proposed regeneration harvest units, with herbicide application having minimal impacts if appropriate application methods are used. Potential short-term impacts to water quality if stream set-backs are not adhered to or if spills occur. Potential impact to sensitive plant populations, known populations would be protected from disturbance, but some habitat or individuals could be impacted.
Lincoln Compound	Ongoing	Humbug Creek	Humbug Creek HUC 110 acres	Continued disturbance within a developed area.
Outfitting	Ongoing	Multiple	Outfitter and guide special use permits for big game and spring bear seasons, day use and overnight camping.	Temporary displacement of use of area.
Road Maintenance	Annual	Multiple	Grading and spot-gravelling performed as needed. Culvert maintenance may include clean out and or replacement where warranted for water flow.	Potential impacts to water quality from inadvertent side casting of road material into stream channels and erosion of freshly bladed surface, but longer-term benefits based on road-drainage improvements and fish passage. .
Road Special Use Permit	Ongoing	Multiple	Re-issuance of existing road access permit for long-term.	Continuation of existing use.
Personal use firewood cutting.	Ongoing	Multiple	Dead trees with approximately 100 feet of existing travel routes within the analysis are being removed by the public for firewood.	Temporary disturbance, reduction of some down wood within travel corridors. Potential for weed spread.
Private Land Timber Sale	Ongoing	Private property, State Property	Unspecified acres; primarily tractor logging using existing roads for hauling.	Temporary localized disturbance during operations. Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest may be reduced on some of the acres affected. Because off-forest lands occur at lower elevations in

ACTIVITY/NAM E	DECADE/YEA R	DRAINAG E	SCOPE OF ACTIVITY	RESOURCE EFFECTS
				highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity. Felling and removal of trees, potential for weed persistence or spread.
Private Land Development	Ongoing	Multiple	Development for housing in several areas in the vicinity of the town of Lincoln.	Increased disturbance and road use may displace wildlife. Habitat alteration for developed sites.

Reasonably Foreseeable Future Activities

Table C- 5. Foreseeable future activities

ACTIVITY/NAME	ESTIMATED IMPLEMENTATION	DRAINAGE	SCOPE OF ACTIVITY	RESOURCE EFFECTS
Blackfoot Travel Plan (non-winter) and Blackfoot-North Divide Winter Travel Plan	Currently Under analysis	Lincoln RD	<p>The Lincoln Ranger District is currently developing the Blackfoot Travel Plan (non-winter) that would change existing non-winter motorized public access routes and prohibitions within the Blackfoot travel planning area. The overall objective of this proposal is to provide a manageable system of designated public motorized and non-motorized access routes and to designate motorized public access routes on a Motor Vehicle Use Map. The following changes are proposed:</p> <p>Approximately 98 miles of roads would be closed to public wheeled motorized use (348 miles of National Forest System roads would still be available)</p> <p>Approximately 30 additional miles of motorized trails would be designated (92 miles of motorized trails would be available)</p> <p>Approximately 18 additional miles of non-motorized trails would be designated (89 miles of non-motorized trails would be available)</p> <p>Approximately 2 miles of new road and motorized trail would be constructed</p> <p>Approximately 21 miles of roads would be considered naturally reclaimed per field investigations (roads that are vegetated to the point that they are not drivable and thus are reclaimed on their own)</p> <p>Approximately 62 miles acquired through land exchange would be identified for closure and possible decommissioning.</p> <p>Approximately 39 miles not previously part of the road or trail inventory</p>	Action alternatives would reduce overall road density and related effects such as potential for weed spread, sedimentation delivery from roads to area streams, and disturbance to wildlife. Under the action alternatives use of roads may change from motorized to non-motorized; opportunities for both motorized and non-motorized recreation would continue to be available across the district.

ACTIVITY/NAME	ESTIMATED IMPLEMENTATION	DRAINAGE	SCOPE OF ACTIVITY	RESOURCE EFFECTS
			<p>(unclassified routes) would be identified for closure and possible decommissioning</p> <p>Approximately 133 miles of roads would be stored</p> <p>Approximately 8 miles of roads would be decommissioned</p> <p>The Blackfoot-North Divide Winter Travel Plan would provide for a variety of motorized and non-motorized winter recreational opportunities.</p> <p>These plans are under analysis and are being developed in accordance with 36 CFR 212, Subpart B, Designation of Roads, Trails, and Areas for Motor Vehicle Use</p>	
Road Maintenance	Continuation	Multiple	Grading and spot-gravelling performed as needed. Culvert maintenance may include clean out and or replacement where warranted for water flow.	Temporary displacement of animals due to human activity. Potential impacts to water quality from inadvertent side casting of road material into stream channels and erosion of freshly bladed surface, but longer-term benefits based on road-drainage improvements and fish passage.
Livestock Grazing on federal and private lands	Continuation	Multiple	Grazing of cattle, sheep and horses.	Potential impacts on aspen and conifer regeneration. Grazing removes wildlife cover and forage on the site, and reduces species. Potential for spread of existing weed populations as well as introduce new populations. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.
Private Land Timber Sale	Continuation	Private property, State Property	Unspecified acres; primarily tractor logging using existing roads for hauling.	Removal of live and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest may be reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or

ACTIVITY/NAME	ESTIMATED IMPLEMENTATION	DRAINAGE	SCOPE OF ACTIVITY	RESOURCE EFFECTS
				adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
Noxious Weed Treatment	Continuation	Multiple	Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment, and backpack/horsepack equipment; some biocontrol treatment (insects), grazing control (sheep), and mechanical. Stonewall Vegetation Project area 1,111 acres Bear-Marshall-Scapegoat-Swan IRA 386 acres Lincoln Gulch IRA 261 acres	Potential impacts to small trees along roadsides and in proposed regeneration units. Applying herbicides for control of noxious weeds would have minimal impacts to desirable tree stocking if appropriate application methods are used.

