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Draft Environmental Assessment Beartooth Front Storm Damage Clean-up and Fuels Reduction Healthy Forests Restoration Act Project – Main Fork Rock Creek and Benbow Area

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Carbon and Stillwater Counties, Montana
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Table of Contents

SUMMARY i

INTRODUCTION 1

- Document Structure 1
- Background and Regulatory Framework 1
- Purpose and Need for Action 10
- Proposed Action 13
- Decision Framework 13
- Public Involvement 14
- Issues 14

COMPARISON OF THE NO-ACTION AND ACTION ALTERNATIVES 16

- Alternatives 17
- Action Alternative Design and Mitigation Measures 22
- Effects Comparison of Alternatives 38

ENVIRONMENTAL CONSEQUENCES 40

- Fuels 40
- Visuals Resource 43
- Water Resources 45
- Recreation 47
- Wildlife 49
- Fisheries 56
- Forest Vegetation 58
- Heritage Resources 61
- Soils 63
- Noxious Weeds 64
- Sensitive Plants 66

CONSULTATION AND COORDINATION 67

REFERENCES CITED 69

APPENDICES - Available online at: <http://www.fs.fed.us/r1/custer/>

- Appendix A = Fuels specialist report**
- Appendix B = Visuals specialist report**
- Appendix C = Hydrology specialist report**
- Appendix D = Recreation specialist report**
- Appendix E = Wildlife specialist report**
- Appendix F = Fisheries specialist report**
- Appendix G = Forest Vegetation specialist report**
- Appendix H = Soils Specialist Report**
- Appendix I = Range/Noxious Weeds Specialist Report**
- Appendix J = Sensitive Plants Specialist Report**

SUMMARY

The Beartooth Ranger District, Custer National Forest (CNF), United States Forest Service (USFS) proposes to improve public and firefighter safety by cleaning up areas of wind-damaged trees and reducing fuel loading on 238 acres of National Forest System (NFS) lands in the Main Fork Rock Creek drainage and 377 acres of NFS lands in the Benbow area (Figure 1).

The Benbow area is in the Little Rocky Creek and Fishtail Creek drainages, approximately 35 miles northwest of Red Lodge and 1.5 miles west of Dean, Montana (Figure 4). The Main Fork Rock Creek area (Main Fork) is approximately 9.5 miles south-southwest of Red Lodge (Figure 5).

The purpose of this project is to:

- Improve the ability to control and/or suppress wildfires to protect human and natural resources in the project areas.
- Reduce the risk to wildland firefighters and residents of the wildland-urban interface should a fire occur.
- Improve the ability to safely leave the areas in the event that a wildfire occurs.

This action is needed to respond to increased fuel loads created by the November 2007 storm event. These needs would be addressed by reducing fuel loads, creating fuel breaks, and reducing beetle infestation potential in treatment areas. Fuel breaks and fuel reduction would also serve the purpose of improving overall defensibility of values at risk in the event of a wildfire. Values at risk near or in the Little Rocky and Fishtail drainages, include the communities of Dean and Nye, a small subdivision off Forest Road #2414, numerous private residences and ranches along Fiddler Creek Road, and the nearby Stillwater Mine. Values at risk in and near the Main Fork include numerous private residences, recreational lease cabins on National Forest System (NFS) lands, and heavily utilized Forest Service recreation sites associated with US Highway 212 (Beartooth Scenic Highway). The City of Red Lodge and outlying subdivisions are located at the mouth of the Main Fork of Rock Creek canyon.

The proposed action focuses on cleaning up down and storm-damaged trees and thinning live trees in the Benbow and Main Fork areas. In addition to the proposed action, the Forest Service also evaluated the No Action Alternative, which would not conduct any fuels reduction or storm damage clean-up.

Based upon the effects of the alternatives, the District Ranger will decide whether to implement the proposed action alternative, a modified action alternative, or the no action alternative. If an action alternative is selected, it will include:

- The location, design, and scheduling of proposed fuel reduction on National Forest Lands in the Benbow and Main Fork areas, if any;
- Design features, mitigation measures, and monitoring requirements.

INTRODUCTION

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of the No-Action And Action Alternatives:* This section provides a more detailed description of the agency's proposed action for achieving the stated purpose and the no-action alternative. The Proposed Action alternative was developed based on significant issues raised by the public and other agencies. This discussion also includes possible project design features and mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative as they relate to Key issues.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the action alternative.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide complete versions of project specialist reports to support the analyses presented in the environmental assessment. The appendices are available for viewing and download on the Custer National Forest website at: <http://www.fs.fed.us/r1/custer/>. Printed copies of the appendices are available upon request.

Additional documentation, including more detailed analyses of project-area resources and supporting documentation, may be found in the project planning record located at the Beartooth Ranger District Office in Red Lodge, Montana.

Background and Regulatory Framework

A wind event with recorded gusts over 100 miles per hour brought widespread damage to the Beartooth Front area on November 12, 2007. This wind created heavy concentrations of wind damaged and fallen trees on NFS lands, including the Main Fork and Benbow areas (Figure 1). Concentrations of wind damaged and fallen trees in combination with

fuels conditions that existed before the wind event have increased beetle infestation potential and created potentially hazardous fuel loads.

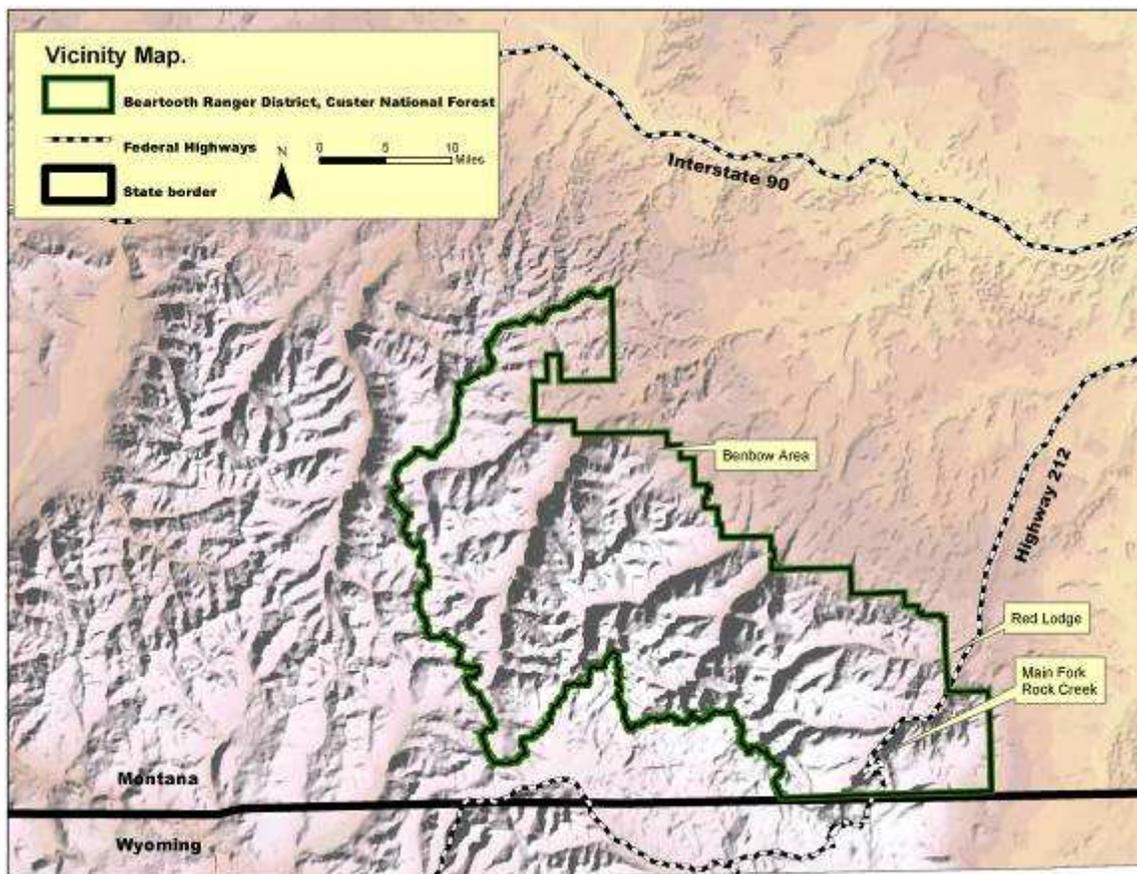


Figure 1. Vicinity map.

Related storm clean-up and fuels reduction efforts

The November 2007 wind event also affected recreation facilities across the Beartooth District, such as signs, picnic tables, trails, roads, and recreation residences damaged by falling trees. To provide facilities for safe use by the public, some hazard tree removal and repairs at these facilities were completed under separate efforts in winter and spring 2008.

The Bureau of Land Management (BLM), Billings Field Office has proposed a total of 40 acres of mechanical treatment for storm damage clean-up, fuels reduction, and forest health improvement along the Benbow Road #2413 at the Custer NF boundary.

In recent years, the Beartooth Ranger District has completed several fuels reduction and projects along the Forest Boundary near the West Fork Rock Creek and Main Fork Rock Creek. Future fuel reduction planning efforts are also anticipated along the Beartooth Front near Nye and Dean. The Beartooth Front Storm Damage Clean-up and Fuels

Reduction project would continue and/or complement these other related efforts in the Main Fork and Benbow areas.

