SUMMARY

Introduction

The Townsend Ranger District of the Helena National Forest (HNF) is proposing the Cabin Gulch Vegetation Treatment Project. The project is designed to restore fire-adapted ecosystems in the Cabin Gulch landscape, create conditions that minimize opportunities for high-intensity wildfires, and improve the water quality in the project area, specifically in the West Fork Cabin Gulch. It emphasizes cost-effective timber harvest, reduces the susceptibility of timbered stands to insect and disease agents, captures the economic value of trees killed by forest insect and disease agents, promotes aspen stand health and size, promotes the reproduction of whitebark pine, and reclaims grassland and shrubland communities.

The project area is located approximately 15 miles east of Townsend, Montana and is approximately 15,600 acres in size (Figure 1). The legal description is T.7, 8 and 9N., R.3 and 4E., Principal Meridian Montana. Private lands bound the area on the southwest and east with the rest of the border being National Forest System (NFS) lands. The Mount Baldy Inventoried Roadless Area (IRA) is to the north of the project area. The main drainages that flow through the project area are Holloway Gulch, the North Fork Deep Creek, the West Fork Cabin Gulch, the Middle Fork Cabin Gulch, and the East Fork Cabin Gulch. These streams are tributaries to the greater Deep Creek drainage that is just south of the project area.

The South Belts Ecosystem Watershed Analysis (EWAS; USDA Forest Service 2005) evaluated the existing vegetation and watershed conditions. The assessment identified resource conditions that do not meet desired conditions as identified in the Forest Plan. These differences are described in the existing condition sections by resource in Chapter 3 of the Draft Environmental Impact Statement (DEIS). Throughout the Forest Plan, the desired conditions are embodied in the management direction goals, objectives, and management area standards and guidelines.

Project History

In August of 2006, the HNF released the Cabin Gulch DEIS. The interdisciplinary team (IDT) met in the fall and early winter of 2006 to review and discuss the 20 comment letters received on the DEIS. As the IDT considered what the public concerns were, an opportunity arose to use a new analysis tool developed by the Northern Region Geospatial Group. This new product is a Vegetation Map Product (VMap). It is a map base developed using 2005 satellite imagery and Ecognition software. The map has attributes for vegetation type, size class, and canopy cover. Using Forest Inventory Analysis (FIA) plot data and FIA grid intensification data, new modeling efforts were undertaken. This use of new information resulted in different resource base data. This data is considered the most accurate and reliable data available for vegetation and wildlife habitat analysis.

As a result of the VMap product and data used in the analysis, changes to the alternatives were made and the Responsible Official determined that a new DEIS was needed to provide the public an opportunity to comment on these changes and the subsequent environmental effects analysis. Therefore, the decision was made to produce a new DEIS to *supersede and replace* the August 2006 DEIS for the Cabin Gulch Vegetation Treatment Project. Detailed descriptions of the various modeling efforts and data can be found in the individual resource reports in the project file.

Cabin Gulch Vegetation Treatment Project
Vicinity Map

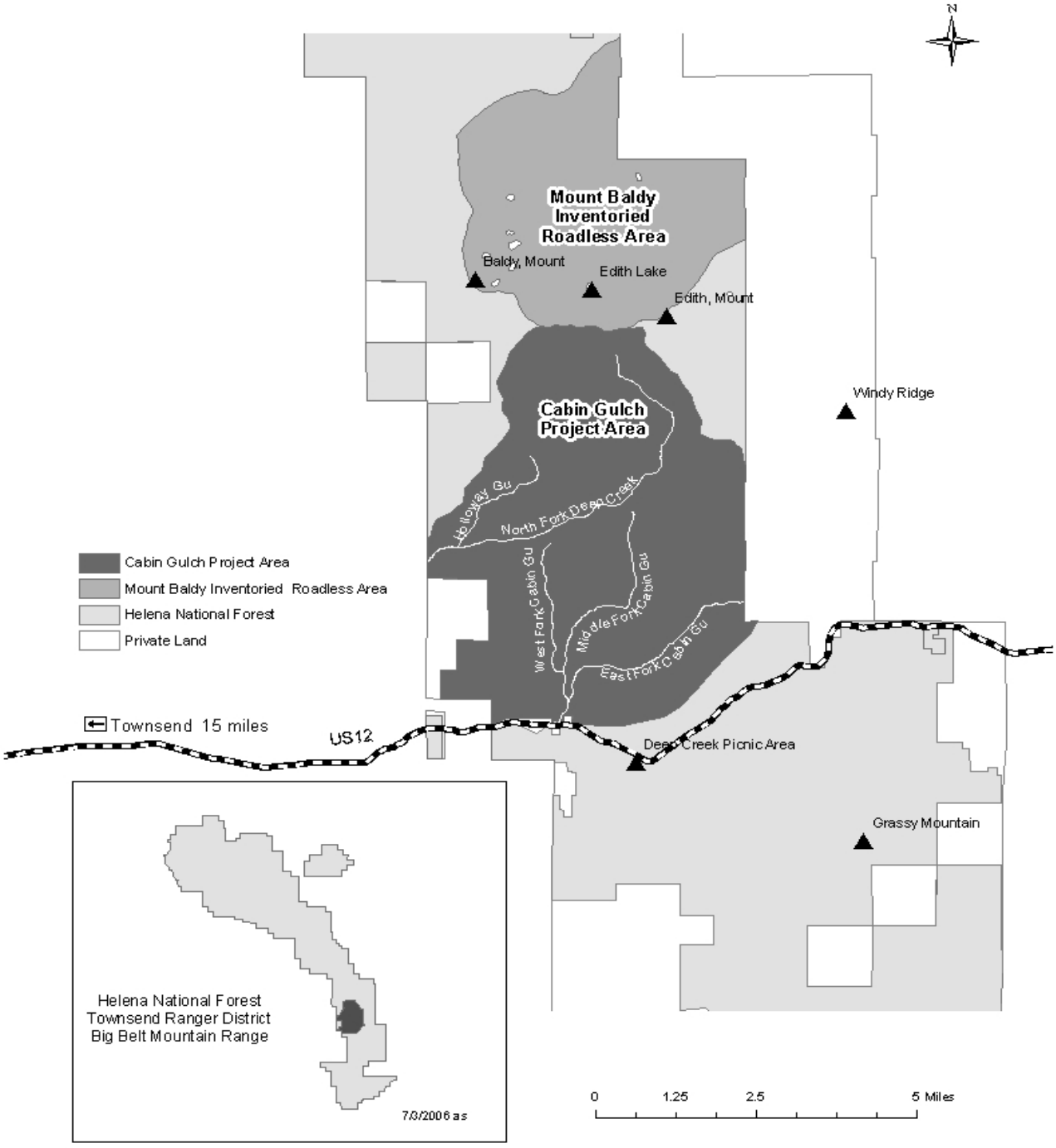

Figure 1

Purpose and Need for Action

The purpose and need for action is determined by the extent and intensity of differences between the existing and desired conditions. Where there is little difference between these two conditions, the need for action is low. However, the need for action in this analysis area is compelling. Based on the comparison between the desired condition, and existing conditions, as determined through the regulatory framework direction, the following objectives were identified to develop the proposed action.