Data source: HNF Lincoln RD GIS. Codes categorized as follows:

Fuels treatments: 1111,1112,1113,1115,1117,1120,1130,1150,1152,1153,1154

Regeneration treatments: 4111,4112,4113,4117,4121,4131,4132,4133,4134,4141,4142,4148,4211

Intermediate treatments: 4151,4152,4210,4220

Sanitation treatments: 4230, 4231, 4232

Reforestation treatments:

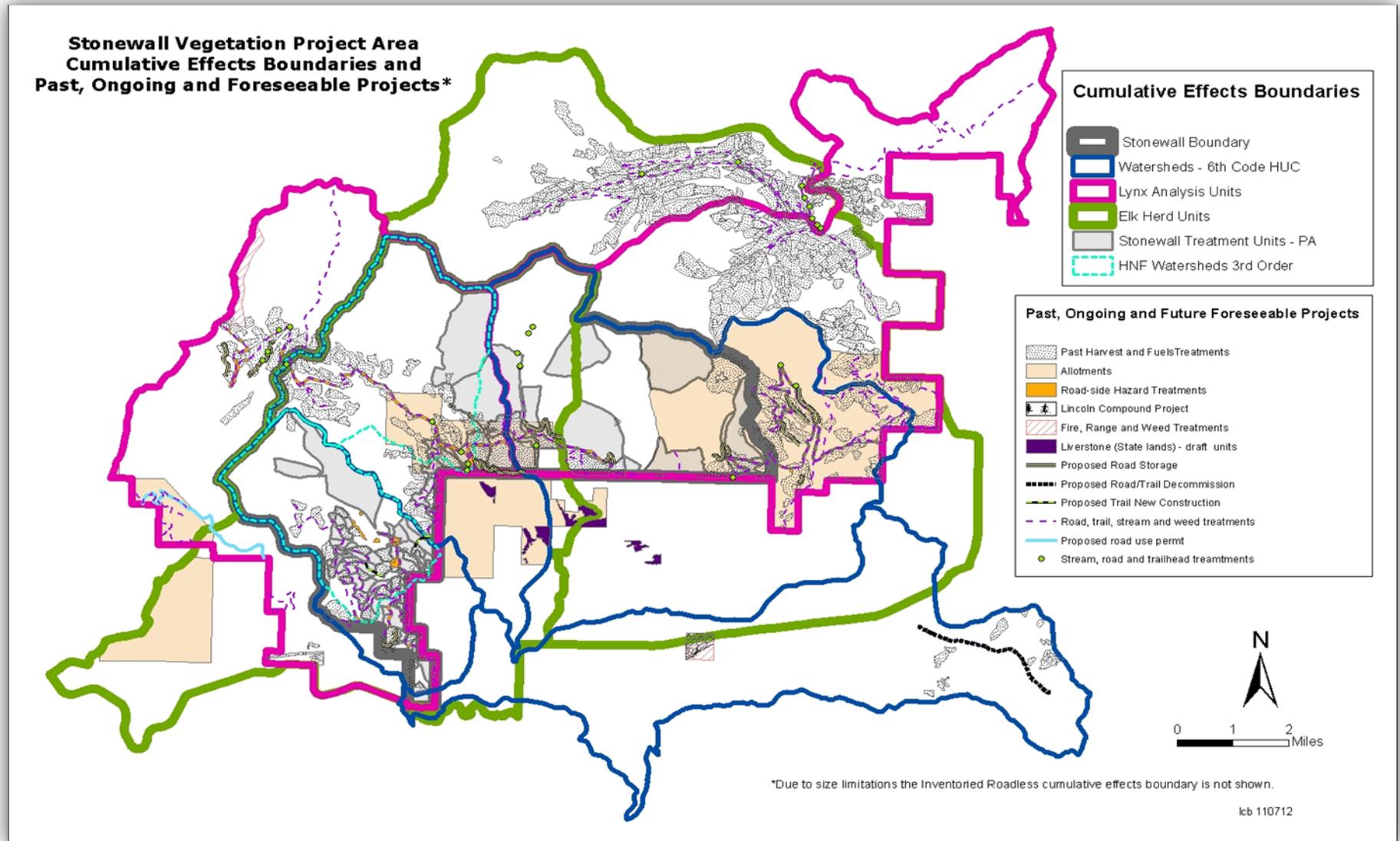


Figure C- 1. Past, Ongoing and Foreseeable Projects within the Cumulative Effects Boundaries (wildfire location information not available, not mapped)