Forest Vegetation and Fuel Loads

Prior to European settlement of the area, lightning-caused fires reduced fuels on the Beartooth Ranger District. Computer modeling simulations indicate the Beartooth Front was characterized by high severity fires every 35 to 200 or more years. From 1870 to 1904, more than 138,000 acres of forest land burned on the Beartooth District (Photo 1). Based on personal accounts, historic photos, and tree age, the last known large fire event for the for Fishtail and Little rocky creek drainages was 104 years ago, and 118 years ago for the Main Fork of Rock creek drainage.



Figure 2. Photo of West Fork Rock Creek work center around 1906.

Considerable growth of timber along the Beartooth front has occurred since the fires of the early 1900's (Photo 2). Fire suppression and development of homes and cabins in the project areas have prevented wildfire from performing its natural role in fuels reduction. Forests in the project areas are primarily even-aged mature lodgepole pine. Lodgepole forests that survive more than about 100 years often become susceptible to and die from mountain pine beetle infestations (Gibson 2004). The resulting buildup of dead and dry fuels can invite a large stand-replacing wildland fire. There are also spruce, Douglas-fir, aspen, subalpine fir, and whitebark pine forests. Prior to European settlement, these forest types would have had low intensity fires periodically burning through them to reduce fuels. Crown fires can readily spread into these forest types from adjacent lodgepole forests. Exclusion of fire has generally made these forest types more susceptible to beetle infestations and stand-replacement fires.



Figure 3. Photo of West Fork Rock Creek work center, 2008.

The September 1948 Hellroaring and Rock Creek fires burned approximately 3,000 acres in Hellroaring and Main Fork Rock Creek drainages south of M-K campground. Most historic human-caused fires on the Beartooth District occur in drainage bottoms where recreational use is more frequent. Since 1953 there have been 80 recorded wildfires in the Main Fork Drainage ranging in size from 0.1 to 1503 acres. Of those, 33 have been lightning (41%) and 47 human or other ignition sources (59%). Over the last ten years, there have been 20 fires, or an average of 2 fires per year. Of those fires, 8 were lightning (40%) and 12 were human caused or other ignition sources (60%). From 1953 to 2007, 3 recorded fires have occurred within or on the edge of the proposed treatment units in the Main Fork of Rock Creek. Two fires were human caused and 1 caused by lightning.

Local landowners have provided anecdotal evidence that the north face of the Beartooth Ranger District, which includes the Fishtail and Little Rocky creek drainages, burned in a stand replacement fire around 1904. Since 1953 there have been 28 recorded wildfires in the Fishtail creek and Little Rocky creek drainages, and surrounding area ranging in size from .10 to 380 acres. Of those, 12 have been lightning (43%) and 16 human or other ignition sources (57%). Over the last ten years, there have been 2 lightning fires, both in 2007. From 1953 to 2007, 3 recorded fires have occurred within or on the edge of the project area. Two fires were lightning caused and one human caused (Benbow fire). The human-caused Benbow fire (380 acres, 1980) occurred in portions of Proposed Action treatment units and destroyed one primary residence in a small subdivision along Meadow Creek.

The November 2007 wind event resulted in an existing condition of heavy concentrations of trees blowing over or being damaged in the Main Fork Rock Creek and Benbow areas. When combined with fuel loads that existed before the storm, these trees form areas of down fuel that will readily carry fire.

Climatic and terrain influences

Wildfire size, frequency, and length of wildfire season have increased in western U.S. forests in the late 20th century (Westerling et al 2006, Graham et al 2004, Meyer and Pierce 2003). This trend is evident on the Beartooth Ranger District. In the past 20 years, strong winds, topography and high ERC values have resulted in rapidly spreading high-intensity fires on Custer National Forest lands in Carbon and Stillwater Counties. Examples include the 2008 Cascade fire (10,200 acres), the 2006 Derby fire (200,000 acres), the 2002 Red Waffle fire (2,000 acres), the 2000 Willie fire (1,503 acres), the 1996 Shepherd Mountain fire (14,890 acres), and the 1988 Storm Creek (56,856 acres) and Clover/Mist fires (387,400 acres). Predicted continued climatic changes may result in earlier spring snowmelt, longer fire seasons, and consequent large wildfires (Westerling et al 2006).

During dry periods, lightning and human-caused fires are a regular occurrence on the Beartooth District. Trees weakened by drought can also become more susceptible to insect infestations. For most of the past 10 years, summer precipitation has been below historic levels. Recent drought in Stillwater and Carbon Counties has significantly heightened risk of wildland fire along the Beartooth Front (Stillwater County 2007). This is evidenced by lower than normal live fuel moistures over the past few years. Live and dead forest fuel moistures on the District have been recorded since the 1970's and are used to calculate Energy Release Component (ERC) for wildland forest fires. Higher ERC values indicate higher potential wildland fire severity. In general, larger fires (≥ 1000 acres) tend to be associated with higher ERC values. Large fires can be quite expensive and dangerous. Over the past several years, peak summer ERC values have been exceeding historic high values on the Beartooth Ranger District.

Strong wind events similar to the November 2007 wind event are common in Stillwater and Carbon Counties (Stillwater County 2007, Carbon County 2005). Much of the Custer National Forest along the Beartooth Front is characterized by steep forested and wind-prone slopes. In addition to potential for storm damage to trees and increased fuels loads, there is rapid wildland fire growth potential. The Beartooth Mountains consist of large plateaus and steep narrow drainages. Steep slopes affect fire ignition and spread by preheating the fuels upslope and enabling spotting to occur from rolling and aerial fire brands. Narrow drainages, including the Main Fork and Little Rocky Creek, can funnel winds down slope from the plateaus and increase wind speeds. Flame length, rate of spread, and fire spotting generally increase with wind speed.

Bark beetle infestation potential

If beetle infestations increase at and near wind-damaged areas, they could potentially kill live trees, which could increase fire risk as the amount of fuel increases. Concentrations of wind damaged and fallen trees can increase bark-beetle infestation potential (Samman and Logan. 2000, Hagle et al 2003). Such concentrations can attract beetles from surrounding areas. Wind damaged and fallen trees serve as food sources and over-

wintering habitat for several bark beetles, including mountain pine beetle, pine engraver beetle, Douglas-fir beetle, and spruce beetle. When abundant host trees (such as fallen trees) are present, beetle populations increase and often exhaust that food supply and then inhabit and kill nearby live trees. These beetles kill live trees by breeding and laying eggs in the phloem (or vascular tissue) of trees, which conveys water and food to the tree (Hagle et al 2003). Recent aerial surveys mapped thousands of trees killed by bark beetles on the Beartooth District. 2003 and 2006 aerial surveys detected and mapped populations of mountain pine beetle infestation in the Little Rocky Creek and Main Fork drainages (See Project Record). New attacks by engraver beetles in ponderosa pine and Douglas-fir beetles were observed in May 2008 in Benbow area storm damage. Based on information provided by a Forest Service entomologist, there is a high likelihood that much of the downed Douglas-fir in the Benbow area will be infested by Douglas-fir beetle (Gibson 2008). In the Main Fork, insipient spruce beetle populations may well be concentrated in some of these numerous windthrown trees (Gibson 2008). If beetle infestations increase at and near wind-damaged areas, they could not only kill thousands of live trees, but also increase fire risk as the amount of fuel (or dead trees) increases.

Community Wildfire Protection Plans

The fires of 2000 focused national attention on the threats wildland fire posed to people, communities, and natural resources and resulted in the advent of the National Fire Plan. A major component of that overall effort emerged with the 2001 approval of “A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Strategy,” (10-Year Strategy) by the Western Governors’ Association, the Secretaries of the Departments of Agriculture and the Interior, and a broad range of stakeholders. The 10-Year Strategy was evaluated and updated in 2006 (Western Governors Association 2006). Primary goals of the 10-Year Strategy are: (1) improve prevention and suppression, (2) reduce hazardous fuels, (3) restore fire adapted ecosystems, and (4) promote community assistance. The goals are interrelated and mutually reinforcing: restoring fire-adapted ecosystems and reducing hazardous fuels will reduce risks to communities and provide economic benefits, as well as improve fire prevention and suppression.

In 2001, Red Lodge was included in the Federal government’s nationwide list of communities at high risk from wildfire in the vicinity of Federal lands (Federal Register, Volume 66, #160, August 17, 2001). Both Carbon and Stillwater Counties developed community wildfire protection plans through a collaborative process between citizens, Federal, State, County, and local agencies, and the private sector. Each County defined several goals to begin mitigation of fire risk within and near the Wildland Urban Interface (WUI). WUI is defined as areas within or adjacent to a community that is at-risk due to wild fire potential.

The 2005 Carbon County Community Wildfire Protection Plan and Pre-Disaster Mitigation Plan (CWPP/PDM) states that “The most extreme situation with respect to fuel conditions and values at risk occurs south and west of Red Lodge where there are numerous high-value individual homes and subdivisions located in the wildland urban

interface area in close proximity to the National Forest boundary.” This includes the Main Fork of Rock Creek.

