

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter presents the relevant resource components of the existing environment – the baseline environment. It describes the resources of the area that would be affected by the alternatives. This chapter also discloses the environmental effects of implementing the alternatives. These form the scientific and analytical basis for comparing the alternatives described in Chapter 2.

This DEIS hereby incorporates by reference the Resource Specialist Reports in the Project Record (40 CFR 1502.21). These reports contain the detailed data, methodologies, analyses, conclusions, maps, references, and technical documentation that the resource specialists relied upon to reach conclusions in this DEIS.

Recreation, Affected Environment

Introduction

Outdoor recreation provides valuable quality-of-life benefits to Montanans and citizens throughout the United States. It also contributes to the health and well being of individuals and communities. According to a national study, two-thirds of the American public engages in some type of outdoor recreation at least several times a month (Roper Starch 2000). Outdoor recreation provides a substantial economic benefit, especially to small communities. A National Recreation Survey, conducted by the U.S. Forest Service from 2000-2002, determined the average forest visitor annually spends about \$3,700 on all outdoor recreation.

Analysis Area

The analysis area encompasses the north Big Belt Mountains from the Gates of the Mountains Wilderness Area in the north, to Boulder-Baldy Mountain in the south. The Helena and Townsend Ranger Districts of the Helena National Forest manage this area. Some information and comparisons are drawn from adjacent Bureau of Reclamation, BLM and National Forests, as well as from other Helena NF Ranger Districts.

The Recreation Scene

The north Big Belt Mountains are important to local communities for the outdoor recreation opportunities that they provide. The bulk of the recreational use occurs from May to November (Helena NF 1994, 1998). Popular activities include camping, hiking, horse riding, upland bird and big game hunting, motorized travel and sightseeing, mountain biking, picnicking, target practice and recreational prospecting. Aside from the Missouri River near Beaver Creek and nearby Canyon Ferry Reservoir, opportunities for fishing are very limited in the

analysis area. Winter snowfall is not reliable enough in the north Big Belts to draw high numbers of cross-country skiers, snowmobile riders or other winter recreationists, as compared to the Continental Divide Range to the west. Although scenically impressive, the bulk of the analysis area lacks the attractive summer destination features, such as large streams and mountain lakes found in the southern Big Belts (Boulder-Baldy area) and adjacent mountain ranges.

The presence of the Missouri River, Canyon Ferry, Hauser and Upper Holter Lakes strongly influences recreation use in the nearby Big Belt Mountains. Canyon Ferry alone draws thousands of visitors each year. Developed campgrounds, picnic sites, and boat launches around these large water bodies are extremely popular with both local residents and visitors from across the State. These same facilities have attracted OHV riders in increasing numbers. The Bureau of Reclamation's Hellgate campground, in particular, is popular with ATV and motorcycle riders using the OHV trail system in Hellgate Gulch (Chuck Neal, personal communication, 2003). Lesser numbers of riders stage out of several other public and private campgrounds on the east shore of Canyon Ferry Reservoir, including Chinaman's Gulch and Kim's Marina near Cave Gulch. People who desire a break from water-based recreation frequently travel into the Big Belts for sightseeing, hiking, target practice and picnicking. The loop route from Magpie Gulch to Avalanche Gulch is especially popular.

The Federal Energy Regulatory Commission (FERC) recently reissued licenses for dams along the Missouri-Madison Rivers corridor. A revolving trust fund has been developed among the Pennsylvania Power and Light-Montana, Bureau of Reclamation, FS and BLM to enhance recreational facilities along the rivers affected by dam operations. Substantial recreation improvements have been made, or are now being planned, along Hauser and Upper Holter Reservoirs. This, in turn, is bringing more people to the area for water-based recreation and some facilities are now overflowing on summer weekends. The use of these facilities, as well as those along Canyon Ferry Reservoir, will likely increase during the Lewis and Clark Bicentennial in 2004-2006, although to what extent is unknown.

The north Big Belt's rugged, semi-arid and mining-disfigured terrain contains a limited number of Forest Service developed recreation facilities including: Vigilante Campground and trailheads in Avalanche, Confederate, Hellgate, Magpie, and Whites Gulches. The Bar Gulch and Indian Flats rental cabins are located in Magpie Gulch and east of Hogback Mountain, respectively. Nearby Forest Service, BLM and private campgrounds in Trout Creek, along the Missouri River, and next to Canyon Ferry Reservoir, have toilets, water pumps and other amenities.

The preponderance of outdoor recreation in the north Big Belts occurs without benefit of developed facilities in dispersed recreation settings on timber-shaded benches adjacent to small streams, sage and aspen-covered flats along drainage bottoms, and in mountain parklands and meadows (Helena NF 1994, 1998). These dispersed recreation areas are accessed by improved and unimproved roads.

People picnic, car-camp and stage daylong recreational activities, including hunting, mountain biking, off-road vehicle (OHV) riding, target practicing, and hiking, in dispersed recreation settings. In the topographically constricted north Big Belts, recreation is especially concentrated in accessible terrain next to roads and creeks that is not overly degraded by past or current mining, livestock grazing, and weed (thistle) infestation. Some of these dispersed camping and day-use areas have been impacted by frequent use and there are minor to substantial erosion, sanitation, weed infestation, landscape (scenery), and other problems.

Stretches of various drainage bottoms in the north Big Belts are privately owned and are demarcated by abandoned and actively worked mining claims, recreational cabins, subdivisions and private homes, such as those along Trout Creek. These areas are unavailable for public recreation. Several roads and trails in the Big Belts that provide access across this private property to National Forest land lack legal easements. Some private recreational cabins in Magpie Gulch burned in the 2000 Cave Gulch wildfire.

Recreation Opportunity Spectrum

Forest Service recreation management is guided by the Recreation Opportunity Spectrum (ROS), which allocates and manages outdoor recreation opportunities and activities by natural resource setting. The distribution of summer ROS classes in the north Belts analysis area is shown in the following table. ROS data show that roads and trails bisect over 70% of the project area. The Roded Natural and Roded Modified category predominates because of all of the past and current development within and around the analysis area. The analysis area also contains equivalent amounts of the Semi-Primitive Non-Motorized and Motorized ROS classes.

Summer ROS Distribution In the North Belts Analysis Area: 2003

Category	Acres	%
Primitive*	13,561	5.9
Semi-primitive Non-motorized	45,722	19.9
Semi-primitive Motorized	46,586	20.3
Roded Natural	64,630	28.2
Roded Motorized	54,807	23.9
Rural	3,699	1.6
Urban	0	0
Not Classified	5	0.2
Total	229,010	100%

* The core of the Gates of the Mountains Wilderness is classified as Primitive. Portions of the wilderness are also classified as Semi-Primitive Non-Motorized near its' boundary because of proximity to forest roads and the Missouri River (Upper Holter Lake).

Inventoried Roadless

The north Big Belts analysis area includes nine Inventoried RARE II Roadless Areas: Holter, Big Log, Devils Tower, Middleman-Hedges Mountain, Hellgate Gulch, Cayuse Mountain, Irish Gulch, Camas Creek, and Ellis Canyon. In total, these Roadless Areas comprise 132,976 acres, of which 86% is located within the north Belts Travel Planning Area. They provide varying levels of remoteness and solitude. Currently, there are several motorized routes within seven of the nine Roadless Areas. The characteristics of each Roadless Area are described in Appendix B. The project area also encompasses the 28,562-acre Gates of the Mountains Wilderness Area.