## Past, Ongoing and Future Activities in the Bear-Marshall-Scapegoat-Swan IRA

**Table C- 6. Acres of past harvest and fuels activities in the Bear-Marshall-Scapegoat-Swan IRA**

<b>Past Harvest and Fuels Activity</b>	<b>Acres within IRA</b>
Prescribed Burning	38,636.0
Wildfire	9,460.6
Man Caused Fire	653.2
Fuels Treatment (yarding, rearranging, compacting, crushing, piling)	4,493.5
Thinning (hazardous fuels reduction, fuel break)	7,992.5
Range Improvement	870.9
Timber Harvest (patch clearcut, stand clearcut, shelterwood establishment cut, seed tree seed cut, shelterwood staged removal cut, single tree selection cut, group selection cut, liberation cut, commercial thin, sanitation salvage, precommercial thin)	2,962.3
Reforestation Needs Created	2,708.7
Reforestation/Planting/Regeneration activities	6,856.3
Wildlife/T&E activities	337.8
<b>TOTAL</b>	<b>74,971.8</b>

**Table C- 7. Ongoing and reasonably foreseeable future actions in the Bear-Marshall-Scapegoat-Swan IRA**

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Flathead NF/Spotted Bear RD	<p>Soldier Addition II EA (Decision Notice signed December 2011)</p> <p>The portion of the district affected by the vegetation treatments in this project are bounded to the east by the Hungry Horse Reservoir and the South Fork Flathead River, to the north by Sullivan Creek, to the south by Bunker Creek, and to the west by Bruce Ridge</p>	<p>1,333 acres prescribed fire</p> <p>and</p> <p>1 acre of hand cutting of small trees</p>	<p>1,333 acres of prescribed burning to sustain the role of fire in the ecosystem and help restore whitebark pine habitat.</p> <p>and</p> <p>1 acre of hand treatment to reduce hazardous fuels around the Stony Hill Electronic Site to protect the site from future wildland fire.</p> <p>Implementation expected: 2012 - 2022</p>	<p>Short-term effects to solitude and opportunities for primitive and unconfined recreation would be minimal due to the increased presence of people and noise during project implementation. Helicopter use is expected to occur over a 1 to 2 day period during the ignition process; however, helicopter use is not unusual in the area. During the implementation of the fuels treatment at the Stony Hill Electronics Site, solitude may be interrupted by the power saws used in thinning and the presence of personnel on the site for several days.</p> <p>Short-term effects to the undeveloped characteristics while cut stumps are visible at the site; however, when viewed from off-site the area would resemble other subalpine openings. Thinning treatments would not affect the remoteness characteristic of the area.</p> <p>Burning would be expected to enhance the natural integrity and apparent naturalness of the area. Burning would not affect the feel of remoteness in this IRA.</p>
Flathead NF/Spotted Bear RD	<p>Spotted Bear River (Decision Notice signed August 2011)</p> <p>The project area is bounded on the west by the Hungry Horse</p>	<p>436 acres of prescribed fire</p>	<p>Prescribed burning on 436 acres to sustain the role of fire in the ecosystem and improve the availability of seasonal habitat for ungulates, grizzly bears, and other wildlife species</p> <p>Expected implementation: 2012-2022. Some</p>	<p>Short-term effects to solitude and opportunities for primitive and unconfined recreation would be minimal due to the increased presence of people and noise during project implementation. Helicopter use is expected to</p>

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
	<p>Reservoir and the South Fork Flathead River, on the north by South Fork Dry Park Creek, on the south by a minor ridge off Spotted Bear Mountain just north of the mouth of Cedar Creek, and on the east by the Great Bear Wilderness and Bob Marshall Wilderness boundaries.</p>		<p>of the prescribed burning could begin in 2012. Due to the infrequency of achieving the desired combination of weather and fuel/vegetative conditions, implementation of the prescribed burning may take up to 10 years before completed.</p>	<p>occur over a 1 to 2 day period during the ignition process; however, helicopter use is not unusual in the area. People who use the area for primitive recreation opportunities would still be able to use the area as they did before, although they may be restricted during the time the area is actively burning. Additionally, instead of the area being "green" as it was before, portions of the area would now be considered "black," but this should not affect their recreational use of the area.</p> <p>Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible.</p> <p>Proposed burning is designed to produce effects similar to those expected in a historic natural fire and result in more resilient forest conditions for long-term benefits. The vegetation slashing and subsequent burning is not anticipated to detract from IRA characteristics such as natural integrity and apparent naturalness.</p>