The 2008 City of Red Lodge Growth Policy states that “The City of Red Lodge is surrounded by wildland areas that contain heavy fuel loads and the potential for severe wildland fire activity. Surrounding areas of concern include the Main and West Forks of Rock Creek and the Palisades Area, all south and west of town. These areas contain significant fuel loads that could easily cause ignition within City Limits by blowing fire brands” (City of Red Lodge 2008).

The 2007 Stillwater County Wildfire Protection Plan (CWPP) identified much of the Benbow area as WUI (Stillwater County 2007). The CWPP states that “Generally, the development of most concern in the county from the standpoint of fire protection is occurring along the wildland urban interface area.” Goals of the Stillwater CWPP include maximizing protection of property from wildland fire in rural areas. Specific objectives of this CWPP include “Pursue WUI fuel reduction projects in high-risk areas around the county” and to “Jointly develop a fuels reduction project for the major subdivision area (BLM, FS, RFD, private landowners).” Stillwater County’s mitigation project ranking listed fuel reduction in high risk areas by the USFS as a “High” priority. The Benbow area is in a high-risk area adjacent to subdivided private lands and is therefore a high Stillwater County priority for fuels treatment. A catastrophic wildland fire in the Benbow area could threaten nearby homes, structures, and agricultural operations on private lands and also spread into continuous timber stands on private and NFS lands along the Beartooth Front. Increased insect infestation in the Benbow area due to presence of storm-damaged trees could increase dead trees and the corresponding fire hazard. The majority of proposed treatment in the Benbow area is within WUI.

Healthy Forests Restoration Act of 2003

The Healthy Forests Restoration Act of 2003 (HFRA) established procedures for Federal agencies conducting environmental analysis for authorized hazardous-fuel-reduction projects on Federal land. The proposed Beartooth Front Storm Damage Clean-up and Fuels Reduction Project is designed under the requirements of HFRA and for the purpose of responding to the 10-year Comprehensive Strategy. Specifically, project activities were identified in the CWPP/PDM and CWPP, portions of these project areas were identified as WUI, and presence of wind throw poses the significant threat of increased fire danger and potential impacts of a large wildfire to various ecosystem components. Potential impacts of a wildfire are described in the Environmental Consequences section of this Environmental Assessment.

Watershed and Water Supply Protection

One purpose of the HFRA is to reduce wildfire risk to municipal water supplies. The Main Fork Rock Creek and Little Rocky drainage meet HFRA definitions of Municipal Water Supply Systems in that they contain “systems constructed or installed for the collection, impoundment, storage, transportation, or distribution of drinking water”

(HFRA 2003). There are multiple public water systems in the Main Fork Rock Creek as defined by the Safe Drinking Water Act (42 USC 300f). Additionally, numerous privately owned groundwater wells and springs used for residential drinking water and ditches and wells used for irrigation purposes are fed by water from the Main Fork, Little Rocky, and East Fishtail watersheds.

The Main Fork Rock Creek contains public water systems supplied by shallow wells at multiple Forest Service campgrounds and organizational camps and downstream of the Forest Boundary at Rock Creek Resort, all in close proximity to the Main Fork Rock Creek.

A catastrophic wildland fire in these areas could increase runoff and sedimentation. This could potentially decrease water quality. Post-fire run-off can contain increased levels of nutrients and sediment (Miller et al 2006, Wondzell and King. 2003). Such increases could potentially affect water quality and quantity in shallow wells with surface water connection and irrigation ditches that serve communities and residences in these areas.

Custer National Forest Land and Resource Management Plan.

The 1986 Custer National Forest Land and Resource Management Plan (Forest Plan) Forest-wide Fuels Management standard specifies that "A combination of treatments will be used that will most efficiently meet the fuels management direction of each management area" (USDA 1986, page 39). Activities in the Beartooth Front Storm Damage Clean-up and Fuels Reduction project are proposed in several Forest Plan Management Areas. Each Management Area (MA) has specific goals and standards defined in the Forest Plan. Activities in the Main Fork Rock Creek are proposed in MA F, MA M, and MA T. Activities in the Benbow area are proposed in MA B, MA D, and MA M.

The MA B goal is to "Provide for continuation of livestock grazing..." (page 45). MA B standards include:

- Management activities may include removal of wood products....
- The fire management control objective is to hold 90 percent of fire starts to less than 50 acres.
- The appropriate fire suppression response may vary from contain to confine based on location and fire danger.
- Planned ignitions may be used for range and wildlife enhancement, fuels and debris reduction.

The MA D goal is to "maintain or improve the long-term diversity and quality of habitat for the selected species as well as accommodating the other resource management activities...." (page 53). MA D standards include:

- The fire management control objective is to hold 90 percent of fire starts to less than 50 acres.

- The appropriate fire suppression response may vary from contain, to control, to confine.
- Planned ignitions may be used for range improvement and wildlife habitat, timber stand maintenance, fuels reduction, sanitation, maintaining vegetation, and associated wildlife habitat dependent on periodic fire.

The MA F goal is “To provide a spectrum of recreation opportunities and settings in the and around developed sites and the access corridors to the sites...” (page 61).

MA F standards include:

- Vegetation in developed sites will be managed to maintain the appropriate recreation setting, including planting new plant to supplement existing vegetation as well as preventative measures for insect and disease control when necessary.
- Harvest within developed recreation sites will normally be for removal of hazardous trees and protection of improvements.
- The fire management control objective will be to hold 90 percent of fire starts to less than 50 acres.
- Appropriate fire suppression response will be to control all wildfires. Contain and confine will not be appropriate.
- Planned ignitions may be used for slash and debris disposal, enhancement of visual quality and preventative measures to reduce wildfire intensity.

Riparian areas are designated MA M. The Forest Plan MA goal for riparian areas is to provide healthy, self-perpetuating plant and water communities that will have optimum diversity and density of under-story and over-story vegetation (pages 80-82). MA M standards include:

- Silvicultural prescriptions will be used along fishery streams to insure that an adequate number of trees will be available to maximize the continual, natural development of pools necessary to meet the need of the individual fishery involved.
- The fire management control objective will be to hold 90 percent of fire starts to less than 10 acres.
- The appropriate suppression responses will be contain and control. Confine will not be an appropriate response. Minimal suppression equipment will be used.
- Prescribed fire may be used for debris cleanup

The MA T goal is “To provide facilities, information and interpretation to Forest visitors regarding the human and natural history of the landscape seen from the highway (212) corridor” (page 98). MA T standards include:

- Timber harvest of posts, poles, and firewood will be permitted as long as it maintains or enhances the visual resource.

- The fire management control objective will be to hold 80 percent of fire starts to less than 100 acres.
- The appropriate fire suppression response will be contain, control, and confine.
- Planned ignitions may be used for debris disposal. Broadcast burning will not normally be used as a management tool.

While not repeated here, there are other applicable Goals, Standards, and Objectives in the Forest Plan.

Custer National Forest Fire Management Plan

The Forest Plan requires that a Fire Management Plan be developed and implemented. Custer National Forest Fire Management Plan (USDA 2008a) goals include:

- Make firefighter and public safety the highest priority in every fire management activity. The objective for this goal is to ensure that wildland and prescribed fire operations cause no injuries to either the public or firefighters.
- Reduce wildland fire hazards in and near high value public and private property. The objective for this goal is to employ strategies to reduce risk of fire destroying or damaging cultural, historic, or any private structure. The strategy for this goal is to use a combination of mechanical hazardous fuel reduction practices and prescribed fire to reduce the intensity of unwanted fires near structures, cultural and historic sites.

The Fire Management Plan specifies that “long-term fuels management on the CNF will focus on protection of property, lowering the risk to firefighters, the general public and restoring conditions that promote lower intensity wildland fires, reducing large fire suppression costs and improving ecosystem health” (USDA 2008a, page 28). This Plan also states (pages 11-12) that “mechanical treatments for fuels reduction will be used to modify wildland fuels to reduce the flammability and resistance to control. The mechanical reduction of fuels near structures and other developments is the preferred option for treating fuels. In many instances this treatment will precede an application of prescribed fire. Non fire treatments most commonly used may include thinning, pruning, lop and scatter, hand or machine piling, chipping or mulching or removal as fuel wood by the general public.”

Purpose and Need for Action

The Forest Service has prepared this Environmental Assessment (EA) to disclose and inform the public regarding the potential environmental effects that could result from implementing fuels reduction activities in locations near Red Lodge and Dean, Montana. This EA was completed in compliance with the National Environmental Policy Act (NEPA), HFRA, and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect and cumulative environmental impacts that would result

from the proposed action. It is prepared according to the format established by Council of Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508) and guidance for environmental assessment of forest health projects (Connaughton 2002).

Planning was coordinated with Federal, State, and local government entities and agencies, and local federally recognized tribes. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Beartooth Ranger District Office in Red Lodge, Montana and available for public review.

The project areas are susceptible to severe wildfire behavior that can potentially impact the communities of Red Lodge and Dean, other at-risk Federal lands, and Forest Service infrastructure, such as developed recreation facilities and leased recreation residences. Based upon findings from field reconnaissance, information gathering, and analysis by USFS fire and fuels management specialists, the existing condition within the proposed project area includes fuel loading, arrangement of fuels on the ground and in the tree crowns, wind patterns, and topography that make it difficult to efficiently and safely suppress wildfires (Fuels analysis, Appendix A). The desired fuel condition is to improve the ability of firefighters to suppress human-caused fires in the drainage bottoms and along the National Forest boundary in the project areas by reducing fuel loads and fuel continuity.