Although Inventoried Roadless Areas may possess some wilderness attributes, they are not necessarily closed to motorized travel. As a result, there are Roadless Areas in the north Big Belt Mountains that contain popular OHV routes. While these routes may not be specifically included in the forest transportation system (as a road or trail), there are still existing routes open to motorized use under the State OHV and Helena NF Forest plans. Due to the presence of adjacent developments, past use, and non-enforceable boundaries, many of the Roadless Areas in the north Big Belts retain limited wilderness character.

The Roadless Area Conservation Rule, implemented in 2001, does not prohibit motorized trail use within Inventoried Roadless Areas. The approval of the Regional Forester is required for trails located within Inventoried Roadless Areas if the use designation is being changed from non-motorized to motorized. Regional Forester approval is also required if there is a proposed change in the type of motorized use (single track to double track).

Motorized Recreation

In historical perspective, the Helena NF has both inherited and created an extensive travel network that provided, until recently, motorized vehicle access throughout the mountain range. Benefited by relatively open, but steep, mountain topography, the north Big Belts have become locally popular for off-highway vehicle (OHV) travel using All Terrain Vehicles (ATV), 4-wheel drive pickups and motorcycles. Over the years the Helena NF has tacitly accepted that the north Big Belts is a place on the forest where OHV use (at some level) can be accommodated and supported with minimum impact to other forest resources.

The area increasingly attracts OHV enthusiasts from outside the local area because it is an enjoyable place to ride and due to OHV closures elsewhere. This high-quality OHV opportunity was related, in part, to the “open unless closed” travel management system that existed prior to July 1, 2001. Implementation of the new OHV policy on that date confined motor vehicles to existing roads and trails, and reduced the more challenging riding opportunities (USDA Forest Service and USDI BLM 2001).

Many off-highway vehicle opportunities in the north Big Belts are located on existing but unclassified routes. Unclassified routes are user-created roads, trails, and “troads” currently not managed as a part of the forest transportation

system. There are approximately 36 miles non-system routes identified in the north Big Belts analysis area; of which 33 remain open to motorized use, yearly or seasonally. They are also referred to as non system routes. While efforts have been made to locate and document all non-system routes, additional unknown routes undoubtedly exist. Unclassified roads and trails, not previously restricted, remain open to both licensed and unlicensed vehicles. Although the unclassified routes are not managed for dual use, they remain open under the State OHV policy. The extent of dual use (mixture of trail and road vehicles) on those unclassified routes is unknown. Forest Service system roads are only legally open to licensed vehicles. Some local 4-wheel drive enthusiasts seek challenging opportunities but there are few existing routes in the north Big Belts that provide the 4x4 driving experience desired.

Currently, some unlicensed OHVs travel on forest system roads from dispersed campsites and parking areas to specific trail destinations. These same roads may also connect OHV trail segments. While riding on forest system roads with unlicensed vehicles is common, it is in violation of state and federal regulations. In some locations, Forest roads provide the only existing access to other off-road motorized opportunities. Forest development roads could be designated as dual use for both licensed and unlicensed vehicles. However, the dual use designation can only be made following an analysis and evaluation of the risks involved. Due to safety considerations, the mixed use of street legal and unlicensed vehicles has not been actively promoted on the Helena NF.

System trails are those designated, managed and routinely maintained by the Helena National Forest to established Forest Service standards. Three "system" trails are currently designated for motorized travel in the north Big Belts analysis area: Hunters Gulch #239, Never Sweat #241, and Cave Gulch #243. Both the Hunters Gulch and Cave Gulch Trails were badly eroded by floods that occurred following the Cave Gulch Fire. There are several other "non-system" trails in the north Big Belts where motorized use is allowed. No motorized "system" trails are currently designated for motorcycle use only. Motorcycle routes could be designated that provide the single-track recreation experience desired by some forest users. System trails and unclassified routes used for motorized travel require reconstruction and some segments require relocation.

Recreational OHV use in Montana grew by 40% in the last decade and is expected to continue to grow (MT State Trail Plan 2000:5-10). This trend is verified by the number of OHV licenses issued over a four-year period in Lewis and Clark and Broadwater Counties by the State Department of Motor Vehicles (following table). An increasing number of OHV purchases are ATVs used for big game hunting as opposed to strictly recreational or sport riding. Main roads up the various drainages, and the so-called "Figure 6 Route" over the top of Maggie Gulch to Avalanche Gulch, are popular driving routes suitable for passenger vehicles.

OHV Vehicle Licenses: 2000-2003

	2000	2001	2002	2003*
Broadwater	100	239	266	306
Lewis & Clark	287	1,614	1,816	2,038
Meagher	20	98	121	126

* As of February 2003, Montana Department of Justice, Motor Vehicle Division, Deer Lodge, MT.

Resource damage directly attributable to OHV use is readily apparent on certain trails and in some areas, but has not been quantified for the analysis area. (Forest road and trail condition information in the INFRA database and Forest Roads Analysis primarily concerns the infrastructure itself rather than its effect on other resources). Documented damage includes deep trail ruts, multiple routes around difficult terrain and marshy areas, multiple stream crossings, and spread of noxious weeds. These problems are being addressed by a combination of deferred maintenance projects, OHV trail grants, and regular trail funding. Non-system OHV trails continued to proliferate prior to the restriction of cross-country travel.

As OHV use has grown on the Helena NF, so has the number of OHV violations—driving in prohibited areas or in an unauthorized type of motor vehicle. Summary law enforcement (LEIMARS) statistics identify the Ranger District on which the violations occurred but not specific areas. On the Townsend District, which includes the north Big Belts, the number of warnings, incidents and ticketed violations increased from 74 in 2000, to 90 in 2001, to 192 in 2002 (Helena NF 2003). These numbers also include violations in the Elkhorn Mountains (on the Townsend District). They do not reflect all violations that are likely occurring as a consequence of limited law enforcement resources, inadequate FS signing, and other factors. However, they are indicative of the growing OHV management problem in the north Big Belts analysis area. Law enforcement problems associated with OHV use may arise for several reasons: growing popularity of the sport, lack of available riding opportunities, and confusing travel plan maps and regulations.

ATV-related accidents, particularly among children, are a national concern. A government study reports that riders under age 16 represent about 14% of all ATV riders, but suffer 37% of ATV-related injuries and 38% of ATV-deaths (Kellman 2003). The Helena NF has not experienced many ATV fatalities (if any) or major injuries, although the latter may not always be reported and therefore are difficult to track. Nor has a comparison been made between the rates of ATV (and OHV) accidents with other types of recreational activities. However, in addition to public education, properly designed, low-to-moderately challenging trails offer a method to curb ATV accidents.

Snowmobiling occurs on approximately 30 miles of system trail in the north Big Belts. Most of the snowmobile trail system is located on forest roads. In addition, snowmobiling is currently allowed on 114,149 acres in the travel planning area. It should be noted that only a portion of the total acres open to snowmobile use is physically suitable for that activity. Due to the lack of reliable

snow accumulations in the north Big Belts, the amount of snowmobile use is variable but usually moderate.

Snowmobile use in high elevation areas is not currently restricted seasonally. Although the amount of snowmobile use that occurs prior to December is limited, it does occasionally occur. In most instances, snowmobile use during the fall is related solely to the need for access. October and November snowmobile use may be desired for hunting, access to private land, and access to the electronic site on Hogback Mountain.