For *vegetation conditions* the underlying purpose is to create conditions that result in a fire-dependent ecosystem that is resistant and resilient to disturbance regimes such as high-intensity wildfire and epidemic levels of insect or disease. Meeting this objective provides for a variety of habitat needs and conditions. This responds to the goals and objectives of the Helena National Forest Land and Resource Management Plan (FP) (FP pg. II/1 & II/2 with emphasis on goals 4, 11, 14, & 16) and is supported by the National Fire Plan, the Tri-County Fire Working Groups Regional Community Wildfire Protection Plan, and by the area specific South Belts Ecosystem Watershed Analysis.

For *hazardous fuels* reduction, the underlying purpose is to create vegetative conditions that lead to reduced risks to values that are important to communities, people, and natural resources. This is in line with the National Fire Plan. Hazardous fuels reduction treatments are designed to reduce the risks of catastrophic wildland fire to people, communities, and natural resources while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity, and dynamics. Accomplishing these goals by removing or modifying wildland fuels within treatment areas will reduce the potential for severe wildland fire behavior, lessen post-fire damage, and limit the spread or proliferation of invasive species and diseases.

For *water quality* the underlying purpose is to create conditions which will improve and address the water quality concerns associated with the tributaries of Deep Creek. The State of Montana has established a Total Maximum Daily Load (TMDL) for Deep Creek. With the majority of the project area's drainages flowing into Deep Creek there is an opportunity to reduce the sediment contributions of the forest's road systems in this area.

For *timber production* the underlying purpose is to increase timber productivity on the suitable timber land by managing the stocking level of individual stands and successfully managing insect and/or disease outbreaks.

Based on the guidance provided through the regulatory framework and the data collected and analyzed by the IDT members, the Responsible Official has determined there is a need to modify the vegetative conditions and thus the fuels component within treatment areas; improve the water quality (siltation/sediment) within the Cabin Gulch landscape by reducing sediment to the Deep Creek drainage; modify the vegetative composition in the warm-dry habitats that are most impacted by the combination of over-stocking (increased tree densities); drought, and insect and disease activity; and strive to maintain aspen, ponderosa pine, whitebark pine in a sustainable condition.

Vegetation Conditions

Vegetation conditions on a given landscape are a function of physical site characteristics, climate, successional processes, and disturbance regimes. It is not known site-specifically what the structures of the forests in Cabin Gulch were historically. However, based on a variety of research performed at larger scales we do know that, in general, low elevation, dry forests in this Region have experienced changes in disturbance processes, and consequently structure and function. Causes of this change could include fire suppression, forest management, and climate change (Hessburg et al 2005; Westerling et al 2006; Hessburg et al 2003). In general, changes include higher tree density, more multi-storied stands and ladder fuels, and a greater homogeneity of structures across the landscape which results in a greater probability for disturbances to affect large contiguous areas (Hessburg et al 2005).

Since the latter part of the 19th century, settlement, timber management, and fire suppression efforts have altered vegetation composition and structure within the Cabin Gulch landscape. Without fire as a disturbance agent, the lower elevation forested lands have shifted towards more uniform and dense stands

that are dominated by Douglas-fir (a shade tolerant species) rather than ponderosa pine, which is shade intolerant.

Across the landscape of the Cabin Gulch project area there are a variety of historic fire regimes with different expected intervals between fires and different levels of expected fire severity. In particular, the warm, dry, forest types within the area historically contained relatively open ponderosa pine and Douglas-fir overstories - with understories of grasses, forbs, and low shrubs (Pfister, et al 1977). This condition was maintained over time by frequent, low intensity fire (Fischer & Clayton, 1983). The warm, dry, forest types of the area have departed from this condition due to the lack of frequent, low-intensity fire. Many of these sites now contain dense stands with significant ladder fuels, which readily facilitate crown fires. The number of small trees in the dry-forest types has increased dramatically since the suppression of natural wildfires occurred.

This has created a situation where the current level and future levels (if nothing is done) of fuel are above historic levels. These conditions increase the risk of severe fire events, which threaten the health and safety of the adjacent private landowners, the general public, and firefighters. These dense stands are at increased risk of unnaturally intense wildland fires and insect or disease epidemics. These conditions predispose forest stands to stand replacing fire events such as the Maudlow-Toston wildland fire located just a few miles south of this project area. That fire burned over 81,000 acres of multiple land ownerships in the year 2000. Furthermore, these predisposed forest stand conditions are subject to insect and disease epidemics discussed in more detail later in this document (Graham et al., 2004).

The current and expected stand conditions without management are undesirable for a variety of reasons. For instance, due to tree competition and stress, susceptibility to insects and diseases is high (Hessburg et al 1994; Furniss 1981; Negron et al 1999; Gibsen 2005)). Insect activity is already occurring and can be expected to continue, causing tree mortality. The area is not in a condition to function in its historical role as a fire-adapted ecosystem; if a fire occurs, high mortality is likely due primarily to ladder fuels and closed canopy. The condition for this vegetation type is over-represented on the landscape level due to lack of disturbances.

On August 18, 2008 a fire broke out in the Bear Gulch drainage, on the southwest corner of the project area. This fire grew from 30 acres to more than 600 acres in less than four hours. Total size was 755 acres. Approximately 90 percent of the overstory experienced stand-replacing fire. Classified as high overstory severity, these trees either have red needles or the needles and fine twigs have been completely consumed. These stands have nearly 100 percent mortality as a direct result of the fire. Understory vegetation was almost completely consumed in these areas. The majority of fire growth occurred during the first two burning periods when weather conditions were conducive for fire growth with high temperatures, low relative humidity, and moderate to high winds. The remaining 10 percent of the fire experienced low overstory severity. The fire burned in a patchy mosaic through these areas. Trees will mostly survive although some received adequate scorch and will die as a direct result of the fire. Some trees may die in the coming years as a result of insect activity. The rapid spread of this fire, and resultant impacts are a vivid reminder to local residents of the severe fires of 2000 in this area. The current stand conditions in the project area are ripe for another Maudlow-Toston, Cave Gulch or Warm Springs Creek type of major fire event.