The purpose of this project is to:

- Improve the ability to control and/or suppress wildfires to protect human and natural resource in the project areas.
- Reduce the risk to wildland firefighters and residents of the wildland-urban interface should a fire occur.
- Improve the ability to safely leave the areas in the event that a wildfire occurs.

This action is needed to respond to increased fuel loads created by the November 2007 storm event. These needs would be addressed by reducing fuel loads, creating fuel breaks, and reducing beetle infestation potential in treatment areas. Fuel breaks and fuel reduction would also serve the purpose of improving overall defensible space around the communities of Red Lodge, Dean, and associated infrastructure on private and public lands.

Proposed actions respond to the goals and objectives outlined in the Custer Forest Plan and Fire Management Plan. Specific MA control objectives, appropriate suppression responses, and goals/objectives for use of mechanical fuels treatments and prescribed fire are listed above. The proposed Beartooth Front Storm Damage Clean-up and Fuels Reduction HFRA project is designed under the requirements of HFRA and for the purpose of responding to the 10-year Comprehensive Strategy, focusing on reducing wildfire risk to communities, municipal water supplies, and other at-risk lands. This proposal concurrently addresses identified hazards and vulnerabilities described in the Carbon County CWPP/PDM, Stillwater County CWPP, and City of Red Lodge Growth Policy.

The Beartooth Front Storm Damage Clean-up and Fuels Reduction project consists of specific proposals. It is important to note that none of these proposals are intended to nor can completely prevent wildfires in the Main Fork and Benbow areas. These are fire-dependent ecosystems comprised primarily of even-aged timber stands. Many of these stands are at an age when they would, under natural conditions, burn in a high severity stand-replacing wildfire. This situation has been exacerbated by down fuels created by the November 2007 wind event. The lack of access roads, tendency for high winds, short burning condition windows, and continuous fuels in these areas can make fuels treatments using prescribed broadcast burning or wildland fire use very expensive and oftentimes not physically possible. Proposed treatments may create thinned areas from which future prescribed burning and/or fire suppression tactics could be implemented.

There will be additional human- and lightning-caused wildfires in the project areas. Dependent upon weather and other conditions, wildfires in these areas could grow large and suppression may not be immediately possible. Rather than attempt to treat fuels across large landscapes, proposed activities are focused on treatments in specific and strategic areas where such treatments would likely be most effective at improving public and firefighter safety and improving the ability to suppress fires. Fuels reduction units are connected to existing fuel breaks, such as roads, talus slopes, meadows, and other openings in vegetation. A variety of treatments are proposed to create fuel breaks along Main Fork Road # 2421, Benbow Road # 2414, and adjacent to the Forest boundary. Given that a high percentage of recent fires in the area have been started due to human activities, fuels reduction is focused on the areas most used by the public, such as near roads and developed recreation facilities with storm damage. When (not “if”) wildfires start in the project areas, proposed fuels treatments are designed to improve the ability of firefighting personnel to suppress wildfires, protect infrastructure, use existing roads as fire control lines, and increase effectiveness of aerial fire retardant use.

It is estimated that there are thousands of acres of November 2007 wind damage on the Beartooth District. It is important to note that the majority of the wind damaged areas are not proposed for treatment due to wilderness designation, steep terrain, and lack of access roads. Proposed removal of dead, wind-damaged, and beetle infested trees is a treatment that would help reduce local beetle populations and prevent further mortality within and immediately adjacent to specific treatment areas. Proposed treatments are intended to improve resistance to beetle infestation potential in specific areas, not at the landscape level. Timing is critical since treatment activities must take place before adult beetle flight occurs and the insect spreads to different sites (Samman and Logan 2000). Weather over the next few years will likely be largest determining factor as to whether a bark beetle infestation occurs along the Beartooth Front (Gibson 2008).

Proposed Action

In January 2008, the Forest Service proposed fuels reduction and storm damage clean-up across 109 acres in the Benbow area, 1070 acres in the West Fork Rock Creek area, and 238 acres in the Main Fork Rock Creek area. In response to public comment and Forest Service Interdisciplinary Team recommendations and to better address the project purpose and need, the District Ranger modified the proposed action to:

- Not include previously proposed treatments in the West Fork Rock Creek areas burned in the 2008 Cascade wildland fire and unburned areas in the West Fork Rock Creek. The Forest Service is in the process of re-assessing post-fire fuels and clean-up treatment needs and potential effects of such actions in the West Fork drainage.
- Not include previously proposed removal of storm damaged trees in Main Fork Rock Creek campgrounds. Environmental analysis has been completed and clean-up in these areas was authorized under administrative site maintenance categorically exclusions. On-the-ground work to remove storm damage in these areas was completed in spring 2008.
- While the potential for treatment areas exceeding a 40 acre opening size was identified in maps and tables in the original proposal, retention of some remaining standing trees in thinned areas and streamside management zones would prevent any one continuous opening from being larger than 40 acres.
- Per public request, 268 acres of storm damage clean-up and thinning areas were added in the Benbow area. This includes treatment in Benbow Unit 60 adjacent to private lands.
- Specify fuels objectives for each treatment type.
- Specify equipment to be utilized in each unit, such as handwork (chainsaws and handpiling), machine work (heavy equipment or commercial logging machinery), or a combination of hand and machine work.

The modified proposed action is the Action Alternative that is considered for this environmental analysis. The Action Alternative would meet the purpose and need by reducing fuels and cleaning up storm damage across 377 acres in the Benbow area and 238 acres in the Main Fork Rock Creek area. A full description of the Action Alternative is provided later in this document.

Decision Framework

The Responsible Official for this proposal is the Beartooth District Ranger, Custer National Forest. After the close of the EA review and comment period, the District Ranger will consider comments submitted by the public, interested organizations and government agencies (Federal, State, and local) and respond to these comments in the Decision Notice. She will decide whether and how to meet the Purpose and Need in the Benbow and Main Fork areas and document this decision in a Decision Notice. The District Ranger will decide whether to implement the proposed action alternative, a

modified action alternative, or the no action alternative. If an action alternative is selected, it will include:

- The location, design, and scheduling of proposed fuel reduction on National Forest Lands in the Benbow and Main Fork areas, if any;
- Design features, mitigation measures, and monitoring requirements.

Public Involvement

The proposal has been listed in the Schedule of Proposed Actions since April 2008. The proposal was provided to the public and other agencies for comment from January 25 to February 25, 2008. Comment period and public meeting notification were provided via a legal advertisement published in the Billings Gazette on January 29, 2008 and news releases sent to several area and regional newspapers. Approximately 200 letters describing the proposed action and asking for comment were mailed or e-mailed to individuals, agencies, groups, and Forest Service permit holders that could be potentially affected by or interested in the proposal. The Beartooth District Ranger presented project information to the Red Lodge City Council and Carbon County Commissioners. Public collaboration meetings were held on January 30 in Nye and on February 6 and February 19, 2007 in Red Lodge. A total of 17 responses to project collaboration and public comment efforts were received (see project record).

Using the comments from the public and other agencies (see *Issues* section), the interdisciplinary team developed a list of issues to address.

Issues

The Forest Service initially identified issues and comments through content analysis of public comment received during the project comment period, Interdisciplinary Team discussion, and legal requirements. The Forest Service separated the issues and comments into two groups:

- **Key Issues** are significant issues that drive project design, identify additional project needs, or result in a specific monitoring or mitigation measure.
- **Comments for Analysis** are non-significant issues identified from comment to be analyzed to display effects of the project or to carry forth project-specific requests or suggestions made by scoping respondents.

The Forest Service identified 9 topics raised during scoping as Key Issues that relate to proposed activities in the Main Fork and Benbow areas (Table 1). An Indicator was developed for each Key Issue to measure or describe how project activities would be affected by proposed activities. The Forest Service identified 24 Comments for Analysis to display effects of the project (Table 2). Other comments were dismissed from further analysis because they were either 1) beyond the project's scope; 2) a request that would not address the project's purpose and need; 3) already decided by law, regulation, Forest Plan, or other higher level decision; 4) irrelevant to the decision to be made; 5) not

related to the project’s effects; 5) conjectural in nature or not supported by scientific evidence; or 6) the magnitude, extent, duration, speed, and direction of preliminary effects were determined to be non-significant. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...”

Table 1. Key Issues.

Number	Key Issue	Indicators
1	Effects to visual resources.	Consistency with Forest Plan Visual Quality Objectives (VQO’s).
2	Effectiveness of fuels treatments in decreasing fire risk and improving firefighter and public safety.	Qualitative change in future fire behavior within the treatment areas based on modeling results
3	Effects to recreational users	Consistency with applicable Forest Plan recreation goals, objectives, and standards.
4	Identification of a need for commercial and personal firewood harvest opportunities.	Number of vehicle accessible cull decks retained unburned for a minimum of one field season.
5	Effects to water quality.	Equivalent clearcut area acres (ECA); qualitative discussion of effects to water yield, sedimentation, and channel and floodplain function.
6	Effects to fisheries.	Equivalent clearcut area acres (ECA) and a qualitative determination of the potential for riparian, streambank stability and LWD related effects to aquatic species and habitat, accounting for aquatic mitigation measures.
7	Effects of project implementation to noxious weed proliferation and post-project weed monitoring needs.	Noxious weed risk assessment rating.
8	Effects of tree removal and equipment use on future off-road use and car camping sites.	Post-project compliance with Beartooth Travel Management Plan (USDA 2008b).
9	Effects to snag amount and distribution.	Average number of snags per acre retained in a stand and whether recommendations in the Northern Region snag management protocol (USDA 2000) would be met.