Off-Route Motorized Travel

The three-state OVH policy and subsequent regulations implemented in 2001 allow motorized travel up to 300 feet off existing motorized routes but only to access dispersed campsites. Prior to that decision, cross-country motorized travel was allowed unless otherwise specifically prohibited and posted. Wheeled vehicles are not currently authorized off existing routes for other recreation activities such as picnicking, camping, hunting and game retrieval, firewood gathering, and fishing. This is a major departure for many visitors accustomed to readily available and accessible dispersed recreation sites on the Helena National Forest near forest roads. Individuals requiring or desiring motorized access to their chosen recreation activity may be displaced to other areas.

Effects of the off-route travel restriction in the north Big Belts is somewhat negated by the number of existing routes. Prior to implementation of the cross-country travel restriction, there were many existing routes that provided access to most of the popular dispersed recreation sites, especially along small streams. Because motorized use on existing routes is allowed, there is currently no need for most Forest visitors to travel cross-country.

Hunting

Hunting is one of many recreational activities in the north Big Belts, but it accounts for a large majority of recreationists and is facilitated by motorized vehicles—pickups and, increasingly ATVs. As a general trend, sales of big game licenses to Montana residents have declined in nearly every category since 1996 (MT Fish, Wildlife and Parks 2000). However, big game hunting continues to be the major fall event in the Big Belts such that seasonal road closures and area restrictions are necessary to provide hiding cover for hunted wildlife. Many non-hunters look to safer areas off the forest to recreate and enjoy the fall season.

One notable change in recent years is the use of ATVs during the various hunting seasons. ATVs are increasingly used to access backcountry hunting areas, transport camps and equipment, and retrieve game. The use of ATVs for hunting begins during the fall upland bird season and extends through the winter/spring mountain lion season. While there is no supporting documentation, observations by Forest Service employees indicate the growing popularity of ATVs for hunting.

The north Big Belts primarily encompasses Hunting District 392. This District is heavily used because it is easily accessed from various population centers

(Bozeman, Helena, Great Falls, Townsend). Montana Fish, Wildlife and Parks data indicate that the north Belts is one of the most popular in Region 3 for mule deer and elk hunting (Tom Carlson, FW&P, personal communications, 2003). Motorized access is an important aspect of these hunts, and there are associated OHV violations, such as in the heavily used Hedges Mountain area.

**Big-Game Hunting District 392 in the North Big Belts
3-Year Annual Average: 1999-2001***

	Mule Deer	Elk
Number of Hunters	1,124	1,869
Number of Hunter Days	7,065	12,503
Animal Harvest	334	259

* Tom Carlson, FW&P, personal communications, 2003

Game Retrieval & Disabled Hunter Access

Many hunters desire access on roads otherwise closed to motorized travel to retrieve downed deer and elk. Currently there are no roads or trails within the north Big Belts identified for game retrieval. While the opportunity to retrieve game is popular with some hunters, others find it unacceptable and intrusive. There are a variety of methods available that could be implemented to facilitate game retrieval. Administration of retrieval restrictions is often difficult and violations do occur. The lack of game retrieval routes does discourage some hunters in areas where terrain is steep or motorized travel is restricted.

The Helena Forest does not designate any special access routes for hunters with disabilities. That opportunity was previously offered by the Forest for several years with mixed results. About 12-15 permits were issued annually, across the Forest, to qualified hunters with disabilities. That opportunity was not supported by the general public or by all disabled individuals. The Helena Forest does provide equal opportunities for all individuals to participate in a variety of recreation activities. There are numerous motorized routes on the Forest that provide access and excellent hunting opportunities during the big game season.

Non-Motorized Recreation

Horse-riders (non-hunters), mountain bikers, rock climbers and hikers are a distant second to hunters, OHV enthusiasts and car tourists in the north Big Belts. Use data are largely unavailable for these activities. Helena bike shops report that purchases of mountain bikes are steadily rising and that riders are seeking trail networks on NFS lands other than abandoned roads. The north Big Belts are not a major draw for trail riding with horses outside of the Gates of the Mountains Wilderness Area. Horse use that occurs is frequently associated with livestock management on forest allotments by local ranchers and FS range specialists. Limestone cliffs in Trout Creek Canyon and Hellgate Gulch are popular climbing spots for a local climbing club and are also attracting climbers from outside the area.

Some 52 miles of non-motorized system (quiet) trails extend through the Gates of the Mountains Wilderness and another 37.6 miles are located within the north Big Belts analysis area (Bilk Mountain, Cayuse, Hanging Valley National Recreation Trail, Trout Creek Canyon, Belt Mountain, Boulder Lakes). The dry, rugged terrain apparently is not as attractive for hiking as the South Belts (i.e., Boulder-Baldy area) and adjacent mountain ranges. In addition, the presence of OHV riders may also deter some hikers, mountain bikers and horse riders. The Helena NF is correcting resource damage associated with these quiet trails (rutting, multiple routes, erosion) using a combination of deferred maintenance and regular trail funding. INFRA site condition data and observations by Forest trails personnel indicate that approximately 50% of all existing trails require some level of reconstruction.

Amount of Recreation Use in the North Big Belts

Quantification of recreation use in the north Big Belts is difficult because recreation primarily occurs outside of developed (fee) facilities. Vigilante Campground, located above the small community of York in the upper Trout Creek drainage, is the only fee campground within the project area. Fee revenues and use figures indicate there are approximately 1,500 visitors at the campground annually. In total, the Bar Gulch and Indian Flats cabins are rented about 300 nights per year. Because the terrain is rugged and dry, the Gates of the Mountains Wilderness receives relatively low visitation. Wilderness use occurs predominately in the spring and early summer (before it is too hot) and during big game hunting season.

National Visitor Use Monitoring (NVUM) surveys conducted during the fall of 2002 and early winter of 2003 document heavy daily traffic on the Avalanche Gulch (63 vehicles) and Magpie Gulch (89 vehicles) roads during hunting season. During the same late fall time period, the Big Log and Hunters Gulch trailheads were occupied daily with 3 to 28 vehicles. Extrapolating this data to the other main gulches in the analysis area during the short fall hunting season indicates that on any given day (especially on weekends) some 150 to 350 vehicles, primarily hunting rigs, travel on forest roads in the north Big Belts. Assuming an average of two persons per vehicle, daily visitation would range from 300 to 700 people or more. This use estimate is borne out by Montana Fish, Wildlife & Parks hunter data in Table 2 below. NVUM survey data are not yet available for the spring and summer seasons so similar visitor use projections are impossible to make.

Recreation Transportation System

Currently, the Helena NF manages approximately 1,000 miles of system trails. This total does not include non-system trails that evolved as a consequence of past historical activity or were built by trail users. Most system trails are located within one of the Travel Plan areas identified below. The majority of motorized trails are Forest roads that also serve as designated snowmobile routes or segments of the Continental Divide National Scenic Trail.

Distribution of System Trails By Travel Plan Area

Travel Plan Area	Non-Motorized	Motorized
Blackfoot	180.9 miles	157 miles
Divide	32 miles	152 miles
Elkhorn	139.6 miles	0 miles
North Big Belts	98.1 miles	43 miles
South Big Belts	92 miles	26.2 miles

This Helena NF trail system is distributed across a half-dozen individual mountain ranges, separated by intervening valleys and private, State and other public lands. The north Big Belt Mountains contain approximately 14% of the existing system trails on the Helena Forest.