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Lewis and Clark NF/Rocky Mountain RD	Benchmark Fuels EA (Analysis Complete – EA being revised due to remanding on appeal)  T19N R09W and T20N R10W	388	Use of Prescribed fire and mechanical fuels treatments to reduce fuel hazards. Expected implementation: chainsaw and hand-piling Summer/Fall 2013, Mechanical removal of trees may begin Winter 2013. Prescribed burn implementation anticipated to occur over the course of several years.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation.  Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible.  Long-term benefits to naturalness as fuel hazards are reduced.
Lewis and Clark NF/Rocky Mountain Ranger District	Rocky Mountain Ranger District Travel Plan EIS—Badger -Two Medicine Area (Analysis Complete)  The project area extends from Birch Creek which is situated about 17 miles west of the town of Dupuyer, Montana, north about 20 miles to Glacier National Park near Highway 2 and west to Marias Pass and the Continental Divide.	(7.59)	3.74 miles of road to be converted to non- motorized system trails  0.26 road miles to be decommissioned  3.59 trail miles to be decommissioned	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Lewis and Clark NF/Rocky Mountain Ranger District	Rocky Mountain Ranger District Travel Plan EIS—Birch Creek South Area (Analysis Complete)  The project area extends from Birch Creek which is situated about 17 miles west of the town of Dupuyer, Montana, south about 70 miles to Red Mountain near Highway 200.	(20.2)	2 miles of undetermined road adopted as part of the designated transportation system within the IRA.  12 miles of non-system trail adopted as part of the designated transportation system within the IRA (4 of these miles motorized trails).  6.2 miles of unneeded existing roads and trails decommissioned.	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Helena NF/Lincoln RD	Forest-wide Hazardous Tree Removal and Fuels Reduction—HFRA (Analysis Complete)	approximately 82  (2.86)	Removal of trees that are dead or present a hazard (falling) within 1 ½ tree lengths of the edge of an open road. The trees to be removed in the IRA are all on existing, open roads that provide access to trailheads, trails, private lands, dispersed recreation sites, campgrounds, administrative sites, recreation opportunities and general forest access. Implementation began Fall 2010.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation.  Short- term effects to the undeveloped characteristics while cut stumps are visible.
Helena NF/Lincoln RD	Blackfoot Winter Travel Plan—EA (Under Analysis)	N/A	Designate motorized and non-motorized trails for winter use	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Helena NF/Lincoln RD	Blackfoot Travel Plan (non-winter)—EIS (Under Analysis)	N/A	Designate motorized and non-motorized trails	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Helena NF/Lincoln RD	Alice Creek Wildlife Enhancement Project (Under Analysis)  13 miles northeast of Lincoln, MT. Bordered by the Continental Divide along the north and eastern edge, and the Scapegoat Wilderness along the western side.	2,823	Improve big game winter range by reducing conifer encroachment within native grasslands. In addition to creating and maintaining natural openings and improving stand structure, burning would improve forage quality and quantity.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation.  Short term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible.  Long-term benefits to naturalness as winter range and forage are improved.
Helena NF/Lincoln RD	Dry Creek Rx Fire (planned future activity in SW Crown)	2,000	Use of Prescribed fire and mechanical fuels treatments to reduce fuel hazards.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
				<p>noise during project implementation.</p> <p>Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible.</p> <p>Long-term benefits to naturalness as fuel hazards are reduced.</p>
Helena NF/Lincoln RD	Weed Treatments (ongoing)	388	Ground based herbicides applied to reduce invasive weed infestations.	<p>Short-term effects to solitude during project implementation,</p> <p>Long-term beneficial effects to naturalness as weed infestations are reduced.</p>
Helena NF/Lincoln RD	Grazing Allotments (ongoing)	17,511	Ongoing grazing in the Alice Creek, Keep Cool Liverpool, and Stonewall Allotments	No new impacts to roadless resources are anticipated, there may be minor long-term (ongoing) impacts to naturalness due to the presence of livestock.
LoloNF/Seeley Lake RD	<p>Dick Creek Fuels Management Project (Analysis complete, Decision signed 4/26/2008)</p> <p>Located near McCabe Point within the “Monture Area” of the BMSS</p>	1,075	<p>This project includes prescribed burning on approximately 1,075 acres of transitory range and winter range located near the Blackfoot Clearwater Wildlife Management Area.</p> <p>Implementation of approximately 775 acres of prescribed burning was conducted in 2011.</p> <p>Implementation of remaining approximately 300 acres of prescribed burning planned for fall of 2012, or later depending on available burn window.</p>	<p>This project would not alter the natural character of the BMSS and when completed would appear as a natural fire would; leaving a mosaic of burn patterns on the landscape. Ignition would be conducted aerially, and control lines would utilize natural topographic breaks. No tree felling would be conducted as part of this project that would alter the character of the IRA. The feeling of isolation and solitude could be reduced for a short time period while aerial ignition activities occur. The sight and sounds of the helicopter would affect the feeling of solitude in the lower reaches of the Dick Creek</p>

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
				drainage for own to two days.
Lolo NF/Seeley Lake RD	<p>Swan Face Prescribed Burn (Analysis Complete, Decisions signed 7/25/2011)</p> <p>Located near Clearwater Lake in the Swan Front Area.</p>	2,500	<p>This project includes the reintroduction of fire to restore the role of fire and enhance ecosystem processes. Ignition would be conducted by hand and aerially, and control lines would utilize natural topographic breaks.</p> <p>Implementation of prescribed burning planned to be conducted in the fall of 2012.</p>	<p>No tree felling would be conducted as part of this project that would alter the character of the IRA. The feeling of isolation and solitude could be reduced for a short time period while ignition activities occur. The sight and sounds of the helicopter would affect the feeling of solitude in the vicinity of the burn for two to three days.</p>

## **Appendix D – Stonewall Roadless Area Characteristics Worksheet**

**Roadless Areas:** The Bear-Marshall-Scapegoat-Swan Inventoried Roadless Area (IRA) is 866,330 acres and managed by the Helena, Lewis and Clark, Lolo and Flathead National Forests. The portion of the Bear-Marshall-Scapegoat-Swan IRA managed by the Lincoln Ranger District of the Helena National Forest covers 53,995 acres, and the Stonewall Vegetation Project area overlaps with 12,254 acres. The Lincoln Gulch IRA covers 8,246 acres, and the Stonewall Vegetation Project area overlaps with 3,193 acres.