Table 2 – Comments for Analysis.

Number	Comments for Analysis
10	Effects of project activities to subdivisions adjacent to the Forest boundary.
11	Effects of logging truck traffic and associated safety concerns.
12	Concern about use of heavy equipment and suggestion for use of smaller equipment, such as horse logging.
13	Effects to moose.
14	Concern about project implementation causing fire starts.
15	Identification of a need for interpretive education associated with project.
16	Suggestion to “allow the public to use the plowed road on weekends to drive to a plowed parking area beyond.....”
17	Effects of thinning to future timber stand wind damage potential.
18	Effects of future regeneration to fuel loading and fire risk.
19	Effects to snag habitat.
20	Effects to viability of snag associated wildlife.
21	Effects to wildlife habitat diversity
22	Effects to MIS and MIS viability.
23	Effects to old growth habitat and species.
24	Effects to Sensitive wildlife species.
25	Effects to pine marten.
27	Effects to lynx.
28	Cumulative effects of proposal and historic timber harvest.
29	Effects to beetle infestation levels.
30	Effects to soils.
31	Effects to heritage resources.

COMPARISON OF THE NO-ACTION AND ACTION ALTERNATIVES

This section describes and compares the alternatives considered for the Beartooth Front Storm Damage Clean-up and Fuels Reduction – Main Fork and Benbow Areas project. It includes a description of the No-Action and Action alternatives considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. As recommended by the CEQ (Connaughton 2002), the No Action is presented to contrast the impacts of the proposed action with the current condition and expected future condition in the absence of the Action Alternative.

Alternatives

No Action Alternative

No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No fuels reduction or additional storm-damage clean-up activities would be implemented to accomplish project goals.

Action Alternative

The Proposed Action

The actions proposed by the Forest Service to meet the purpose and need would reduce fuels and clean-up storm damage across 377 acres in the Benbow area (Figure 4 and Table 3) and 238 acres in the Main Fork Rock Creek area (Figure 5 and Table 4). No activities are proposed in parklands, prime farmlands, wild and scenic rivers, or ecologically critical areas.

Table 3. Proposed Benbow Area Units.

Unit number	Unit acres	Proposed treatments	Treatment Method
1	66	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand.
2	30	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
3	75	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
54	35	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
55	1	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
56	15	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
57	18	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
58	28	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand
59	20	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand
60	89	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
TOTAL BENBOW ACRES = 377			

Table 4. Proposed Main Fork Area Units.

Unit number	Unit acres	Proposed treatments	Treatment Method
41	37	Remove and salvage windfall and wind-damaged trees along US Highway 212 ¹ .	Machine
42	10	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
43	33	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
44	17	Thin remaining live trees in Parkside Campground ² .	Machine
45	40	Thin remaining live trees in Greenough Lake Campground and recreation site ² .	Machine
46	6	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
47	87	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
48	8	Remove and salvage windfall and wind-damaged trees in MK Campground ¹ . Thin remaining live trees in MK Campground ² .	Machine
TOTAL MAIN FORK ACRES = 238			

The following descriptions correspond to numbered end notes in the “Proposed treatments” column in Tables 3 and 4:

Treatment 1: Windfall and wind-damaged trees would be removed using ground-based timber harvest equipment where such trees are concentrated or scattered. Equipment used could include skidders, low-angle cable-logging systems, feller bunchers, and/or forwarders. Due to variability in wind damage, topography, equipment operability considerations, and current road locations, this treatment would vary in each unit. Where available, merchantable trees would be salvaged and sold as commercial timber. Tree removal could begin as early as winter 2008/2009 and continue for up to 5-10 years as timber is sold under contract and/or as funding becomes available to treat areas with lesser amounts of merchantable timber. Remaining slash and non-merchantable down and damaged material would either be removed or piled and burned onsite. Piles would be burned under prescribed conditions under an approved burn plan. Prescribed burning could take several years depending on burning factors like fuel moisture, weather conditions, etc.

Treatment 2: Trees would be thinned to create a shaded fuel break. All thinning would be dependent upon availability of funding to accomplish it. Thinning could begin as

early as winter 2008/2009 and continue for up to 5-10 years as funding becomes available. After thinning, there would be an average 10 foot spacing between remaining individual tree crowns. Tree spacing between remaining boles would be approximately 20' to 30' between remaining individual trees. In material less than 5" DBH, bole spacing would be 15' to 25'. Thinning would be accomplished by hand crews or using mechanized equipment. While cut biomass would be utilized for forest products where possible, the majority of these areas contain non-merchantable size standing timber. Any cut merchantable trees could be sold as commercial timber to offset treatment costs. In machine operable ground, slash would be machine piled to leave \leq 10 tons to the acre. Remaining slash and non-merchantable down and damaged material would either be removed or piled and burned onsite. Piles would be burned under prescribed conditions under an approved burn plan. Prescribed burning could take several years depending on burning factors like fuel moisture, weather conditions, etc.

For both treatments 1 and 2, in areas not machine operable, or where it would not be possible to utilize biomass for forest products: 1) Tree boles 6" and greater would be bucked to 6 foot lengths and left in place; 2) All material down to a 3" top would be handpiled; 3) Remaining material would be bucked to lie flat on the ground; and 4) Piles would be burned under prescribed conditions under an approved burn plan.

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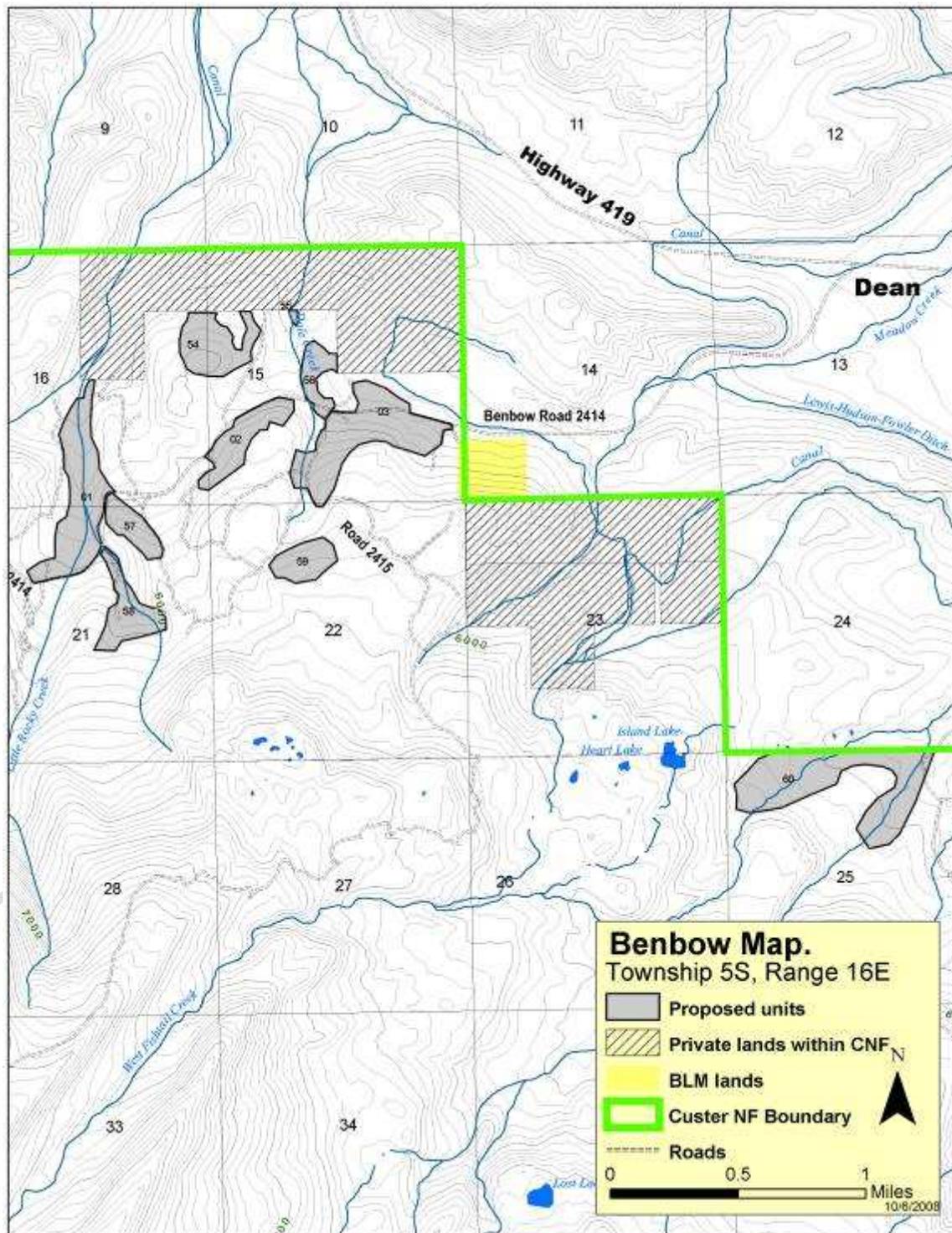


Figure 4. Map of proposed units – Benbow area.