The non-motorized and motorized travel system on the Helena National Forest, and in the north Big Belts analysis area, has been developed in accordance with: 1) Recreation Opportunity Spectrum (ROS) criteria; 2) construction and maintenance costs; 3) use levels, demands and trends; 4) access; 5) resource constraints; and 6) legal and administrative direction (i.e., OHV Plan).

Accounting for and managing the numerous non-system or user-built trails across the forest and analysis area has been a serious recreation management issue on the Helena NF in recent years. This is partly the result of the numerous roads, trails and “troads” inherited from past historical uses of the area (including mineral and timber activities). In addition, routes also evolved from use by OHV riders, mountain bikers, and hikers. User-created routes are located near rural subdivisions and areas of urban interface. Forest and user-group inventories have identified approximately 36 miles of non-system trails in the north Big Belts that have been incorporated into this analysis (MTVRA 1995).

The majority of developed trailheads in north Big Belts analysis area are associated with the Gates of the Mountains Wilderness. Because trails in the Big Belts generally provide short day trips, overnight facilities are not required. Most trailheads only require a sign or kiosk, and a small parking area. There is an existing need to enhance trailhead facilities at several locations. Additional trailhead development may also be required, depending upon the final north Big Belts travel decision.

Operational Costs

A non-motorized trail typically costs approximately \$18,000 per mile to construct to Forest Service standards (based on past Helena Forest and Region One contracts). To minimize costs, a 30-inch trail tread is frequently constructed with motorized equipment (when authorized). The average cost for contracted non-motorized trail maintenance averages about \$110 per mile. Both trail construction and maintenance costs vary depending upon topography, terrain, trail standards, and access.

Although ATV trails normally require a 60-inch tread, construction costs are usually quite similar to those for non-motorized trails. Additional trail hardening (water dips, crossings, bridges, etc.) may be necessary to reduce potential resource impacts. The use of motorized equipment often negates the expense of constructing a wider trail. Because access on motorized trails is quicker, the average maintenance cost would be less than for non-motorized trails. The estimated cost for routine maintenance of motorized trails would be about \$75 per mile.

Reconstruction of existing trails is often required to meet agency standards, ensure visitor safety, and protect forest resources. Individual work items vary by trail, but include the following: tread repair, clearing and grubbing, water bars, berm removal, bridge and puncheon construction, switchback construction, and culvert installation. Because the amount of work necessary is usually less than required for total construction, costs are determined to be approximately \$12,000 per mile.

Trail construction and reconstruction is funded primarily through the Forest Service capital investment program. Those funds are supplemented by state and federal trail grants administered by Montana Fish, Wildlife & Parks. Because both funding sources are limited, needed trail improvements will take many years to complete.

Routine trail maintenance is accomplished primarily with Forest Service summer crews. That job is complimented in large part with volunteer labor. The Helena Forest does not currently receive sufficient funding to annually maintain all system trails to established Meaningful Measures standards.

Travel Plan Complexity

The 1986 Forest Plan identified travel management direction for Helena Forest lands. Generally, motorized use was allowed throughout the Forest unless specifically prohibited or restricted. Over time, other travel restrictions were implemented to mitigate concerns about erosion, wildlife security, noxious weeds, user conflicts, etc. As a result, the Forest Travel Plan has grown increasingly complex. In 1986, there were four different area restriction dates and three different route restriction dates for the north Big Belts.

The 2001 (and latest) edition of the Helena Forest Visitor Map identifies seven different area restrictions and five different route restriction dates within the same area. Other restrictions that have been implemented elsewhere on the Helena Forest have created a Visitor Map that is extremely complex and difficult to understand. Due to the complexity of the existing travel plan on the Helena National Forest, enforcement is difficult. Thus, one purpose of the current travel planning effort is to simplify the travel plan (and the consequent maps and signs) so that it is more easily understood.

Recent Changes Affecting Recreation Management

Three situations have changed the recreational picture in the north Big Belts. The first is the Cave Gulch wildfire of 2000. It altered, at least in the short term, recreation opportunities and displaced some recreationists. Until recently (June

30, 2003), most of the fire area was closed to motorized travel. Burned-over drainage bottoms in Magpie Gulch and parts of Hellgate and Avalanche Gulch have eliminated or reduced the attractiveness of many picnicking and dispersed camping spots, and some non-motorized and motorized trails. The extent of visitor displacement to other areas, such as Trout Creek or the nearby Elkhorn Mountains, is unknown. Although motorized restrictions in the Cave Gulch fire area have greatly reduced OHV use, there has been no recognizable increase in non-motorized recreation activities.

The second situation is the issuance of the 2001 *Off-Highway Vehicle Plan for Montana, North Dakota and Portions of South Dakota*, which restricts motor vehicles to existing roads, trails and designated areas. By eliminating cross-country travel, the plan has vastly reduced the overall acreage (but not existing roads and trails) available for OHV driving. Prior to implementation of the OHV decision on July 1, 2001, approximately 625,447 acres (64%) of the Helena National Forest were open to motorized use by wheeled vehicles. (It should be noted that motorized use on many of those acres was not physically possible due to terrain, slope, or vegetation). Since that decision, the Helena Forest is no longer open to cross-country motorized travel by wheeled vehicles, except on existing routes. Snowmobile travel was not affected by the OHV decision. The plan's intent is to curtail damage to soils, water and other resources resulting from off-route motorized travel. When completed, area-specific travel plans, including that for the north Big Belts analysis area, will supersede the OHV Plan.

The OHV plan has affected forest recreationists in various ways. OHV riders now have fewer opportunities to explore the forest by vehicle. Travel is only allowed 300' off-route to access a dispersed camping spot. The OHV restrictions have limited, to some extent, people's ability to reach favorite recreation destinations in the north Big Belts. This is especially true for the elderly and those persons with disabilities. The greatest impact to individuals with disabilities may be the reduced motorized opportunities to hunt and retrieve game animals. In addition to the OHV plan, the Helena NF has also implemented various road and area closures over the last decade to protect forest resources.

The third situation is the implementation of travel plans elsewhere in southwestern Montana by the Forest Service and Bureau of Land Management (BLM). The Elkhorn Mountain travel plan is one example near the study area. The BLM has implemented a travel plan for the Whitetail-Pipestone Pass area near Butte, and the Lewis and Clark National Forest has developed travel plans for the Snowy Mountains and Rocky Mountain Front. These travel plans are causing some motorized users to seek off-road or trail experiences on other public or private lands. The Big Belt Mountains have borne the brunt of some of this OHV user displacement. At the present time there are few public motorized recreation opportunities available on private lands in or near the analysis area—a trend that is likely to continue as land use patterns (i.e., absentee ownership) and demographics change throughout Montana and the West.

One major consequence of the changing management situation described above is displacement. The term displacement is used to describe the movement of one or more types of recreational user to other locations more suited for their activities. Visitors are displaced due to factors such as: overcrowding, lack of

opportunities, and desire to avoid certain types of recreation activities. Displacement is a natural function of land management and occurs to varying degrees on most public lands. Although there has been no quantitative analysis to determine the amount of displacement in the north Big Belt Mountains, it certainly occurs. There is currently a network of both “system” and unclassified trails in the north Big Belts that provide a variety of motorized opportunities. The resulting use may have already displaced some non-motorized recreationists to other locations on the Helena Forest.

With the exception of a few system roads and trails, the Cave Gulch Fire Area was closed to motorized travel immediately following the fire (September 2000). On June 30, 2003 this closure order was rescinded, in part, and motorized travel is now allowed on some of the roads and trails within the Cave Gulch fire perimeter.