Table D- 1 that follows displays effects to roadless characteristics.

**Table D- 1. Effects to roadless characteristics**

<p><b>Roadless Characteristics</b> As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</p>	<p><b>Is there an effect?</b>  Yes or No</p>	<p><b>Is the effect improving, stable or degrading?</b></p>	<p><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
<p><b>Soil, Water and Air resources</b> These three key resources are the foundation upon which other resource values and outputs depend. Healthy watersheds catch, store, and safely release water over time, protecting downstream communities from flooding; providing clean water for domestic, agricultural, and industrial uses; helping maintain abundant and healthy fish and wildlife populations; and are the basis for many forms of outdoor recreation. Identify any unique or critical watershed resources. Describe how the project will affect these key resources areas and the habitats that depend on them.</p>	<p>Yes, Short Term</p> <p>Yes, Short Term</p> <p>Yes, Temporary</p>	<p>Stable</p> <p>Improving</p> <p>Stable</p>	<p><b>Soil:</b> There would be some immediate effects to soils as fire consumes the organic layer. Project design features would minimize soil erosion and sediment delivery to streams is not likely.</p> <p><b>Water:</b> Decreased forest canopy would lead to an increased risk of surface erosion for about a year after a high severity fire or mixed severity burns. High severity burns would not pose an adverse risk of sedimentation unless they are over more than 10-20 acres and on steeper slopes. High severity burns near streams pose the highest risk for sedimentation. However, riparian buffers would provide protection and reduce the risk of sedimentation reaching streams. After about a year, vegetative recovery and reduced wildfire risk would improve conditions compared to present conditions.</p> <p><b>Air:</b> Management activities would likely cause direct short-term impacts from dust and smoke. Dust would be generated through various activities including transportation of material. These activities are not anticipated to result in significant impacts to regional air quality because of the transitory nature of fugitive dust. Smoke from burning operations could produce some smoky days in the local area and generally lasts 1-3 days after ignition is completed. Smoke may settle into the lower draws and drainages during the evening hours following ignition. Permissible burn days are determined based on metrological conditions that tend to disperse smoke.</p>
<p><b>Sources of public drinking water</b></p>	<p>Maybe</p>	<p>Stable, then after a</p>	<p>No sources of drinking water would be affected by the project.</p>

<p align="center"><b>Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</b></p>	<p align="center"><b>Is there an effect?  Yes or No</b></p>	<p align="center"><b>Is the effect improving, stable or degrading?</b></p>	<p align="center"><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
<p>National Forest System lands contain watersheds that are important sources of public drinking water. Roadless areas within the National Forest System contain all or portions of 354 municipal watersheds contributing drinking water to millions of citizens. Maintaining these areas in a relatively undisturbed condition saves downstream communities millions of dollars in water filtration costs. Careful management of these watersheds is crucial in maintaining the flow and affordability of clean water to a growing population.</p> <p>Identify any public drinking water systems or sources within the project area or that would be affected by the project. Describe how the project would affect water quality and quantity of the public drinking water source.</p>		<p align="center">year Improving</p>	
<p><b>Diversity of plant and animal communities</b> Roadless areas are more likely than roaded areas to support greater ecosystem health, including the diversity of native and desired nonnative plant and animal communities due to the absence of disturbances caused by roads and accompanying activities. Inventoried roadless areas also conserve native biodiversity by serving as a bulwark against the spread of nonnative invasive species.</p> <p>Discuss the diversity of plant and animal communities. Identify any unique plant and animal communities within the area. Describe effects to the diversity of communities and impacts to populations in the areas.</p>	<p align="center">Yes</p>	<p align="center">Stable/Improving</p>	<p>Project IRA's provide habitat for large number of wildlife species that depend on their remote forested character including nine threatened, endangered and sensitive species (discussed below). These areas provide critical lynx habitat, grizzly bear core and den habitat and wolverine den habitat. While activities proposed under alternatives 2 and 3 would result in short-term disturbance, because no new roads are proposed, all alternatives would maintain the remote character of the area and long-term human access would be unchanged under all alternatives. Approximately 23,000 acres have recently burned and due to elevated fuel conditions, the likelihood of stand replacing wildfire and a long-term loss of suitable wildlife habitat is greatest under alternative 1, whereas alternatives 2 and 3 both reduce the risk of catastrophic wildfire. Vegetative diversity would be relatively unchanged under alternative 1, although a continued reduction in whitebark pine and aspen is likely to occur. Treatments proposed under alternatives 2 and 3 would enhance stand and landscape level vegetative and habitat diversity, including maintenance or improvement of white-bark pine and aspen.</p>
<p><b>Habitat for TES and species dependent on large undisturbed areas of land</b> Roadless areas function as biological strongholds and refuges for many species. Of the nation's species currently listed as threatened, endangered, or proposed</p>	<p align="center">Yes</p>	<p align="center">Stable/Improving</p>	<p><b>Plants:</b> Under both alternatives, all treatments in the roadless areas would be prescribed burning with hand preparation. More area would be treated under alternative 2. TES plants: <i>Pinus albicaulis</i> (whitebark pine) is the only sensitive species found in the project area. Sensitive plant habitat has not been mapped in the project area, but</p>