It is desirable to create a mosaic on the landscape with different vegetation condition classes to increase resiliency. These qualities are consistent with direction found in the Helena National Forest Plan.

The foreground in the following two pictures provide the reader with a real look at an example of the current conditions (left) and a representation of the desired forest stand condition (right).

Aspen, Grassland, and Sagebrush Habitats

In having a more fire-adaptive ecosystem, there is a need to have other vegetation types that are vital to overall diversity across the landscape (Forest Plan page II/1, emphasis Goal 4 & 6). Given a continuation of conditions (e.g. lack of fire, deer and elk use, and livestock grazing) that have prevailed for the past 100 to 150 years in the interior West, most aspen stands will eventually be replaced by conifers, sagebrush, or possibly other tall shrub communities (USDA RMRS, Fading Gold Video). Numerous areas throughout the West that were once dominated by aspen are in a late successional stage, and if treatment is going to be successful, something needs to be done soon. Many treatment alternatives (such as burning, cutting, fencing, spraying, ripping, chaining,) exist that can be used by land managers to restore aspen.

Aspen habitats rely on fire to remove the diseased overstory, kill any encroaching conifers, and stimulate a new generation of suckers from the existing clone root system. Aspen has therefore become a species of concern for the entire western United States, including the Helena National Forest as the lack of fire in this habitat type has resulted in a failure of aspen clones to survive and rejuvenate (USDA RMRS, Fading Gold Video). The encroachment and resulting competition from coniferous vegetation, has resulted in the aspen stands losing stand vigor and thus not regenerating. This concerns managers of elk and other wildlife species, and even impacts the fall viewing of aspen as the leaves turn color.

Grassland and sagebrush areas have also experienced the same reduction in occupied habitats on the landscape. Since settlement of the West began, there has been a substantial reduction in both the quantity and quality of sagebrush ecosystems (USDI, 2002). The factors for this are many and complex. Agricultural conversions, livestock grazing, noxious weeds, and fire management activities and policies are among the many reasons the sagebrush biome is at risk (USDI, 2002).

Insect Activity

Several insects are active in Cabin Gulch and the broader landscape. These include Douglas-fir bark beetle (DFB), mountain pine beetle (MPB), western spruce budworm (WSB). To varying degrees these agents alter forest structure and function, respond differently to vegetation conditions, and affect values at risk. Susceptibility of stands to insects depends on factors such as composition, structure, age, and stress. While most insects are endemic in the ecosystem, susceptible stands can experience mortality that threatens values at risk.

Trees infested by bark beetles often retain a green crown for a full season after being attacked. Aerial detection flights primarily reflect the previous year's bark beetle infestation by detecting the changing tree crown colors. In essence the survey is a year behind current infestation levels. The 2005 and 2006 "Insect and Disease Conditions in the US" reports that bark beetles (all species) have affected over 4 million acres in the western US in the past few years. In this Region, the area of bark beetle activity increased from 259,200 acres in 1997 to 1,514,900 acres by 2005. The area decreased slightly in 2006; however, MPB activity specifically has continued to increase in many areas.

In 2005, there was a 65% increase in MPB in Montana. Montana had the highest 2006 acreage in MPB outbreak status with 899,000 acres, an 8x increase since 2001. More than 2.4 million trees were killed in 2005, more than 83% lodgepole pine. In some infested areas, as many as 295 TPA have been killed in the last 2-3 years. A significant increase in MPB-caused mortality was noted in WBP stands for the 3rd consecutive year on the Helena. Nearly 143,000 beetle-infested acres were mapped in WBP stands in the region; about 630,000 trees have been killed. Ground observations confirmed that many of those infestations are still expanding. MPB populations in lodgepole and whitebark pine on the Townsend District have expanded significantly; in some areas nearly 70% of the whitebark pine over 5" diameter has been killed in the last three years (Gibson, 2005). In 2007 about 144,000 trees were killed, 92% lodgepole pine on the Forest (although the Townsend District was not flown so estimates may be low) (USDA 2007b).

Total Insect Infestations by Year

Year	Townsend District Infestation		Forest-Wide Infestation	
	MPB	**DFB**	**MPB**	**DFB**
2002	125 acres	260 acres	1,770 acres	2,374 acres
2003	4,400 acres	60 acres	9,215 acres	1,817 acres
2004	9,325 acres	6,800 acres	13,805 acres	10,810 acres
2005	16,500 acres	2,300 acres	19,607 acres	5,553 acres
2006	16,710 acres	900 acres	28,881 acres	5,279 acres
2007	*Not flown in 2007*		118,300 acres*	420 acres*
2008	*Not flown in 2008*		350,770 acres*	5088 acres*

MPB = Mountain pine beetle; DFB = Douglas-fir beetle. **portions of Forest not flown*

DFB activity, in contrast to MPB, is decreasing Region-wide. Stands surveyed in and around areas affected by the fires of 2000 show populations declining. In 2006, every area surveyed showed a marked decline in infested stands; however, in a few areas populations and beetle-killed trees remain higher than normal and the opportunity is still high for mortality in these areas. More than 2 million acres of DF older than 100 years exist in the Region. DFB is increasing in localized areas on the Forest, most notably on the Lincoln District, in areas of severe WSB defoliation.

Replication studies examining the influence of thinning and the response to Douglas-fir beetle attack have not been conducted in Region 1. Nevertheless, scientific evidence and examination of the best science available support the idea that thinning through silvicultural management will reduce susceptibility to Douglas-fir beetle (Pfister, et al 1977). There is a need to increase our knowledge of the Douglas-fir beetle by implementing research that studies Stand Density Index (SDI) thinning and underburning units. Research developed by Sturdevant and Negron, is aimed at providing a replicated study to show the influence of treatments on the Douglas-fir beetle. The Cabin Gulch project area provides opportunity for this research.