Recreation, Environmental Consequences

Introduction

This chapter discloses the environmental consequences of implementing the No Action Alternative, Proposed Action, and three other alternatives. The environmental effects of implementing the Proposed Action and the alternatives are presented below. These form the scientific and analytical basis for comparing the Proposed Action and the alternatives described in Chapter 2. Effects are discussed through the following indicators: complexity, displacement, opportunity for motorized and nonmotorized (general and route specific), and roadless changes.

Effects Common to All Alternatives

The effects of implementing a designated route system for travel are common to all alternatives. Even the No Action Alternative would limit motorized travel to previously existing routes, as a result of the State-wide Off-Highway Vehicle (OHV) decision.

Implementation of any travel alternative would result in the displacement of an undetermined number of Forest visitors. Non-motorized users often wish to recreate in areas free of motorized travel. Motorized users may be displaced to other areas for their activities. Although the level of displacement can't be quantified, it is dependent upon the travel alternative selected.

Acquisition of legal rights-of-way would be needed in some areas to ensure long-term access to designated travel routes.

Effects Common to All Action Alternatives

Although new travel restrictions may be less complex, any change would require a period of adjustment for Forest visitors.

Motorized travel would only be authorized on designated roads and trails. The existing unclassified/nonsystem routes that are not part of any alternative would no longer be open to motorized use.

Due to changes in travel restrictions, it is reasonable to assume there would be increased violations during the initial years of implementation. Initial enforcement of new travel restrictions would require additional emphasis by the Helena National Forest, assistance from Montana Fish, Wildlife and Parks, and the public.

New travel restrictions and a simplified travel plan map should enhance opportunities for non-motorized recreation. Motorized routes that are clearly identified on Forest Visitor Maps should eliminate any confusion involving travel. Simplified travel restrictions would provide non-motorized users sufficient information to locate areas where they may experience solitude.

Development, designation and maintenance of travel routes would be more costly than under the existing condition. All action alternatives designate a greater number of system trails than currently exist. Both new and existing trails require construction/reconstruction, additional signing, and some level of route obliteration or closing.

New travel restrictions within the north Big Belts would displace, to varying degrees, both motorized and non-motorized recreationists. Motorized use may be prohibited and/or restricted on existing roads and trails. Access to, and trail opportunities for, hiking, walk-in hunting, horseback riding, and mountain biking may also be diminished as existing routes are closed and rehabilitated. Some forest visitors would likely move to other areas to pursue their recreation activities.

New travel restrictions would limit motorized access to a variety of dispersed recreation opportunities such as: camping, hunting, fishing, etc.

New travel restrictions would limit or diminish existing recreational access to persons with disabilities.

Snowmobile use in the north Big Belts would be restricted to the period of December 2nd to May 15th. That new travel restriction would eliminate snowmobile use that may occur in October or November.

Impacts resulting from the implementation of new travel restrictions in the north Big Belts could affect travel and recreation opportunities across the entire Helena National Forest. Specific recreation opportunities available within the project area may not be found on other Helena Forest lands. Visitors displaced from the north Big Belts may choose to recreate in other locations on the Helena Forest. If visitors travel to adjacent National Forests to participate in recreation activities, those Forests may also be impacted, to an undetermined extent, by the north Big Belts travel decision.

There are no differences between the action alternatives regarding public access to the Dry Range, thus the effects are the same as identified in the existing

condition, Alternative 1. Routes for public access across the National Forest within the Dry Range are the same in every alternative, except for the Proposed Action (Alternative 5), which identifies a limited number of designated routes through the Forest as compared with rest of the alternatives, which are no different than the existing situation. The effect of this difference is that there are fewer motorized routes opened to the public, but this is fairly minor, since very few visitors can legally utilize this area because the adjacent private landowners do not allow public access across their property. This difference would be more expensive to implement (gating, or ripping and seeding, or obliterating the non-designated routes) and enforcement would be easier because the public would be confined to fewer open routes as compared to the other alternatives.

Alternative 1 – No Action

The effects of selecting this alternative would be very similar to the previously described affected environment. Motorized use would continue to be restricted as per the State-wide Off-Highway Vehicle decision implemented on July 1, 2001. Wheeled motorized vehicles would be restricted to existing routes in areas open to that use.

The existing network of non-system trails would remain. Because those routes were never designed or constructed to standard, they could continue to cause resource damage in some areas. Most of the unclassified routes would not meet agency standards for safety or user convenience. As motorized use in the north Big Belts continued, the need to abate resource damage could necessitate additional route restrictions in the future. Motorized use of the unplanned trails may facilitate additional development of unauthorized trails.

Conflicts between OHV users and visitors seeking non-motorized recreation experiences may continue. The quality of the outdoor experience may be diminished for those non-motorized users who wish to recreate in the areas of the north Big Belts that allow for a wide range of motorized uses.

If the trend continues in closing private and public lands to motorized vehicles, additional motorized use could be expected in the north Big Belts due to the network of existing routes. If OHV use on existing routes increased, the recreational experience and enjoyment level for some recreationists (especially non-motorized) would decrease.

The existing number of roads and trails would continue to provide access to dispersed recreation opportunities for those individuals with disabilities.

Several roads in the north Big Belts would remain closed during the spring break-up period from April 15th to June 1st. That restriction was previously implemented to reduce impacts resulting from wheeled vehicle use on soft roadbeds. Retaining the spring route restriction would help minimize damage that may occur as a result of seasonal weather conditions. Identifying spring route restrictions on the Forest Visitor Map would provide the public an opportunity to better plan their activities and travel on the Forest.

Inventoried Roadless

Implementation of this alternative would result in approximately 129 miles of motorized routes on NFS lands within the Inventoried Roadless Areas. Most of that use would be located in the following four Roadless Areas: Camas Creek, Cayuse Mountain, Hellgate Gulch and Middleman Mountain/Hedges Mountain. Because the Roadless Areas do not possess strong wilderness attributes, this may be of minimal impact. However, the presence of motorized routes within Roadless Areas could diminish the opportunity for solitude many people seek in those areas (see Appendix B).

Motorized opportunities

There would be **no reduction** in motorized opportunities under the Existing Condition Alternative. Although cross-country motorized travel would no longer be authorized for wheeled vehicles, the existing road and trail system would provide numerous opportunities for that use.

Implementation of this alternative would allow the continued use of motorized vehicles on 56 miles of trail, 377 miles of roads, and 33 miles of unclassified routes. The trails and unclassified routes would continue to be used by both licensed and unlicensed vehicles. This alternative also recognizes 1.8 miles of motorcycle trail, which is located in Little Hellgate Gulch. Although there would be no legal restriction on ATV use for that trail segment, the topography does not allow use by vehicles of that size.

All roads identified on the Helena Forest Transportation System would be open to licensed vehicles only. Many forest visitors mistakenly believe that low standard roads are open to unlicensed vehicle use.

Unclassified routes would provide opportunities for both licensed and unlicensed vehicles (dual use). While this may provide the motorized access and recreation experience desired by many, dual use on the unclassified routes may present safety concerns for individuals on ATV's and motorcycles. Dual use roads would only be designated following an evaluation of the risks involved.

The north Big Belts would be recognized locally as an area providing some motorized opportunities. This northern portion of the mountain range would provide an area on the Helena Forest for OHV use. At least one route, the power line, would continue to provide 4x4 high clearance opportunities.