<p><b>Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</b></p>	<p><b>Is there an effect?  Yes or No</b></p>	<p><b>Is the effect improving, stable or degrading?</b></p>	<p><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
<p>for listing under the Endangered Species Act, approximately 25% of animal species and 13% of plant species are likely to have habitat within inventoried roadless areas on National Forest System lands. Roadless areas support a diversity of aquatic habitats and communities, providing or affecting habitat for more than 280 threatened, endangered, proposed, and sensitive species. More than 65% of all Forest Service sensitive species are directly or indirectly affected by inventoried roadless areas. This percentage is composed of birds (82%), amphibians (84%), mammals (81%), plants (72%), fish (56%), reptiles (49%), and invertebrates (36%).</p> <p>Identify any TES or sensitive species within the Roadless area. Describe how the project would affect the habitats or populations and whether this effect is significant across the normal range and distribution of these habitats and populations.</p>			<p>there is likely to be potential habitat for eight additional herbaceous sensitive plant species. None of the herbaceous sensitive plants would be directly affected unless there are undiscovered occurrences in the roadless area. Treatment in the roadless area would be prescribed burns, generally of mixed severity that would create openings less than 75 acres in size. Low severity burns would be expected to have minimal impacts since these herbaceous species have adaptations to fire and all typically grow in moist to wet areas that would be less likely to burn. Large openings in the canopy could reduce the shade that is needed by several of these species. These species and their habitat would be expected to be similarly affected by wildfire. Occurrences of whitebark pine would be protected by the project design feature SILV-2 which is designed to protect individuals and enhance habitat for the species. Thus, while there is the potential for individuals to be charred or physically damaged during the treatment, beneficial effects for whitebark pine (in the form of habitat enhancement due to the removal of shade-tolerant species and creation of caching sites for Clark’s nutcrackers) are expected in the long-term.</p> <p><b>Invasive plants:</b> Small areas of spotted knapweed overlap roadless area units 80, 82, and 84. Effects of fire on spotted knapweed are variable but available studies have shown that fire may kill above ground plant parts but the sturdy perennial taproot is likely to survive all but the most severe fires. For the most part, spotted knapweed may be expected to establish, persist, or spread following fire. In some cases hot fires have shown the greatest increase in spotted knapweed cover after several years (Zouhar 2001). Project design features and the ongoing weed management program on the Helena National Forest (which treats 1/3 of infested acres each year) would reduce the potential for new establishment and spread of spotted knapweed in the roadless areas as a result of proposed actions.</p> <p><b>Animals:</b> Project IRA’s provide habitat for two federally listed species including the grizzly bear and Canada lynx and seven Regionally Sensitive Species including the gray wolf, wolverine, fisher, Townsend’s big-eared bat, black-backed woodpecker, flammulated owl and western toad. The following is a brief discussion of anticipated effects to these species.</p> <p><b>Grizzly Bear</b> – All but approximately 2,700 acres of Project level IRA’s are considered occupied grizzly habitat and these areas contain 39,000 acres of grizzly</p>

<p><b>Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</b></p>	<p><b>Is there an effect?  Yes or No</b></p>	<p><b>Is the effect improving, stable or degrading?</b></p>	<p><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
			<p>bear core habitat and over 8,000 acres of den habitat. Because there are no roads proposed in the IRA, core habitat and Total Motorized and Open Motorized Road Densities would be unaffected under all alternatives. Under alternative 1, den habitat would be unaffected. Also while suitable habitat would be largely unchanged, over the long-term due to the absence of fire, whitebark pine would continue to decline under alternative 1. Under alternatives 2 and 3, localized short-term increases in human disturbance would occur during burning. Due to proposed low and mixed severity burning there would also be a reduction in cover on 4,845 acres and 3,564 acres under alternatives 2 and 3 respectively, although cover would be maintained within and adjacent to all units. Of this, potential short-term impacts to 979 acres of den habitat would occur under alternative 2 and 920 acres of den habitat would be affected under alternative 3. Unaffected den habitat would be widely available under both alternatives. Both alternatives 2 and 3 would maintain or promote development of white bark pine.</p> <p><b>Canada Lynx</b> – Project level IRA’s contain 32,587 acres of Lynx critical habitat. Because there is no hare habitat proposed for treatment within the IRA, lynx foraging habitat would remain relatively unchanged under all alternatives. Also due to the absence of treatment, lynx cover would be unchanged under alternative 1. Under alternatives 2 and 3, low and mixed severity fire would occur on 3,349 acres and 2,410 acres of suitable den habitat respectively and cover would be reduced on most of this acreage. However considering that up to 25 percent of the treatment sites would have unburned lands, suitable cover would continue to occur on all treatment sites. Also due to establishment of understory vegetation, proposed actions would increase long-term foraging habitat on the acreage treated. Large blocks of unaffected suitable habitat would be available in all watersheds and connectivity and landscape level habitat would be maintained under all alternatives. All alternatives are consistent with NRMLD standards and guidelines.</p> <p><b>Gray Wolf</b> – Due to its remote nature, virtually all of the project IRA’s provide suitable gray wolf habitat, although no known den or rendezvous sites would be affected under any alternative. Also because there are no new roads proposed, long-term human access would be unchanged under all alternatives, although alternative 2 and 3 would increase short-term human access 4,845 and 3,565 acres respectively. Gray wolf foraging habitat would likely continue to decline in some areas but would generally be maintained under alternative 1, whereas under alternatives 2 and 3, wolf</p>