Proposed harvest would reduce insect susceptibility within units. Reducing density reduces hazard from bark beetles (Shore and Safranyik1998, others). Decreasing competition would cause an increase in vigor and an increase in tree defenses to insects. Removal of infested trees would decrease the population in a localized area. Residual trees would be chosen based on expressed resistance to WSB and diseases such as DMT. Reducing density and the multi-layered character in stands would reduce the success of WSB (Carlson and Wulff 1989). Implementation of any action alternative would not remove insects and diseases; it is not possible or desirable because they perform important ecosystem functions. Proposed treatments would not alter insect epidemics at the landscape scale; however, they would cause a decrease in mortality within treated units, and would provide protection for associated values at risk. Even during an outbreak, stands thinned to 80 BA/ac or less sustain substantially less mortality than those not thinned (Sturdevant 2008; Amman and Logan 1998). This concept is supported by local monitoring in the Greyson thinning project (Townsend Ranger District, implemented in 2006 and 2007), where thinned stands of lodgepole pine were dramatically less infested than neighboring infested stands (Sturdevant 2008, unpublished data).

Hazardous Fuels Reduction

More than 80 years of fire research have shown that physical setting, weather and fuels, combine to determine wildfire intensity and severity (Science Basis for Changing forest Structure to Modify Wildfire Behavior and Severity, USDA Forest Service, RMRS GT Report RMRS-GTR-120, Dr. Russell T. Graham, Dr. Sarah McCaffrey and Dr. Theresa B. Jain). Of these three factors, a fuel (vegetation) is the only one that can be treated. In the Western United States, alteration of fire regimes by fire exclusion has been greatest in dry forests, primarily those dominated by ponderosa pine, Douglas-fir, or both (Graham et al, USDA RMRS-GTR-120). The fuels available for supporting a large wildfire have increased from what was on the landscape prior to the 20th century on millions of acres across the west (Graham et al, USDA RMRS-GTR-120). Given the history of wildfire suppression in this area, the Cabin Gulch Project Area fits this description.

Crown fires in the dry forest types represent an increasing challenge for fire management as well as a general threat to the ecology of these forests and the closely associated human values. Crown fires are dependent on the sequence of available fuels starting from the ground surface to the canopy (Graham et al, USDA RMRS-GTR-120). By managing the available surface, ladder and crown fuels (crown bulk density), crown fire potential can be reduced. Reducing crown fire and wildland fire growth across a given landscape can decrease the chances of large wildfires that affect human values adjacent to forested areas (Graham et al, USDA RMRS-GTR-120).

One only must look at the recent Bear Gulch, Maudlow-Toston, Cave Gulch, North Hills, Warm Springs Creek and Snow Talon wildfires on the Helena National Forest to see the dramatic increase of fire impacts on the vegetation and watersheds affected by wildfires across this landscape.

There is a need to reduce this environmental risk, as well as the risk to firefighters, from wildfire within the project area. The best approach for reducing the risk from uncharacteristically severe fire is to manage tree density and species composition with well-designed silvicultural systems at a landscape scale. (Graham, 2003; Graham et al.,1999). A synthesis of 153 peer-reviewed articles concluded that treatments to reduce fuels significantly modify fire behavior and severity and reduce environmental damage caused by fire (Graham, 2003). Fuel treatments can be designed to restore forest conditions across the landscape to a more resilient and resistant condition, particularly in dry ponderosa pine and Douglas-fir forests where crown fires were historically infrequent (Graham et al., 2004). Fuel treatments are not intended to guarantee benign fire behavior, but can reduce the probability that extreme fire behavior will occur. Weather, lack of moisture, and terrain are factors that humans can't influence.

The burning conditions and resultant effects from the Cave Gulch and Maudlow-Toston fires of 2000 could repeat themselves in this project area given the droughty conditions and level of mortality from various bark beetles and spruce budworm activity. The Cave Gulch fire burned 27,659 acres on National Forest System (NFS) lands, with 7,330 acres being in the "stand replacing" or "lethal": category. The Maudlow-Toston fire burned 10,678 acres on NFS lands with 3,009 acres in this category.

On August 18, 2008, the Bear Gulch fire started on non-Forest Service lands near the southwest corner of the project area. It burned 755 acres during the first two burning periods. Of these 755 acres, 680 acres were on National Forest System Lands. Approximately 90 percent of the overstory experienced stand-replacing fire (Bear Gulch Vegetation Report). Classified as high overstory severity, these trees either have red needles or the needles and fine twigs have been completely consumed. These stands have nearly 100 percent mortality as a direct result of the fire. The understory vegetation has been almost completely consumed in these areas. The majority of fire growth occurred during the first two burning periods when weather conditions were conducive for fire growth with high temperatures, low relative humidity, and moderate to high winds.

Water Quality

In 1996, The State of Montana developed a Total Maximum Daily Load (TMDL) for Deep Creek from the National Forest Boundary to the mouth of the drainage. Probable causes listed are siltation or sedimentation, flow alteration, and other habitat alterations that have resulted in erosive stream banks.

The main drainages in the project area are the East Fork, Middle Fork, West Fork, and North Forks of Deep Creek, and Holloway Gulch. These streams are all tributaries to Deep Creek. Although these streams are not listed under the Clean Water Act as water impaired streams, they do drain into Deep Creek, which is listed as a 303(d) stream. The effects of the HNF transportation system on these streams contributions of sediment delivery to Deep Creek is of importance to managers.

One measurable contribution to the overall TMDL is identified under water quality as related to sediment delivery. Causes contributing to this concern can be from roads or events/activities. The current conditions of these drainages that are tributaries to the Deep Creek drainage are listed below. A detailed sediment delivery survey was conducted for the project area with the following table depicting sediment in terms of average tons/year for the various sub-watersheds within the project area.

Sediment Delivery

Drainage	Existing Tons per Year
East Fork Cabin	3.6
Middle Fork Cabin	0.0
West Fork Cabin	5.2
North Fork Deep	10.1
Holloway Gulch	10.9

The forest-wide management direction on page II/1 of the Forest Plan states in goal 10, “Maintain high quality water to protect fisheries habitat, water based recreation opportunities, and municipal water supplies and to meet or exceed state and Federal water quality standards. Also, the general watershed guidance under the forest-wide standards, page II/25, guides the forest in correcting problems with soil erosion (item #3); mitigating adverse effects on water-related beneficial uses (item #4); and controlling on non-point pollution sources (item #5).

There is a need to display a trend in sediment delivery reduction to move towards meeting the TMDL sediment target for Deep Creek with the goal of reducing impairment. Under current conditions, accelerated stream bank erosion is resulting in habitat degradation and additional sedimentation. The use of water yield and potential impacts on a stream is consistent with the Environmental Protection Agency (EPA) guidance for sediment TMDLs. In keeping with State regulations and other EPA approved water quality habitat restoration plans and sediment TMDLs, modeled water yield benchmarks for non-TMDL streams will be 10% and TMDL streams will be 8% (Blackfoot Headwaters Planning Area Water Quality and Habitat Restoration Plan and TMDL for Sediment).