Snowmobile trails would remain as currently designated. In addition, most high elevation areas (114,149 acres) would continue to provide opportunities for unrestricted off-route snowmobile use. In general, existing low elevation winter range areas (approximately 115,152 acres) would remain closed to snowmobile travel off designated routes.

Off-route Travel

Refer to the Affected Environment.

Game Retrieval and Disabled Hunter Access

Refer to the Affected Environment. In a few locations, there may be a continued lack of access for the retrieval of big game and the hunting of mountain lions.

Non-motorized Opportunities

Of the 146 miles of trail identified under this alternative, 90 miles or 61% would remain non-motorized. Approximately 52 miles of the non-motorized trails are located within the Gates of the Mountains Wilderness. Trails and unclassified routes open to motorized travel are also open to non-motorized use. Mountain bikes are not allowed within the Gates of the Mountains Wilderness.

Displacement

The continuation or increase of motorized use could displace an unknown percentage of non-motorized recreationists to other areas. Because the north Big Belts travel area is predominately frequented by motorized users, the number of displaced recreationists would be minor. Visitors who prefer to recreate in areas with no motorized use could find many alternate areas on the Helena National Forest.

If motorized use in the north Big Belts increases substantially, it's possible some motorized users could be displaced to other locations. Suitable areas for the displaced motorized users would depend largely upon other travel plan decisions made on the Helena National Forest. If sufficient OHV opportunities are not provided on the Helena Forest, motorized enthusiasts would be forced to travel longer distances to participate in their recreational pursuits.

Operational Costs

Unclassified routes open to motorized travel would not be identified as "system" trails or roads. As a result, there would be limited opportunities to obtain funding for the needed relocation, reconstruction, and maintenance of those routes.

Approximately 50% (73 miles) of the existing "system" trails would be reconstructed to meet Forest Service standards. At a reconstruction cost of \$12,000 per mile, the total cost for trail improvements would be estimated at approximately \$876,000.

There would be 56 miles of motorized trail to maintain annually at a cost of approximately \$4,200. In addition, the cost of maintaining 90 miles of non-motorized trail would be an additional \$9,900. Total annual costs for trail maintenance would be \$14,100.

Some level of trailhead development would be necessary to accommodate use of the trail system. Trailhead construction costs, which are currently unknown, would be dependent upon the final travel plan decision.

Travel Plan Complexity

Please refer to the Affected Environment. Identification of spring closure routes on the Forest Visitor Map, as currently exists, provides useful information for the public that helps minimize uncertainty about road conditions and restrictions.

Special Features

North of Trout Creek

Motorized use would continue on existing and previously developed non-system routes. The power line route would continue to provide OHV opportunities. Use of the utility corridor could potentially expose segments of the power line and cause damage. Motorized use of existing routes in the Sweats Gulch and Bull Run Gulch areas would continue. Motorized use on existing routes in the Devils Tower Inventoried Roadless Area could limit the opportunity for solitude in that area.

Trout Creek to Avalanche Creek

Motorized use would continue on existing and previously developed non-system routes. The 53.3 miles of routes in the Middleman Mountain – Hedges Mountain and Hellgate Inventoried Roadless Areas could limit the opportunity for solitude in those areas.

ATV enthusiasts would be able to travel on a network of interconnecting roads and trails that formed loops throughout this area providing enjoyable day trips. However, the Cave Gulch wildfire in that area resulted in the temporary closure of many trails and low standard roads. It is expected that more of these routes would be reopened to the public once they have satisfactorily recovered from the affects of the wildfire. Once these routes are re-opened, the motorized public would again be able to enjoy the various loop opportunities this area has to offer throughout the year.

The Cave Gulch Trail was so badly eroded following the fire and floods that it's not feasible to re-establish that route. Instead, a motorized trail with the same number (243) would be designated on Cave Ridge to the east.

The Horse Ridge Trail would be designated a "system" trail. That route would provide a fifth, and possible excessive, parallel route within a distance of three miles.

The Kingsberry Gulch and Oregon Gulch Roads would continue to provide motorized opportunities for street legal vehicles from May 16th to December 1st. As system roads, unlicensed vehicles would not be allowed. This would certainly affect the numerous OHV's that currently travel on those routes.

The greatest conflict between motorized and non-motorized users would occur during the general big game hunting season by hunters who use ATVs to access the backcountry areas and thus impact the hunting experience of those hunters who choose to walk into these areas.

The snowmobile route on the Magpie road, through Sunshine Basin and across private land to Grouse Ridge would continue to be groomed, providing access to high elevation areas with interconnecting loops. Off-route snowmobile travel is not restricted, except in the low elevation area between York Gulch, Rattlesnake Gulch and Cave Gulch; and temporarily within the Cave Gulch fire area.

South of Avalanche Creek

This area has two large yearlong area closures. There are very few motorized trails. However, the ridge road #4161, is a popular low standard road that follows the spine of the Big Belt Mountains from the upper reaches of Avalanche Creek to the head of Blacktail Creek. It provides scenic viewing, challenging four wheel driving and hunter access.

This area encompasses most of the Cayuse Mountain Roadless Area, which has two open motorized routes--Road #4161 and Nary Time Gulch trail #243. Given the long, slender shape of this Roadless Area, and the presence of these motorized routes, the roadless characteristics of its northern part would be compromised.

East of Divide and Dry Range

The effects on the Dry Range would be essentially the same for all alternatives.

With the completion of the Wagner/Atlanta timber sale to occur in the fall of 2003, the roads east of the Ridge road #4161 to Vermont Gulch and south from the Lambing Camp road would be closed and obliterated. Motorized access through this area would be limited to the Ridge road and the Vermont Gulch road, which would greatly limit motorized travel in this area.

Boulder Mountain, Boulder/Baldy Mountain, and Camas Ridge form the southern boundary of the North Belts Travel plan analysis area. This is a popular summer and fall recreation area because of its high mountain lakes, unblemished scenic quality and wilderness character.

Alternative 2

This alternative is similar to the Proposed Action but it would provide an additional 58 miles of motorized trail opportunities. Implementation of this alternative would eliminate the existing unclassified routes currently open to motorized use. Many of those routes would be designated a dual use road or motorized trail. Several loop opportunities would be provided for ATV's, motorcycles, and 4x4 vehicles. Alternatives 2 and 3 would authorize dual use roads that could be utilized by both licensed and unlicensed vehicles. Motorized use of the system routes could increase and result in a diminished recreation experience for some visitors.

Although the majority of proposed motorized routes currently exist, many segments would require relocation and/or reconstruction. All motorized roads and trails would be maintained to Forest Service standards to ensure visitor safety and resource protection.

Several roads in the north Big Belts would remain closed to motorized travel during the spring break-up period from April 15th to June 1st. That restriction was previously implemented to reduce impacts resulting from wheeled vehicle use on soft roadbeds. Retaining the spring route restriction would help minimize damage that may occur as a result of seasonal weather conditions. It would also

provide helpful information to those visitors seeking motorized travel opportunities in spring.

Inventoried Roadless

Implementation of this alternative would result in approximately 134 miles of motorized routes within the Inventoried Roadless Areas. This would be an increase of 5 miles over the existing condition identified under Alternative 1. Most of that use would be located in the same four Roadless Areas listed in Alternative 1. The majority of increased motorized use would be located within the Middleman Mountain/Hedges Mountain Roadless Area. Because the Inventoried Roadless Areas do not possess strong wilderness attributes, this may be of minimal impact. However, the presence of motorized routes within Roadless Areas could diminish the opportunity for solitude many people seek in those areas (see Appendix B).