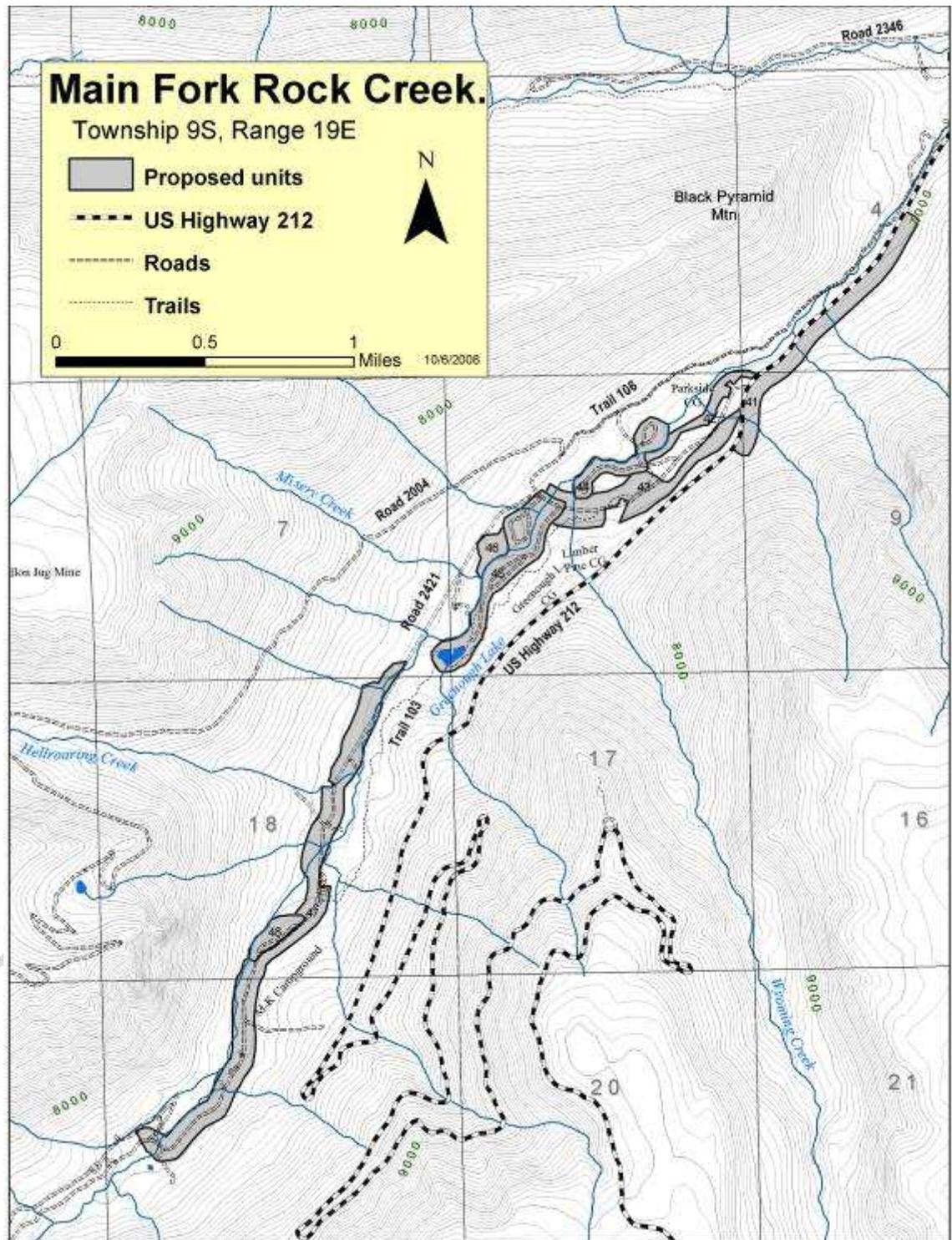


Figure 5. Map of proposed units – Main Fork area.

Action Alternative Design and Mitigation Measures _____

In response to public comments on the proposal, design and mitigation measures in Table 5 were developed to address Key Issues and to ease some of the potential impacts the action alternative may cause. These measures also address some concerns identified as Comments for Analysis. The measures in Table 5 are included as part of the Action Alternative.