An area of particular concern is the Forest Road (FR) 4181 in the West Fork Cabin Gulch. This road lies directly along the West Fork Cabin Gulch. The Helena National Forest Roads Analysis Process, (RAP 2004) assigned this road segment a “high” rating for cumulative watershed/geologic concern. This means that the road is a high risk to watershed values. This road segment has 9 road/stream interactions, 0.98 miles in highly erosive soils, and 2.4 miles in the riparian area. Under existing conditions, FDR 4181 has actively eroding gullies present along almost the entire road. Even with rehabilitation work done after the Bear Gulch Fire of 2008 there is still a need to improve or eliminate this road to help reduce water quality concerns in the West Fork Cabin Gulch and subsequently the greater Deep Creek drainage.

The upgrading of culverts and application of Best Management Practice’s (BMP’s) to roads within the project area is needed to improve water quality impacts associated with the national forest infrastructure.

Timber Production

The availability of timber products for local and regional markets has been reduced in recent years. This causes loss of job opportunities, evidenced by recent mill closings. To support a viable wood products industry, wood products from a variety of sources should be available. Forest-Wide objectives in the Forest Plan for the timber resource include managing suitable acres with stocking control techniques, such as precommercial and commercial thinning, and successfully managing any insect or disease outbreaks (Forest Plan II/4). With approximately 63 percent of the project area being lands allocated for a timber management emphasis in the project area, this project is responsive to the Forest Plan direction.

The proposed action will increase timber productivity on the affected suitable timber land. It will help by managing suitable acres with stocking control techniques, such as pre-commercial and commercial thinning, and successfully managing any insect or disease outbreaks. The proposed timber management activities and projects have been developed in coordination with other resources through an interdisciplinary process.

The management goals (Forest Plan III/30) for the T lands that are addressed by the proposed action include:

- Providing healthy timber stands and optimizing timber growing potential
- Emphasizing cost-effectiveness while protecting the soil resource, and
- Maintaining water quality and stream bank stability.

There is also a need to provide local employment related to forest management, timber production, prescribed fire management and to provide raw product to local and regional mills.

Summary of the Proposed Action

The proposed action (Alternative 2) includes treatments on 3,337 acres based on their ability to contribute to the purpose and need for action. On 695 of the treatment acres there would be no removal of commercial forest products, but fuel and vegetation management would occur to help meet the purpose and need.

The proposed action was designed to restore fire-adapted ecosystems in the Cabin Gulch landscape, create conditions that minimize opportunities for high-intensity wildfires, and improve the water quality in the project area, specifically in the West Fork Cabin Gulch. It emphasizes cost-effective timber harvest, reduces the susceptibility of timbered stands to insect and disease agents, captures the economic value of trees killed by forest insect and disease agents, promotes aspen stand health and size, promotes the reproduction of whitebark pine, and reclaims grassland and shrubland communities.

The following detailed design elements are included in Alternative 2:

- To facilitate removal of timber products, approximately 7.4 miles of specified road construction, 1.6 miles of temporary road construction, 17 helicopter landings and approximately 220 ground based landings are proposed. All road and landing construction will be decommissioned after harvest, with the exception of the specified road constructed to provide public access to the West Fork of Cabin (0.7 miles).
- A three mile segment of Forest Development Road (FDR) # 4181 located adjacent to a perennial stream in the West Fork of Cabin Gulch drainage will be decommissioned by re-contouring back to a natural slope.
- To provide public access to the West Fork Cabin Gulch area, approximately 0.7 miles of new system road would be built to connect the remaining portion of FDR# 4181 and 423-J1. This road would be open to motorized vehicles year round. If needed, gates would be placed on spur roads which are currently closed.
- Approximately 16.3 million board feet (MMBF) of commercial timber would be harvested over approximately 2,642 acres.

- Approximately 611 acres are designated for prescribed fire and may include mechanical treatment with chainsaws prior to fire application if necessary
- Seasonal restrictions for harvest would be required for the following units:

  In unit 59, harvest operations would occur under winter conditions and require a site specific alternative practices exemption;
  In unit 24a, 24f, 24g, 24h, 24i, and 24j operations would occur during the summer/fall months, generally between June 1 and October 15.

Scope of the Analysis

The proposed action is limited to the specific fuel and vegetation treatments proposed on National Forest System land in the Cabin Gulch Vegetation Treatment Project area, although the geographic extent of some areas used to analyze different components (watershed, fuels and wildlife home ranges) may extend beyond the project area. The analysis of effects disclosed in this document includes those occurring from the entire "scope" of the decision. Scope is defined in 40 CFR 1508.25 as the range of actions, alternatives, and impacts to be considered in an EIS. Any new information that develops after the decision of this analysis would be considered prior to implementation.

Decisions to Be Made

The Responsible Official for this proposal is the Forest Supervisor of the Helena National Forest. The Forest Supervisor will make the following decisions and document them in a Record of Decision following the completion of the final environmental impact statement (FEIS).

- Whether or not to implement the proposed action or an alternative to the proposed action
- What monitoring requirements are appropriate to evaluate implementation of this project
- Whether or not a forest plan amendment is necessary

Document Organization

This draft environmental impact statement (DEIS) discloses the direct, indirect, and cumulative environmental impacts and any irreversible commitment of resources that would result from the actions proposed to address forest health, watershed rehabilitation, fuels management, and timber production goals of the Helena National Forest Plan (1986a). This DEIS is prepared according to the format established by Council on Environmental Quality (CEQ) regulations to implement the National Environmental Policy Act (NEPA) found in 40 CFR 1500-1508.

Chapter 1 of the DEIS discusses the purpose of and need for the project, the summary of the proposed action, Forest Plan direction, and the decision to be made. Chapter 2 of the DEIS describes the public involvement process including key issues that were identified. The proposed action is described in detail and alternatives to the proposed action resulting from comments on the proposed action are described (including taking no action). Features designed to reduce and monitor the effects of the proposed action are also described in this chapter. A summary comparison of the alternatives and their effects is provided. Chapter 3 of the DEIS describes the natural and human environments potentially affected by the proposed action and alternatives, and discloses anticipated potential effects. Chapter 4 of the DEIS contains a glossary, the list of preparers and literature cited. Appended materials in this document include additional information and analyses.