Motorized Opportunities

Implementation of this alternative would authorize motorized use on 122 miles of system trail, 120 miles of system road, and 209 miles of dual use routes. This alternative offers the greatest number of motorized trails.

Although several existing routes would be closed to motorized travel, this alternative would still provide numerous OHV opportunities. It would provide 318 miles of system routes (trails and dual use roads) for unlicensed trail vehicles (50 inches or less in width). This is an increase of approximately 229 miles over the existing condition.

Only street legal vehicles would be allowed on 120 miles of system roads. This alternative would increase, by 39 miles, the total number of system roads closed to motorized use yearlong. This is one of two alternatives providing opportunities for licensed and unlicensed vehicles on dual use roads (209 miles). Alternative 2 would result in 72 fewer miles of dual use roads than Alternative 3. Dual use routes would only be approved and incorporated into the Forest Road System following analysis, determination of safety, and final approval by the Forest Supervisor. It may take several years to complete the required analysis for all of the proposed dual use roads. Implementation of this alternative would not result in the immediate designation dual use roads.

Alternative 2 would designate 13 miles of trail in the north Big Belt Mountains open to motorcycles but not to ATV's. This represents an increase of about 11 miles over the Existing Condition in Alternative 1. While the level of motorcycle use remains relatively constant, there are individuals who prefer that single-track experience. The separation of ATV's and motorcycles on some trails would be popular with bike enthusiasts and enhance their recreation experience. Because motorcycle trails are narrower than ATV routes, they would be less intrusive upon the landscape.

This is one of two action alternatives that would promote motorized use in the north Big Belt Mountains. If this alternative were implemented, the area could be recognized for it's motorized opportunities. However, increased OHV use in the

north Big Belts could diminish the recreational experience and enjoyment level for some visitors (including both motorized and nonmotorized users).

Snowmobile trails would remain as currently designated. In addition, some high elevation areas (63,519 acres) would provide opportunities for off-route snowmobile use. Under this alternative snowmobile use would be restricted to the period from December 2nd to May 15th. If snowmobile access were necessary prior to December 2nd, that activity would have to be authorized by the District Ranger. The existing winter range areas for wildlife would be expanded to 165,782 acres and closed to snowmobile travel off designated routes. This would be a reduction in open snowmobile areas of approximately 50,630 acres.

Off-route Travel

Motorized travel would be allowed up to 300 feet off designated routes for firewood gathering, big game retrieval, and camping. This off-route travel exception would supercede the existing three-state OHV decision and resulting special orders. Under the existing condition, off-route travel up to 300 feet is only allowed to access dispersed campsites. Implementation of this travel restriction on the Helena Forest may cause confusion with visitors who also recreate on other National Forests in Montana. This off-route travel restriction would provide expanded access opportunities over the existing condition (Alternative 1) that would be very popular with many forest visitors.

This access opportunity could diminish the recreation experience for visitors who do not want any off-route travel. This alternative would generally be more restrictive than the proposed action but provide additional opportunities (firewood gathering and game retrieval) over the existing condition. Travel up to 300 feet would be allowed off system trails under this alternative but not under the Proposed Action (Alternative 5).

Game Retrieval and Disabled Hunter Access

Opportunities for game retrieval and special access to hunters with disabilities are often related directly to motorized access. This alternative would designate 68 miles of routes providing some type of retrieval access. Depending upon location, retrieval routes would be supported by many hunters. Conversely, use of designated retrieval routes may adversely impact some walk-in hunters.

There are no routes proposed specifically for hunters with disabilities under this alternative. However, the expanded number of motorized routes in this alternative could provide additional access opportunities for disabled hunters.

Non-motorized Opportunities

Of the 219 miles of trail identified under this alternative, 97 miles or 44% would be managed for non-motorized use. This alternative proposes 5 miles of new non-motorized trail. Approximately 52 miles of the non-motorized trails are located within the Gates of the Mountains Wilderness. It should be noted that mountain bikes are not allowed within the Gates of the Mountains Wilderness.

Although motorized trails are open to non-motorized travel, past experience indicates they are not frequently used for hiking or horseback riding. However,

motorized trails are frequently used for mountain biking. It's likely a network of motorized trails in the north Big Belts would become a popular destination for mountain bikers.

Displacement

The continuation or increase of motorized use in the north Big Belts could displace an unknown percentage of non-motorized recreationists to other areas. Because the north Big Belt travel area is predominately used by motorized visitors, the number of displaced recreationists would be minor. Visitors who prefer to recreate in areas with no motorized use could find many alternate areas on the Helena Forest.

As previously noted, OHV use in the north Big Belts would probably increase under this alternative. Some motorized users may not welcome additional use on the designated roads and trails. As a result, some motorized users could be displaced to other locations. Depending upon future Helena Forest travel decisions, motorized enthusiasts could potentially be displaced to private lands or adjacent National Forests. Those motorized opportunities are also becoming more limited.

Under this alternative there would be 16 fewer miles of motorized routes than currently exist (Alternative 1). The decrease primarily reflects the number of system roads that would be open only to licensed vehicles. While the total miles of roads would decrease, there should be no substantial loss of motorized access.

Operational Costs

Approximately 50% (73 miles) of the existing "system" trails would be reconstructed to meet Forest Service standards. An additional 50 miles of system road or unclassified routes would be converted to trail and also require reconstruction. At a reconstruction cost of \$12,000 per mile, the total expense for existing trail improvements are estimated to be approximately \$1,476,000. An additional 32 miles of new trail would be constructed at a cost of approximately \$576,000. Total estimated costs for construction/reconstruction would be \$2,052,000.

Under Alternative 2, there would be a total of 219 miles of trail to maintain annually. The cost of maintaining 97 miles of non-motorized trail would be \$10,670. The additional cost for maintaining 122 miles of motorized trail would be \$9,150. Total annual cost for trail maintenance would be \$19,820.

Some level of trailhead development would be necessary to accommodate use of the trail system. Costs, which are currently unknown, would be determined primarily by the travel plan decision. Please refer to Alternative 5 operational costs for reference.

Travel Plan Complexity

Alternative 2 would basically implement the same restriction dates as listed in the Proposed Action (Alternative 5). However, the travel plan would be more complex due to the additional vehicle/route types and opportunities (dual use,

motorcycles, retrieval). This alternative would be similar to Alternative 3 and less complex than the Existing Condition in Alternative 1. Alternative 2 does propose travel restrictions that are more complex than Alternatives 4 and 5.

Special Features

North of Trout Creek

Dual use on several existing routes in the Devils Tower Inventoried Roadless Area would remain open (seasonally) to motorized use. The winter restrictions on motorized use would enhance opportunities for solitude during that period.

Four motorized routes would be designated and maintained within the Middleman Mountain Inventoried Roadless Area: route 4155 (power line), route 4154, Kelly Ridge Trail, and route 4137 (Beartrap Gulch). Motorized use on those routes could diminish opportunities for solitude.

The existing power line route would be designated and maintained for dual use. This route, open seasonally from May 16th through October 14th, would provide access from the OHV system in Cottonwood and Sweats Gulch to Hogback Mountain and roads in the Grouse Ridge area. The power line trail would provide a key link for ATV's and trail bikes between road systems authorized for dual use. This route has also been identified by local 4x4 enthusiasts as one of their primary travel routes in the north Big Belt Mountains. The power line route, open to game retrieval when otherwise restricted, would be popular with some hunters. It may be difficult to administer retrieval restrictions on the power line route. Some segments of the utility corridor would require reconstruction and/or relocation. Continued and increased use of the utility corridor could potentially expose segments of the power line and cause damage.