Table 5. Action Alternative Project Wide and Site Specific Design & Mitigation Measures.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Access	Currently the Forest Service does not have legal access to proposed Benbow Unit 60. The Forest Service is proposing to acquire temporary access for administrative use only to implement activities proposed in Unit 60.	Unit 60
Identified need for commercial and personal firewood harvest opportunities	All non-saw material decks not purchased and removed by timber sale purchasers and located in vehicle accessible areas would be retained and made available for firewood cutting for a period of one year. This would be accomplished by including a timber sale contract clause that provides for piling non-saw material separate from limbs and tops when timber sale purchaser elects not to purchase and remove that material. Contract administration personnel would monitor implementation to ensure contract compliance.	All units.
Suggestions for project-specific interpretive education	Post-project interpretive education efforts focusing on forest health and fuel reduction would raise public awareness to the goals and objectives of the proposed project would be included as an opportunity for funding under the project KV plan and be implemented if adequate funding is attained.	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Effects to subdivisions adjacent to the National Forest	Property boundaries would be inspected by Forest Service personnel prior to implementation to ensure boundaries are appropriately surveyed and marked. Any additional surveying/marketing would be completed prior to implementation of activities adjacent to said boundaries. Forest Service contract administrators would perform on-the-ground review of all property lines during and post treatment to determine if any trespass occurred during project implementation.	1, 3, 54, 56, 60,
Effects of logging truck traffic and associated safety concerns	Signing, law enforcement patrols and use of road and/or area closures to the public during specific time periods along with use of limited operating periods for the timber sale purchaser would be applied. Periodic monitoring would be conducted by Forest Service contract administration and Law Enforcement personnel.	All units.
Concern about use of heavy equipment and suggestions for use of smaller equipment such as horse logging.	Successful contract bidders could elect to use smaller equipment or horses to implement project activities. Monitoring of contractor activities by Forest Service contract administration personnel would ensure that project design features are applied and equipment, either large or small, is used in a manner that prevents irreversible resource damage.	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Hydrology & Fisheries	Streamside Management Zone Law and Rules would be applied in unit layout and design and during operations: Class 1 streams do not necessarily support fish, nor are they always perennial. Class 1 streams generally flow more than 6 months and always contribute surface flow to the next order stream down valley. Class 2 streams do not support fish. Either they flow less than six months of the year and do contribute surface flow to perennial streams down slope, or they flow more than six months but do not contribute surface flow. Class 3 streams do not support fish, normally flow less than 6 months and rarely contribute surface flow. When in doubt, non-streams would be treated as Class 3, Class 3 as Class 2, and Class 2 as Class 1 streams. All alternative practices would be reviewed and approved by Montana DNRC. Forest Service COR and operator would be fully informed of all stipulations prior to implementation.	All units.
Hydrology & Fisheries	Clarification of Stream definitions would be applied in unit layout and design and during operations: The minimum criteria to meet the definition of a stream under the Montana Forestry BMPs (DNRC 2002) is the same as for Class 3 streams under the SMZ Law (ARM 2007b), i.e., dry scoured or partially scoured channels that flow less than six months per year and generally do not conduct water to the next order drainage downslope. Class 3 streams can be dry one year and flowing for a short duration the next year. Mitigating impacts to natural drainage features that do not meet these minimum stream criteria would still be addressed through BMPs.	All units.
Hydrology & Fisheries	CNF Fisheries and Hydrology personnel would be involved in marking SMZ and wetland boundaries, and should mark all streambed and bank retention LWD.	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Hydrology, Fisheries, Soils, and Wildlife	<p>For both timber sale and fuels reduction contracts, utilize applicable Forest Plan standards and guidelines, Montana Streamside Management Zone BMP's, Montana Forestry BMP's and the Soil and Water Conservation Practices BMP's. Comply with Montana Stream Protection Act and obtain appropriate permits where necessary.</p> <p>In addition to BMP and SMZ requirements, mechanized equipment use would be restricted within 50-feet of isolated wet areas, such as seeps, springs, and wet meadows.</p>	All units.
Hydrology, Fisheries, and Soils	<p>Temporary Road Construction: All temporary roads shall be constructed to minimize cuts and fills.</p> <p>When locating and constructing temporary roads and skid trails, intermittent or perennial stream crossings would be avoided. If crossings cannot be avoided, appropriate BMPs would be incorporated into the crossing design and appropriate permits would be obtained prior to implementing the project. Permits generally require at least 30 days for processing applications prior to implementation. Measures would be taken to ensure FS COR and operator are fully aware of all permit stipulations prior to implementation.</p> <p>Construction of temporary roads within ephemeral swale areas would be avoided and minimized. Where crossings are needed, they would cross ephemeral swales at right angles.</p>	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Hydrology, Fisheries, Soils, Recreation, Wildlife, Visuals	Decommission all temporary roads and skid trails as follows: <ul style="list-style-type: none"> • Within 6 months of completion of use, all temporary road segments would be fully recontoured so as to not be passable by 4x4 vehicles. To the extent practical, logging slash (cull logs, rootwads, large limbs) would be placed along the temporary road prism, especially at points of entrance to the road. • Temporary roads on existing non-system routes used for project activities and access points in and adjacent to treatment units identified for closure in the Beartooth Travel Management Plan (USDA 2008b) would be reclaimed and physically blocked to ensure accessibility would not be improved over pre-project conditions, thereby ensuring traffic related sediment production/transport would not increase over pre-project conditions. • Slash, cull logs, or rootwads would be used where available to prevent re-use of temporary roads and skid trails. • All disturbed areas would be seeded with an approved noxious weed-free seed mix. 	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Hydrology & Fisheries	<p>The following would be applied for use of fords to facilitate yarding or hauling: To comply with the Montana SMZ regulations (ARM 2007b), Class 1 and 2 streams would only be crossed for skidding purposes by suspended means, i.e., log cribs or temporary bridges and only with alternative practice approval from Montana DNRC. Class 1 and 2 streams would not be forded for skidding purposes, but Class 3 streams could be forded at 200 foot minimum intervals, at stable sites and only when the stream is dry. Streams could be forded for hauling activities. Unimproved fords would be avoided. Improved fords would consist of hardening approaches and channel bottom in order to minimize the generation or delivery of fine sediment. Hardening could consist of rubber mats, concrete planks or a layer of substrate that is larger than currently exists which would not be mobilized by high flows.</p>	All units.
Hydrology and Fisheries	<p>Temporary stream crossings and fords would be obliterated and restored as follows:</p> <ul style="list-style-type: none"> • All temporary culverts, log cribs and skidder bridges installed for this project would be removed and crossing site approaches would be restored to match adjacent topography. • New fords would always be considered temporary and full rehabilitation of crossing sites would occur after hauling activities cease. • Rehabilitation would include recontouring and ripping if necessary, installation of adequate drainage, and slash placement to disperse overland flows and eliminate potential for public motorized access. 	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Hydrology, Fisheries, & Soils	Areas of concentrated soil disturbance such as temporary roads, landings, and temporary stream crossings would be scarified where compaction exists and seeded with noxious weed free seed of an approved mix after harvest activities are complete. Seeding would occur prior to the following winter season and prior to placing slash. Erosion control and drainage measures would be applied within 15 days of the completion of unit harvest activities.	All areas impacted by project activities (roads, units, log landings, etc.)
Hydrology & Fisheries	A Custer National Forest level BMP Audit would be scheduled and completed on select treatments and roads within two years of full project implementation. Effectiveness monitoring will be essential to determining if proposed prescriptions are effective at protecting or improving aquatics resource.	All units and roads used in project activities.
Hydrology & Fisheries	A long-term trend monitoring plan would be developed to determine if the proposed management is improving riparian conditions at a satisfactory rate.	All project areas.
Hydrology & Fisheries	Post-treatment large woody debris frequency would be inventoried in treatment areas to insure stream retention guidelines were adequately followed and to evaluate the efficacy of the prescription for future recommendations on similar proposed actions.	All units.
Soils	Coarse Woody Material would be left at a minimum rate of approximately 7-9 tons/acre to help the recovery of long-term soil productivity.	All units.
Soils	Skid trails and landings would be designated prior to construction and/or use in any fuels treatment contract by including Forest Timber Sale Contract Requirement B(T)6.422.	All units.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Soils	<p>Skid trails would be located on existing jeep trails or old unclassified roads where available.</p> <p>Skid trails would be located to avoid concentrating runoff and provide breaks in grade. Skid trails and landings would be located away from natural drainage systems and divert runoff to stable areas.</p>	All units.
Soils	Unit 1 landing and skid trail designation would be accomplished in consultation with either the CNF Soil Scientist or Hydrologist.	1
Soils	Heavy slash would be maintained on the skid trails during use.	All units.
Recreation, public safety, effects to subdivisions adjacent to the National Forest.	<p>During summer months, clean-up and fuels reduction operations would be limited to weekdays to minimize impacts and avoid higher use of the area by recreation users on the weekends unless the work could occur without risk to the public. Limiting operations and log hauling to week days whenever possible would reduce impacts to adjacent land owners. Special orders closing operating areas to the public Monday – Friday during project activities would be implemented for public safety when necessary.</p>	Access roads to all units except for Unit 60.
Recreation	<p>To address a suggestion to “allow the public to use the plowed roads on weekends to drive to a plowed parking area” beyond project area,” during the winter use season from December 1st to April 15th, the public would be allowed on weekends and holidays to use roads plowed to facilitate project activities.</p>	Access roads to all units except for Unit 60.
Recreation, public safety	<p>Monitoring of contractor activities would be conducted by Forest Service contract administration personnel to ensure effectiveness of signing, use of road and/or area closures to the public during specific time periods to improve safety, and use of limited operating periods for the contractor to improve safety and provide for some recreational use of the area during period of contract.</p>	All Forest Service roads used for project activities.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Recreation	Signing, news releases and field level contacts to inform and educate the public regarding dispersed recreation opportunities or restrictions would be applied.	All project activities.
Visuals	<p>The following unit layout and design measures would be applied to mimic existing patterns found in the landscape to reduce unnatural edges between treated and non treated areas:</p> <ul style="list-style-type: none"> • Tie outer unit boundaries where possible to natural landform and vegetation edges. • Minimize straight lines and geometric shapes to create free form vegetative shapes that mimic natural patterns by feathering unit edges and meandering and varying roadside thinning unit widths. Feathering should be a gradual transition between treated and non-treated areas. • When possible, leave trees in such a way as to make the stand appear open in some areas and denser in others. 	All units.
Visuals	In immediate foreground (300 feet) of Main Fork Road, Highway 212, Benbow Road, and recreation sites in retention and partial retention visual quality objective (VQO) areas, trees in thinned areas would be retained at irregular spacing intervals for a more natural appearance.	Apply this mitigation to the following units and any other units deemed necessary during implementation: <u>Main Fork area:</u> All units <u>Benbow Area:</u> 01, 02, 03, 56, 57, 58

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
	<p>To minimize visual effects of stumps of removed vegetation in retention and partial retention VQO to maintain naturally appearing scenery the following would be applied:</p> <ul style="list-style-type: none"> • Where slopes are flat and terrain allows, in areas with retention VQO, cut stumps of all size classes flush with the surface of the ground within 300 feet, or visual sight distance if less than 300 feet, of Highway 212, Main Fork Road, and all campgrounds, trails, trailheads and dispersed recreation areas. • Where slopes are not flat and terrain allows, in areas with retention or partial retention VQOs, cut stumps of all size classes low (less than 4 inches on the high side of the stump) within 300 feet, or visual sight distance if less than 300 feet, of Highway 212, Main Fork Road, Benbow Road, and all campgrounds, trails, trailheads and dispersed recreation areas. 	<p>Apply this mitigation to the following units and any other units deemed necessary during implementation: <u>Main Fork area:</u> All units <u>Benbow Area:</u> 01, 02, 03, 56, 57, 58</p>
<p>Visuals</p>	<p>To maintain a naturally appearing landscape in campgrounds and picnic areas which are sensitive viewpoints, the following would be applied:</p> <ul style="list-style-type: none"> • Retain a portion (about 10-15%) of understory trees which do not pose a hazardous fuels risk for vegetative screening around and recreation sites. This can be accomplished by leaving individual trees as well as leaving trees in clumps. • Within 50 feet of campground and picnic area developed site footprints, preserve some vertical diversity in the forested stand by retaining clumps of small trees or individual trees or shrubs that do not pose a ladder fuels risk. 	<p>Sensitive Viewpoints for this mitigation include: <u>Main Fork Rock Creek area:</u> Parkside Campground, Limberpine Campground, Greenough Lake Campground and recreation site, and M-K Campground.</p>

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Visuals	<p>Reduce any long-term visual effects of marking paint that may be left on site by:</p> <ul style="list-style-type: none"> • If paint is used for marking, when possible, use a cut tree mark and place “stump” mark on side away from viewing of the nearest sensitive viewpoint. • Use a method other than paint to mark unit boundaries, such as ribbon, and remove once the project is complete. 	All units
Visuals	<p>Enhance views when possible at pullouts used as scenic overlooks. At pullouts which could be used as scenic overlooks, remove vegetation in a way that enhances the view from these areas.</p>	Opportunities to be determined by Recreation Staff during implementation
Visuals	<p>To minimize visual effects of landings and slash debris once the project is complete, the following would be applied:</p> <ul style="list-style-type: none"> • When possible use topography and vegetation to screen landings from view of Main Fork Road and Highway 212. Once management activities are complete, clear slash and debris in landings and revegetate. • If any vegetative clearing is needed, shape edges of landings to mimic natural patterns and openings. • Remove any slash debris that may make it to the main road surfaces once the management activities are complete. 	All landings