<p style="text-align: center;"><b>Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</b></p>	<p style="text-align: center;"><b>Is there an effect?  Yes or No</b></p>	<p style="text-align: center;"><b>Is the effect improving, stable or degrading?</b></p>	<p style="text-align: center;"><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
			<p>foraging would be maintained in the short-term and increased in the long-term.</p> <p><b>Wolverine</b> – Project level IRA contain approximately 16,500 acres of wolverine den habitat. Prey availability and landscape connectivity would be largely unchanged under all alternatives. Den habitat under alternative 1 would be unaffected, whereas mixed severity burning would affect 1,648 acres or 10 percent of the suitable IRA den habitat under alternatives 2 and 3. Also there would be a short-term increase in human activity on this acreage, as well as a long-term reduction in cover. However 90 percent of the suitable habitat would be unaffected and suitable den and foraging habitat would continue to be available in all affected watersheds under all alternatives.</p> <p><b>Fisher</b> – Project IRAs contain 478 acres of fisher summer habitat and 21,800 acres of winter habitat. Under alternative 1 suitable habitat and prey availability would be largely unchanged. Also because there would be no new roads, long-term human access would be unchanged under all alternatives. Due to proposed low and mixed severity burning, short-term disturbance to foraging individuals and a reduction in cover would occur on 39/1,189 acres of summer/winter habitat under alternatives 2 and 49/718 acres of summer/winter IRA habitat under alternative 3. Also due to the canopy openings associated with mixed severity burning, suitable summer/winter habitat would be reduced 4/207 acres and 1/66 acres under alternatives 2 and 3 respectively. Preferred riparian habitat and travel corridors would be maintained under all alternatives.</p> <p><b>Townsend’s big-eared Bat</b> – Most of the project IRA’s provide suitable foraging habitat for this species and under alternative 1 foraging habitat would be unaffected. Proposed burning would create more open understory conditions and improved foraging habitat on 3,564 and 4,845 acres under alternatives 2 and 3 respectively. While habitat would be reduced on sites where canopy openings would be created through mixed severity burning under alternatives 2 and 3 (up to 900 acres), suitable foraging habitat would continue to be widespread under all alternatives.</p> <p><b>Black-backed Woodpecker</b> – Project IRAs contain approximately 23,000 acres of recently burned high quality black-backed woodpecker habitat. In the absence of future wildfires, habitat may decline under alternative 1. Under alternatives 2 and 3, high intensity burning would create high quality habitat on approximately 1,500</p>

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			<p>acres and 1,000 acres respectively.</p> <p><b>Flammulated Owl</b> – Suitable flammulated owl habitat occurs on approximately 4,300 acres of project IRAs. Under alternative 1, preferred open canopy habitat would continue to decline. Proposed burning under alternatives 2 and 3 would increase open canopy habitat on 3,900 acres and 2,900 acres respectively.</p> <p><b>Western Boreal Toad</b> – Suitable breeding habitat would be largely unchanged under all alternatives. While proposed burning would affect upland habitat on approximately 4,600 acres under alternatives 2 and 3, suitable habitat would continue to occur on all sites and foraging habitat would be improved on the acreage affected. Unaffected suitable upland habitat predominates across all watersheds under all alternatives.</p>
<p><b>Primitive and semi-primitive classes of recreation</b> Roadless areas often provide outstanding dispersed recreation opportunities such as hiking, camping, picnicking, wildlife viewing, hunting, fishing, cross country skiing, and canoeing. While they may have many Wilderness-like attributes, unlike Wilderness the use of mountain bikes, and other mechanized means of travel is often allowed. These areas can also take pressure off heavily used wilderness areas by providing solitude and quiet, and dispersed recreation opportunities.</p> <p>Describe current recreation opportunities within the Roadless area. Identify the effects of your project on the area and these activities. Describe the effect in terms of availability for similar experiences in surrounding areas or within the region of use. Consider link to ROS mapping.</p>	<p>Yes</p>	<p>Stable</p>	<p>The ROS classification in the Bear-Marshall-Scapegoat-Swan and Lincoln Gulch IRAs is primarily Semi Primitive Motorized with areas of Roaded Modified and Roaded Natural. The primary recreation activities occurring within the roadless areas include hunting, hiking, dispersed camping, use of motorized trails in the summer and snowmobiling and cross-country skiing in the winter. In the short term, visitors may be temporarily displaced during implementation of the proposed activities (prescribed burning, hand slashing of small diameter trees and construction of hand fireline). Noise associated with hand slashing of small diameter trees and hand fireline construction would affect the expected experience associated with the areas' roadless character, however this would only impact visitors traveling through the area during project implementation. The proposed low severity and mixed severity prescribed fire would create openings ranging from 5 to 75 acres in size, the more open forest canopy is not expected to affect the recreation activities or experience within or adjacent to the project area in the long term. However, the prescribed fire activities would be noticeable by the area users, affecting the on-site management component of the expected setting. No road construction, reconstruction or maintenance is proposed within the IRA acreage; therefore the current IRA roadless characteristic would not change. There would be no long term impacts to recreation opportunities within the project area. Ecosystem restoration and a reduction in the risk of negative impacts from severe wildfire would help to maintain the recreation settings and opportunities.</p> <p>Alternative 2 would treat 4,846 acres out of the total combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District); the prescribed fire would be</p>