This EIS herby incorporates by reference the project record (40 CFR 1502.21). The project record contains specialist reports and other technical documentation used to support the analysis and conclusions in this EIS. These multiple specialist reports were developed specifically for the Cabin Gulch project. The project record is available for review at the Helena National Forest, Supervisor’s Office in Helena, Montana.

Issues

All of the comments received as a result of scoping, during the comment period for the August 2006 DEIS, and field trips were reviewed by the interdisciplinary team and District Ranger and used to refine and to

identify significant issues. These significant issues are also called “key” issues, and will be referred to as such in this document.

The issues identified were categorized into two types: key issues and analysis issues. Key issues are defined as those issues utilized in modifying the proposed action or in the development of an alternative to the proposed action. . Analysis issues are already decided by law, regulation or Forest Plan direction or policy, addressed through project design or addressed through comparison of effects of the no action and alternative actions.

Key Issues

Based upon the content analysis of the comments received, the IDT recommended, and the Responsible Official agreed, that the following are the three key issues for developing alternatives to the proposed action.

Public Access

As implementation of the Helena Forest Plan has occurred, prior decisions have closed various road and motorized trail segments to provide benefits to wildlife and watershed resources. There have also been decisions, such as the recent North and South Belts Travel Plans, where the focus of the analysis and decision are travel management driven. Through these prior decisions, the public has been vocal in that the closing of a motorized trail or road is an action that generates much public interest. There is a concern that the recreational use of the area may be diminished by the proposed action for both summer and winter activities.

Thus any proposal that involves a “road closure” is of concern to the public and forest managers. There is a concern that the decommissioning of the West Fork Cabin Gulch road would result in the loss of public access and motorized recreational opportunities. The public has stated that the decommissioning of the West Fork Cabin Gulch road may limit the management of these lands for multiple-uses, including motorized uses and thus limit the public’s use of the area. There is also a concern that the use of the “play area” by snowmobilers may be impacted.

Measures to evaluate: Miles of road by season of use and vehicle class.

Old Growth

The issue of “old-growth” is a local, regional, and national issue. Many individuals and organizations are concerned about the distribution and variety of old growth habitats that occur on the Helena National Forest.

Concerns with old growth stands address both social and biological aspects on the landscape. There is a concern that the value of old-growth habitat for wildlife would be reduced if any current old-growth habitat is altered. Habitat fragmentation, species viability, and snag management are three important aspects of this issue. The proposed action and alternatives have been modified in response to public input resulting in no managed old growth being proposed for treatment; and no stands that meet the Green et al (1992), definition for old growth are proposed for treatment.

Measures to evaluate: Acres of managed or Green et al (1992) old growth in treatment units.

Transportation Management

Comments received during scoping and on the August 2006 DEIS were very critical of the miles of temporary road needed to implement the proposed action. In response to this, the IDT recommended and the Responsible Official agreed to reconsider the road designations. Some groups and individuals felt the forest was in error to use 9 miles of temporary road. The revised alternatives and proposed action now have a mixture of temporary roads, short-term specified roads (to be decommissioned after implementation), and long-term specified roads. Some long-term specified roads will be left open, some placed in storage and some gated.

Measures to evaluate: Miles of road by category. Temporary; Short-term specified; Long-term specified open; Long-term specified storage and Long-term specified gated.

Alternatives

Section 102(2) of the National Environmental Policy Act (NEPA) states that all federal agencies shall "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternative uses of available resources."

With an environmental assessment, Federal agencies are required by The Council of Environmental Quality (CEQ) to "rigorously explore and objectively evaluate all reasonable alternatives" [40 CFR 1502.14(a)]. The courts have established that this direction does not mean that every conceivable alternative must be considered, but the discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.

The range of alternatives may extend beyond the limits set by the Forest Plan goals and objectives under NEPA; however, the National Forest Management Act (NFMA) requires that the selected alternative fully complies with the Forest Plan unless the plan is amended.

The alternatives developed are based on preliminary analysis of the information gathered during scoping activities and are a reasonable range given that issues have been addressed through project detailed design elements and site specific mitigation.

The range of alternatives developed and presented in this chapter is based on preliminary evaluation of the information gathered from public and internal comments during scoping activities and the purpose and need for the project. Other influences included Forest Plan goals, objectives, standards and guidelines; federal laws, regulations and policies; and economic viability. Within theses parameters, the alternatives display a range of outputs, treatments, management requirements, design features, mitigation measures, and effects on resources.

In addition to the alternatives considered in detail, the interdisciplinary team considered a number of other alternatives during the analysis process. Although these alternatives contributed to the range of alternatives they were eliminated from detailed study for the reasons briefly described below.

Alternatives Considered But Not Given Detailed Study

Federal agencies are required by The Council on Environmental Quality (CEQ) to rigorously explore and objectively evaluate reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14 (a).

Public comments received during scoping provided suggestions for alternative methods for achieving the purpose and need for action. Some of these alternatives were outside the scope of the purpose and need for action, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary harm. Therefore, a number of alternatives were considered but dismissed from detailed study for reasons summarized below.

Removal of All Insect Infected Trees

Several comments suggested removal of all insect infected trees, thus removing the insects that are killing the trees. This recommendation may decrease the insect populations in very limited localized areas; however, by further reducing tree density, as recommended in the purpose and need, continued tree mortality from insects is likely to decrease. Proposed treatments would reduce the insect susceptibility to trees within harvest units and treated stands have a higher likelihood to survive ongoing insect infestations. Decreasing tree competition results in an increase in tree vigor and an increase in the trees ability to defend insect attacks. Insect activity is currently limited to localized areas and it would be difficult to facilitate removal of groups of insect infested trees across such a large landscape during the period of the year the insect is in the trees.

Timber Harvest Only with No Underburning

Underburning is an essential tool needed to improve stand level resilience to fire, as well as mitigate fire movement across the landscape, treat logging slash and to also restore and reclaim the aspen, sage and grasslands in the area. To not underburn would result in not meeting components of the purpose and need for action, as this tool is most effective in the restoration of fire dependant ecosystems that are resistant and resilient to high intensity wildfire. Also, not utilizing fire would result in excessive amounts of slash and fine fuels, which would create a fire hazard in itself.

No New Road Building Including Temporary Roads

Several comments requested an alternative that would not build any new roads. This alternative would eliminate any new road construction, either system or temporary. Lack of a transportation system to facilitate harvest, would result in a loss of opportunity to remove wood products from treatment areas. It is estimated that harvest operations could occur within approximately 1,200 feet adjacent to existing roadways; this would result in approximately 1,000 acres of harvest. This limited number of acres would not meet the purpose and need of restoration.