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Visuals	<p>Slash Treatment –To retain a naturally appearing landscape and reduce visual effects of pile and burn sites, the following would be applied:</p> <ul style="list-style-type: none"> • When possible, establish burn piles away from sensitive viewpoints (roads, campgrounds, trails, trailheads, dispersed recreation sites, and cabins). If piles are visible, remove as soon as possible by burning, chipping, etc. • If after one year pile-burned sites visible from sensitive viewpoints, areas would be rehabbed by re-burning, scattering, and/or covering with natural duff in order to minimize the visual impact of these management activities. 	<p>Sensitive Viewpoints for this mitigation include: <u>Main Fork Rock Creek area:</u> Main Fork Road, Parkside Campground, Limberpine Campground, Greenough Lake Campground and recreation site, M-K Campground, and Parkside NRT. <u>Benbow area:</u> Benbow Road</p>
Visuals	<p>Limiting Future Recreation Use – If barriers are needed to limit recreation use of an area, naturally appearing barriers would be used that borrow from the immediate landscape character. Examples include boulders or wood rail fence. If boulders are used as barriers in recreation areas, 1/3 the size of the boulder should be buried and the naturally weathered side should be up.</p>	<p>To be determined by Recreation Staff during implementation</p>
Wildlife	<p>All project workers, contractors, etc. would comply with the Grizzly Bear Food Storage order.</p>	<p>All</p>
Wildlife	<p>Active treatment areas would be inspected for the presence of active ruffed grouse nests and drumming logs. If any are found, individuals implementing the activity will stop work within 300 feet of the nests or drumming logs until July 1.</p>	<p>All</p>
Wildlife	<p>If an active raptor nest is found during unit layout, it would be protected and buffered from planned activities.</p>	<p>All</p>
Wildlife	<p>If an active goshawk nest is discovered within a stand prior to or during treatment activities, work would be halted and the wildlife biologist would be notified immediately to determine steps to resolve the situation.</p>	<p>All</p>

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Wildlife	Management activities within ¼ mile of any known goshawk nest would be restricted from March 1 through August 31 unless surveys confirm that goshawks are not nesting or within the area.	All
Wildlife	Existing aspen clones within the proposed treatment areas would be treated to remove all coniferous trees within one conifer tree length from the aspen.	All
Wildlife	An average of at least 2 snags per acre would be maintained within treated stands. Emphasis would be on maintaining snags greater than or equal to 12” diameter, leaving the largest snags available. Trees maintained as snags would be greater than 75 feet from roads and/or private property, and are not a safety hazard during project implementation.	54, 60
Wildlife	An average of at least 5-10 snags, per acre would be maintained within treated stands. Emphasis would be on maintaining snags that are greater than or equal to 12” diameter, leaving the largest snags available and Douglas-fir when available. Trees maintained as snags would be greater than 75 feet from roads and/or private property, and are not a safety hazard during project implementation.	1, 2, 3, 41, 42, 43, 44, 45, 46, 47, 48, 55, 56, 57, 58, 59
Wildlife	If fawns and/or calves are found in active treatment units from the third week of May through the first week of July), individuals implementing the activity (Forest Service/contractor) would coordinate options with the project leader or District wildlife biologist to work in other areas within the vicinity until the young are removed from the area.	All
Wildlife	To protect and maintain lynx habitat and to comply with standards and guidelines in the Canada Lynx Conservation Strategy (Ruediger 2000) and Northern Rockies Lynx Management Direction Record of Decision (USDA 2007), no pre-commercial thinning would be allowed to occur in the project area.	All

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Range Management	Dependent upon funding, new fence would be constructed natural barriers or existing fence would be compromised by treatments.	Units 3 and 60
Noxious Weeds	All mud, dirt, and plant parts would be removed from all off road equipment before moving into project area. Cleaning must occur off National Forest lands. This does not apply to service vehicles that will stay on the roadway, traveling frequently in and out of the project area. Reference Timber Sale Contract Provision C/CT6.26.	All units where mechanical treatment occurs
Noxious Weeds	To minimize the creation of sites suitable for weed establishment, soil disturbance would be minimized to meet harvest project objectives.	All units where mechanical treatment occurs
Noxious Weeds	All disturbed soil would be revegetated (except the travel way on surfaced roads) in a manner that optimizes plant establishment for that specific site, unless ongoing disturbance at the site will prevent weed establishment. Native material would be used where appropriate and available. A native seed mix that includes fast, early season species to provide quick, dense revegetation would be used. To avoid weed contaminated seed, each lot would be tested by a certified seed laboratory against the all State noxious weed lists and documentation of the seed inspection test provided.	All units where mechanical treatment occurs
Noxious Weeds	Local seeding guidelines for detailed procedures and appropriate mixes would be used. Native material would be used where appropriate and available. Revegetation may include planting, seeding, fertilization, and weed-free mulching as indicated by local prescriptions.	All units where mechanical treatment occurs
Noxious Weeds	Success of revegetation would be monitored and evaluated in relation to project plan. Revegetation efforts would be repeated as necessary and as indicated by local prescriptions.	All units where mechanical treatment occurs

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Noxious Weeds	Weeds on roads used by timber sale purchasers would be treated. Reference Timber Sale Contract Provision C/CT6.26.	All units
Noxious Weeds	Weeds on landings, skid trails and helibases that are weed infested would be treated before logging activities where practical.	All units where mechanical treatment occurs
Noxious Weeds	Presence of weeds would be monitored after sale activity and weeds would be treated as indicated by local prescriptions.	All units
Noxious Weeds	Trust, stewardship, or other funds would be used to treat soil disturbance or weeds as needed after timber harvest and regeneration activities.	All units
Heritage	New cultural resources discovered during project implementation would immediately be brought to the attention of the Forest Archaeologist and plans designed to avoid, reduce further disturbance or mitigate existing disturbance would be formulated in consultation with the Montana State Historic Preservation Officer (MTSHPO), the Crow Tribe and the USFS.	All units
Heritage	All proposed activities located outside the units that may involve ground disturbance (e.g. log landings, access roads, equipment/machinery storage areas, prescribed burn piles and existing road use) would be reviewed by an archaeologist prior to implementation in order to insure no cultural resources are disturbed.	All areas affected by project activities.
Heritage	Over one-half mile of historic road accessing Unit 60, located on Forest Service administered land and private property, dates to 1899-1901 and retains nearly all of its original alignment and some original character. This road becomes a historic trail shortly after entering the Forest Service boundary. Proposed use (including maintenance and/or realignment) of this road by log trucks and heavy equipment may require MT SHPO consultation prior to any disturbance.	Access road to Unit 60.

Concern or Resource	Description of Design feature/Mitigation	Where feature or mitigation would be applied
Heritage	One culturally sensitive site may require consultation with the Crow Tribe in order to verify its significance and to insure its respectful consideration and treatment.	Not disclosed due to heritage protection law.

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Effects Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Table 6 provides an overall summary of this section of the EA.

Table 6. Effects comparison summary of Alternatives for Key Issues.

Key Issues	Effects of No-Action Alternative	Effects of Action Alternative
Visuals Resource	Would be consistent with Forest Plan goals, standards, and guidelines for visual resources.	Would be consistent with Forest Plan goals, standards, and guidelines for visual resources.
Effects to water quality	Low risk of existing levels of blowdown to cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas.	Minimal additional influence on water yield and streamflow. Low risk of existing levels of blowdown to cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas. No adverse indirect effects are anticipated. Fuels reduction would have a long-term benefit in that it would locally reduce the potential for high intensity/long duration fire in localized riparian areas.
Effects to recreational users	Reduced recreation opportunities because blown down trees and hazard trees reduce access for recreation in these areas. Would not be consistent with applicable Forest Plan recreation goals, objectives, and standards.	Loss of use or access to recreation opportunities during implementation. In the long-term, removal of the blown down trees would restore and maintain recreational use by dispersing users. Would be consistent with applicable Forest Plan recreation goals, objectives, and standards.
Identification of a need for commercial and personal firewood harvest opportunities.	No log decks or slash piles would be provided for firewood opportunities.	Log decks and slash piles would be provided for firewood opportunities for a one year period.
Wildlife - Effects to snag amount and distribution.	Recommendations in the Northern Region snag management protocol (USDA 2000) would be met.	Recommendations in the Northern Region snag management protocol (USDA 2000) would be met.
Effects to fisheries	No Direct effects. Indirect effects would be excessive amounts of large woody debris remaining in stream channels with localized adverse impacts to fish and amphibian populations in stream systems, but no impacts to the entire population.	Negligible to nonexistent direct effects on aquatic species. Reduced potential for high intensity wildfire, decrease the risk of streambed and bank scour, and allow for faster regeneration on stream banks and riparian buffer areas would have long-term beneficial indirect and cumulative effects.

Effects of project implementation to noxious weed proliferation and post-project weed monitoring needs.	Low to moderate risk rating.	Moderate risk rating.
Effects of tree removal and equipment use on future off-road use and car camping sites.	No routes or dispersed recreation sites would be opened by fuels treatment and storm damage clean-up in the Main Fork and Benbow areas. Increased resource damage and exposure to potential liability due to a lack of clearing standards and resource protection measures would be likely.	Routes or dispersed recreation sites opened by or used for fuels treatment and storm damage clean-up in the Main Fork and Benbow areas not designated for motorized recreation use in the Beartooth Travel Management Plan (USDA 2008b) would be rehabilitated and physically blocked off at the end of the project.

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