<p><b>Roadless Characteristics</b> As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</p>	<p><b>Is there an effect?</b>  Yes or No</p>	<p><b>Is the effect improving, stable or degrading?</b></p>	<p><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
			<p>implemented on 6.8 percent of the total Lincoln RD IRA acreage. Alternative 3 would treat 3,564 acres out of the total combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District); the prescribed fire would be implemented on 5 percent of the total Lincoln RD IRA acreage. Opportunities to continue the popular dispersed recreation activities would exist over the vast majority of the IRA acreage during project implementation and would continue to exist on all of the IRA acres after project completion.</p>
<p><b>Reference landscapes for research study or interpretation</b> The body of knowledge about the effects of management activities over long periods of time and on large landscapes is very limited. Reference landscapes of relatively undisturbed areas serve as a barometer to measure the effects of development on other parts of the landscape.</p> <p>Describe the landscape that is present. Describe any unique reference landscapes that exist within the Roadless area. Describe how the project activities might affect the reference landscape values of the Roadless area. Consider how the landscapes within the Inventoried Roadless area fits within the broader landscape and if the project creates any overall change. Consider landscape character descriptions in SMS.</p>	<p>No</p>	<p>Stable</p>	<p>No documentation regarding reference landscapes within the project area were found. The current landscape is comprised of dense forests susceptible to insect and wildfire mortality (Douglas-fir and lodgepole pine). In addition, a large-scale mountain pine beetle epidemic has killed most of the mature lodgepole pine and ponderosa pine. The proposed action would result in a landscape setting that resembles a wildfire event which naturally follows a pine beetle event. Forest regeneration and “greenup” would occur shortly thereafter and improve upon the visual appearance of this landscape cycle by resembling an increasingly healthy forest.</p>
<p><b>Natural appearing landscapes with high scenic quality.</b> High quality scenery, especially scenery with natural-appearing landscapes, is a primary reason that people choose to recreate. In addition, quality scenery contributes directly to real estate values in nearby communities and residential areas.</p> <p>Describe the current scenic quality and character of the area. Describe project effects to the scenic integrity of the area and changes to the character of the area. Consider existing scenic integrity.</p>	<p>Yes</p>	<p>Stable</p>	<p>The current scenic quality of the unroaded areas resembles that of landscapes with high scenic integrity. Although visually unappealing to many, the scenes created by large scale beetle kill and wild fires (within their natural regime) do not change a landscapes scenic integrity or visual quality per the visual or scenery management systems. However, events that occur outside of a natural regime due to management decision (i.e., fire suppression) can. The proposed prescribed fire would help ensure the forest maintains a visual appearance characteristic of a wildfire within its natural regime as opposed to an unnaturally intense wildfire.</p> <p>The scenic integrity within the IRAs may decrease from the viewpoint of a user traveling through the proposed prescribe fire treatment units. The fire handlines would create a linear disturbance within the roadless area and stumps from the hand</p>

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<p>Scenic Quality- essential attributes of the landscape. (Glossary 5, Landscape Aesthetics Handbook)</p> <p>Landscape Character – Particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique. (Glossary 3, Landscape Aesthetics Handbook)</p>			<p>slashing of small diameter trees may remain visible for several seasons following the prescribed fire, which would be an unexpected characteristic for the IRA landscape. The creation of openings in the forest from low and mixed severity prescribed fire ranging from 5 to 75 acres in size would create a more natural and visually appealing mosaic in the landscape, enhancing the overall existing landscape character. Less than 4,846 acres out of the combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District) would be affected and only the users who travel through these areas would notice these changes.</p>
<p><b>Traditional cultural properties and sacred sites</b> Traditional cultural properties are places, sites, structures, art, or objects that have played an important role in the cultural history of a group. Sacred sites are places that have special religious significance to a group. Traditional cultural properties and sacred sites may be eligible for protection under the National Historic Preservation Act. However, many of them have not yet been inventoried, especially those that occur in inventoried roadless areas.</p> <p>Identify generically any significant cultural resources within the Roadless area and describe the effect of the project on these resources. Typically mitigation will be designed to prevent significant effects to these resources.</p>	Yes	Degrading	<p>Hand slash pile burning within sites could affect historic structures and could alter prehistoric site artifacts. Hand lines within sites could alter historic and prehistoric sites.</p>
<p><b>Other locally unique characteristics</b> Inventoried roadless areas may offer other locally identified unique characteristics and values. Examples include uncommon geological formations, which are valued for their scientific and scenic qualities, or unique wetland complexes. Unique social, cultural, or historical characteristics may also depend on the roadless character of the landscape. Examples include ceremonial sites, places for local events, areas prized for collection of non-timber forest products, or exceptional hunting and fishing opportunities.</p>	No	N/A	<p>The proposed action would not impact the special features or values of the Bear-Marshall-Scapegoat-Swan IRA because they do not fall within the Stonewall project area. In the long-term, the proposed action would potentially enhance the productive and primitive Elk hunting opportunities within the Lincoln Gulch IRA.</p>

<p><b>Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001</b></p>	<p><b>Is there an effect?</b>  <b>Yes or No</b></p>	<p><b>Is the effect improving, stable or degrading?</b></p>	<p><b>Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.</b></p>
<p>Identify any locally unique characteristics and describe how the project would affect these values.</p>			