Snag/Down Woody Debris

Snags and down woody debris (dead wood) and their management have become a major conservation issue in managed forests. They are an important habitat element for several wildlife species.

Dead and down wood was raised as an issue during scoping for the Cabin Gulch Vegetation Management project. At issue is the effect the vegetation management will have on the abundance and distributions of dead wood within the project area.

An alternative to specifically address dead wood was considered but not developed for the following reasons:

- Existing alternatives reflect a wide range of dead wood considerations. The No Action Alternative describes the overall existing conditions and short and long-term trends of dead wood in the absence of vegetation management. The Action Alternatives describe impacts associated with the vegetation management on dead wood and the implications for short and long term dead wood abundance and distribution.
- Management solely for dead wood within the project area would not meet the purpose and need of the proposed vegetation treatments, nor the management area direction for the area.

Alternatives Considered in Detail

The following is a comparison of the No Action Alternative and 3 action alternatives. All alternatives are subject to compliance with all valid statutes on NFS lands. Impacts to resources are considered through the National Environmental Policy Act (NEPA) of 1969.

For an alternative to be analyzed and considered in detail, it must respond to the purpose and need for action and key issues. The Draft Environmental Impact Statement (DEIS) has four alternatives that were analyzed in detail.

Alternative 1 is the No Action Alternative. Alternative 2 is the Proposed Action. Alternatives 3 and 4 were developed based upon the key issues that were identified during the initial scoping process. Maps of the action alternatives are available upon request.

Alternative 1, No Action

Alternative 1 is the No Action alternative and describes the existing condition. This does *not* mean that nothing will occur under Alternative 1. Alternative 1 provides the baseline for a comparison of the environmental effects of the action alternatives.

The Council on Environmental Quality regulations (40 CFR 1502.14d) requires that a “no action” alternative be analyzed in every EIS. The current situation as described by each resource in Chapter 3 of the DEIS would continue. Under the no-action alternative current management plans would continue to guide management of the project area. Ongoing work or work previously planned and approved, such as, but not limited to, routine road maintenance, weed spraying, trail maintenance, and firewood gathering would still occur. None of the actions proposed in any of the other alternatives would occur.

Alternative 2, Proposed Action

This alternative was designed to restore fire-adapted ecosystems in the Cabin Gulch landscape; create conditions that minimize opportunities for high-intensity wildfires, and improve the water quality in the project area, specifically in the West Fork Cabin Gulch. Alternative 2 would also emphasize cost-effective timber harvest, reduce the susceptibility of timbered stands to insect and disease agents, capture the economic value of trees killed by forest insect and disease agents, promote aspen stand health and size, promote the reproduction of whitebark pine, and reclaim grassland and shrubland communities. To best meet all resource objectives, all new road construction would be recountoured after harvest and other management activities are concluded.

This alternative was designed with stakeholders and the community and through the expertise of resource specialists on an interdisciplinary team. This alternative applies an active landscape approach to meeting all the elements of the purpose and need. This alternative was designed to reduce the potential for wildfire, and modify tree density, species mix, stand components, and basal area in the Cabin Gulch analysis area to promote resilience to disturbances such as insect epidemics and high-intensity wildfires. The acres treated and amount of fire applied to the landscape provides the greatest benefit to reduce potential for crown fire. Unit treatments are designed to reduce ladder fuels and fine woody debris, create more heterogeneous stands, increase structural diversity, and restore the fire adapted ecosystem in the area by moving the landscape towards the desired conditions. This alternative meets the purpose and need to a much greater degree than either of the other alternatives as displayed below in the Comparison of Alternatives Section.

Alternative 3

This alternative was designed to address the following issues identified in scoping: big game security, continued mortality of Whitebark pine and recreation opportunities (winter and non-motorized trail). To address these concerns, this alternative treats approximately 1,000 less acres than the proposed action and leaves five percent more security habitat for big game than the proposed action. Ten percent of the acres treated under alternative 3 address Whitebark pine regeneration, as compared to only six percent of the acres treated under the proposed action. Non-motorized recreation is enhanced by the creation of a trail on the decommissioned segment of road in the West Fork Cabin Gulch (FDR 4181), yet access is provided via the new specified road construction across the upper end of FDR 4831 and the 423-J1 spur.

Alternative 4

This alternative was designed to address issues with road closures, new road construction and long term transportation planning. It is similar to Alternative 2 (Proposed Action) in most respects.

Comparison of the Alternatives

This section provides a summary of the effects of implementing each alternative. The action alternatives address key issues to varying degrees, dependent upon specific alternative design elements. This section also provides a summary of how both key and analysis issues are addressed by the alternatives considered in detail.

Treatment Types for Action Alternatives

Treatment Category	Alt 2 acres	Alt 3 acres	Alt 4 acres
Intermediate Harvest	2366	1390	2366
Regeneration Harvest	360	307	360
Prescribed burning	611	433	611
TOTAL	3337	2130	3337

Harvest Systems Used for Action Alternatives

Harvest Systems Used	Alt 2 Acres (%)	Alt 3 Acres (%)	Alt 4 Acres (%)
Tractor	1382 (52)	946(57)	1382 (52)
Cable	810 (31)	478 (29)	810 (31)
Helicopter	450 (17)	224 (14)	450(17)
TOTAL	2642 (100)	1648(100)	2642(100)

Road Treatments for Action Alternative

Proposed Road Management	Alt 2 (Miles)	Alt 3 (Miles)	(Alt 4 Miles)
Road Construction (Miles)			
Temporary Road Construction	1.6	0.7	2.3
Short Term Specified - Construction	6.7	1.7	1.3
Long Term Specified – Construction - open	0.7	0.7	0.0
Long Term Specified – Construction - storage	0.0	1.7	0.0
Long Term Specified – Construction - gate	0.0	0.0	5.4
Road Closures (Miles)			
Decommission	2.8	7.0	0.5
Road Maintenance (Miles)			
Maintenance on Haul Routes (BMPS)	36.8	30.7	36.8

RESOURCE/ISSUE	ALT. 1	ALT. 2	ALT. 3	ALT. 4
VEGETATION				
Acres of Proposed Regeneration Harvest	0	360	307	360
Acres of Ponderosa Pine restoration	n/a	1288	932	1288
Acres of Whitebark Pine restoration	n/a	201	212	201
Acres of Aspen restoration	n/a	200	37	200
Acres of Shrubland and Grassland Restoration	n/a	123	93	123
INSECTS AND DISEASE				
Acres treated for Douglas-fir beetle research purposes	0	453	288	453
AQUATICS				
Mean % Fine Sediment in Spawning Habitat—Projected yr1/yr 3+				
North Fork Deep Creek	40.0	39.3/37.1	37.1/37.1	39.3/37.1
West Fork Cabin Gulch	45.3	32.7/32.7	32.7/32.7	33.0/33.0
East Fork Cabin Gulch	38.9	38.4/31.4	34.1/34.1	38.4/34.1
Hydrologically Connected Roads (tons/yr of sediment)				
North Fork Deep Creek	10.1	6.1	6.1	6.1
West Fork Cabin Gulch	0.1	0.0	0.0	0.1
East Fork Cabin Gulch	3.6	3.0	3.0	3.0
# High Risk Culverts				
North Fork Deep Creek	2	0	0	0
West Fork Cabin Gulch	0	0	0	0
East Fork Cabin Gulch	8	0	0	0
FUELS				
Fuel Model #/ Description pre/post treatment (%)				
99/Bare Ground (barren)		<1/<1	1/1	<1/<1
102/Low load dry climate grass		1/1	1/2	1/1
122/Moderate load dry climate grass shrub		1/11	1/14	1/11
161/Low load dry climate timber-grass-shrub		22/73	19/68	22/73
165/Very high load dry climate timber-shrub		34/6	39/6	34/6
166/Moderate load dry climate timber-Juniper		33/8	27/7	33/8
183/Moderate load conifer litter		1/<1	<1/<1	1/<1
184/Small downed logs		4/<1	10/2	4/<1
187/Large downed logs		2/<1	<1/<1	2/<1
188/Long needle litter		<1/<1	1/1	<1/<1

RESOURCE/ISSUE	ALT. 1	ALT. 2	ALT. 3	ALT. 4
HERITAGE				
Number, distribution and types of currently identified heritage sites		1 prehistoric in treatment units; 1 historic & 1 pre-historic adjacent to treatment units	1 prehistoric in treatment units; 1 historic & 1 pre-historic adjacent to treatment units	1 prehistoric in treatment units; 1 historic & 1 pre-historic adjacent to treatment units
Amount of the project area subject to previous heritage resource inventory		64%	87%	66%
Site probability within unsurveyed areas		Low	Low	Low
HYDROLOGY				
Water Quantity Cumulative Effects -% Water Yield Increase				
North Fork Deep Creek	2.1	3.8	2.9	3.8
Cabin Gulch	5.0	10.5	8.5	10.5
Main Stem Deep Creek	6.5	7.6	7.1	7.6
Sedimentation from Roads (tons/yr)				
East Fork Cabin Drainage	3.6	2.2	2.2	2.2
Middle Fork Cabin Drainage	0.0	0.0	0.0	0.0
West Fork Cabin Drainage	0.1	0.0	0.0	0.1
North Fork Deep Creek Drainage	10.1	6.1	6.1	6.1
Holloway Gulch Drainage	10.9	6.5	6.5	6.5
Sedimentation from Other Sources (tons/yr; probability of sedimentation)				
East Fork Cabin	n/a	2.5; 3 - 7	0.0; n/a	2.5; 3 - 7
Middle Fork Cabin	n/a	3.3; 3	0.0; n/a	3.3; 3
West Fork Cabin	n/a	0.0; 3	0.0; n/a	0.0; 3
North Fork Deep	n/a	2.9; 7 - 13	0.0; n/a	2.9; 7 - 13
ECONOMICS				
PNV - Timber Harvest	0	$678,276	$416,795	$630,092
Total Employment potential	0	214	133	214
SOILS				
Acres of predicted detrimental soil disturbance – short term	0	327	196	308
WILDLIFE				
% Change in Late Seral Open Dry Forest Habitats				
Ponderosa Pine-Douglas-fir Inland Northwest	1	24	23	24
Douglas-fir Interior Northern and Central Rocky Mountains - Warm	16	35	27	35
% Change in Cool Moist Habitats				
Douglas-fir Interior Early Seral	5	10	9	10

RESOURCE/ISSUE		ALT. 1	ALT. 2	ALT. 3	ALT. 4
Northern and Central Rocky Mountains-cool	Late Seral Open	12	35	19	35
Interior West Lower Subalpine Forest	Early Seral	7	15	15	15
	Late Seral Open	22	23	23	23
% Change in biophysical settings assumed to have Rocky Mountain Juniper as a component					
Ponderosa Pine-Douglas-fir Inland Northwest	Early	10	11	10	11
	Mid-Open	0	1	0	1
	Late-Open	1	24	23	24
Douglas-fir Interior Northern and Central Rocky Mountains - Warm	Early	5	10	9	10
	Mid-Open	1	2	2	2
	Late-Open	16	35	27	35
Douglas-fir Interior Northern and Central Rocky Mountains-Cool	Early	5	10	9	10
	Mid-Open	1	2	1	2
	Late-Open	12	35	19	35
% Elk habitat effectiveness on summer range					
Cabin Gulch		56	56	56	56
North Fork		70	70	70	70
% Elk hiding cover by elk herd unit on summer range					
Cabin Gulch		41	39	41	39
North Fork		15	15	15	15
% Hiding cover /open road density mi/mi^2					
Cabin Gulch		67/0.63	51/0.63	57/0.60	51/0.62
North Fork		56/0.88	54/0.88	56/0.88	54/0.88
% Elk security habitat					
Cabin Gulch		31	31	36	31
North Fork		29	29	29	29
Acres of potential Wolverine natal denning habitat treated		0	268	159	268
Acres of potential Black-back Woodpecker habitat treated		0	3337	2130	3337
Acres of potential Flammulated Owl habitat treated		0	1392	753	1392
Acres of potential Northern Goshawk habitat treated (Nesting)		0	2379	1517	2379
Acres of potential Northern Goshawk habitat treated (Foraging)		0	2971	1886	2971
Acres of potential Pileated Woodpecker Habitat Treated		0	2698	1620	2698
Acres of potential Hairy Woodpecker		0	781	464	781

RESOURCE/ISSUE	ALT. 1	ALT. 2	ALT. 3	ALT. 4
Habitat Treated				
Acres of potential American Marten habitat treated	0	2427	1552	2427
NOXIOUS WEEDS				
Maximum acres of weed infestation requiring treatment post implementation	107	251	167	246