A new trail would be constructed in Sweats Gulch parallel to, and connect with, the power line route. This trail would be open to motorized vehicles from May 16th to December 1st. It would provide a loop opportunity for trail vehicles during the summer. Although this trail would be open during the big game hunting season it would not provide through access to Hogback Mountain. As a result it would increase the possibility of travel violations during the hunting season. Due to the steep terrain in the area the trail could be costly to construct.

One trail, designated and maintained for motorized use (route 4137), would proceed from Beartrap Gulch to the Hidden Valley road system. The route would be open to ATV's and trail bikes from May 16th through October 14th. It would also be open for game retrieval from October 15th through May 15th. Because the trail would be located a short distance from Vigilante Campground it's reasonable to assume the campground may become popular with motorized trail enthusiasts. It's also reasonable to assume many motorized users would travel on the county road between the campground and the trailhead. Motorized access into the Hidden Valley Road system would certainly increase hunting pressure in that area.

A trail extending from Kelly Gulch to the Beartrap Gulch Trail would be designated and maintained for motorized use from May 16th through December 1st. Due to steep terrain in that area, the trail would be costly to construct and

maintain. The Kelly Gulch Trail would proceed to the existing Hidden Valley Road system. The trail could become a popular access route for many hunters.

A network of off-highway roads and trails near York would provide 4x4, ATV and motorbike opportunities, especially convenient for local residents. One route (4-A1) would begin in the community of York. It should be noted, OHV routes near York have the potential to negatively affect the community with noise, dust, litter, and congestion.

Several existing roads in the Hidden Valley area would be designated for dual use and open to motorized vehicles from May 16th through October 14th. The same roads would provide retrieval opportunities when otherwise restricted. It may be very difficult to administer game retrieval restrictions on roads located almost two hours from the Ranger District office. The increased activity in the Hidden Valley area may diminish the hunting experience for many. However, designated game retrieval routes would be endorsed by some hunters.

Spur roads off the main Hidden Valley road would be classified as motorized trails and open from May 16th through October 14th. While those trails would provide several short motorized opportunities, they are not linked and would not provide loop routes. Those short travel routes would offer only minimal recreation opportunities.

A large network of dual use roads is proposed in the area of Grouse Ridge. While those routes would be closed for spring break-up, they do offer numerous loop opportunities for licensed and unlicensed vehicles.

Trout Creek to Avalanche Creek

A motorized trail would be designated in Sunshine Basin between Grouse Ridge and the Magpie Road. The route would be open to ATV's and trail bikes from May 16th through October 14th. That trail would provide a link between two motorized trail systems. The route would parallel upper Trout Creek and may be quite challenging to construct and maintain.

Motorized trails proposed under this alternative would be designated and maintained within the Hedges Mountain and Hellgate Gulch Inventoried Roadless Areas. One important route for motorized users is the proposed trail from Hedges Mountain to the Magpie Road. It would provide a key link between routes in the Cave Gulch area and the upper Magpie drainage. Topography in that area indicates the trail would require numerous switchbacks to meet agency standards. The proposed motorized trail located north of Hedges Mountain would be located very close to the non-motorized and nationally designated Hanging Valley Trail. A motorized trail adjacent to the Hanging Valley Trail could result in travel violations on the National Recreation Trail.

A network of motorized trails and dual use routes would be designated and maintained that include the following routes:

- Horse Ridge (incorrectly listed as Holiday on the alternative maps),
- Oregon-Cave Connection,

- Cave Gulch,
- Cave Ridge,
- Never Sweat,
- Hedges Mountain to upper Magpie Road,
- Cave Gulch to Hellgate Gulch,
- Hunters Gulch,
- Cooper Gulch,
- Never Sweat to Culp Gulch,
- Hellgate Gulch,
- Carpenter Gulch,
- Fisher Gulch,
- Magpie to Hellgate Ridge,
- Upper Hellgate,
- Little Hellgate,
- Gabbish Gulch,
- Doolittle Gulch,
- Thompson Gulch, and
- Nary Time.

Several of those trails would be closed seasonally while others would remain open to motorized use yearlong.

A new ATV trail is proposed adjacent to the upper portion of the Magpie Road from Never Sweat Gulch to Magpie Meadows, to provide unlicensed vehicles loop access in this area. Also, two other new ATV trails are proposed in the lower Magpie Creek area, one at the Forest boundary going west, connecting with the Cave Ridge trail and one in the Coxey Gulch area going west and connecting with the Cave Ridge trail. A new ATV trail is proposed from the end of the Neversweat Gulch road over to Hedges Mountain and a short trail is proposed off the upper Magpie Creek road. This trail network would provide loop opportunities many visitors desire. Because the Cave Gulch Trail was severely damaged by flood, much of that trail would require relocation out of the canyon bottom.

This is the only alternative that designates an area specifically for off-highway vehicle use. The entire 425-acre area, located between Cave Gulch and the Jim Town Road, would become popular with ATV and motorcycle enthusiasts. While this unrestricted use area may be desired by some motorized users, local residents may be unhappy with the resulting increase in traffic, noise, litter, and other associated impacts. Additionally, public lands open to unrestricted motorized travel often result in unacceptable resource impacts.

This area between Trout Creek and Avalanche Creek would provide the hub of the motorized activity in the north Big Belt Mountains. In most cases the motorized routes would not provide access to specific recreation destinations. Rather, these routes themselves provide the recreation opportunity that many visitors seek. This is one location on the Helena Forest where motorized use was previously established and became quite popular. Most of the proposed routes currently exist but would require reconstruction and/or relocation to meet Forest Service standards. Trails could be constructed that allow increased motorized use with minimal resource impacts.

South of Avalanche Creek

The effects of motorized use in this area are similar to the current situation, Alternative 1, except for a few differences. These differences would allow game retrieval on a number of roads that are currently either closed yearlong or during the hunting season. They include the Wagner Gulch road #259, Atlanta/Mule and Camas Ridge road #575, Slough Creek road, Debauch Gulch roads, portions of trail #141, Ready Cash Gulch road, and the Bridge Gulch/Thomas Creek roads. Most of these routes are old timber sale roads that would also be opened to motorized vehicles from December 2nd until October 15th. Having these retrieval routes would provide a convenience to older, less able-bodied hunters and recreationists. However, the potential increased hunting pressure may reduce the quality of the hunting experience. Opening these routes to motorized travel from 12/2 to 10/15 would expand motorized vehicle activity into areas that are currently closed and could reduce the non-motorized recreation experience in those areas.

A short section of new road is proposed off of the Wagner Gulch road to provide public motorized access around private land to road #259 A-1.

East of Divide

See section above.

Alternative 3

Alternative 3 provides the greatest number of motorized opportunities. Implementation of this alternative would authorize parallel routes and loop opportunities across the north Big Belts. Motorized use of the system routes could increase and result in a diminished recreation experience for some visitors. This alternative provides no new trails for non-motorized recreationists.

Although the majority of proposed motorized routes currently exist, many segments would require relocation and/or reconstruction. All motorized roads and trails would be maintained to Forest Service standards to ensure visitor safety and resource protection.

This alternative provides the greatest number of motorized opportunities for the elderly and persons with disabilities. The large number of dual use routes would provide access to a variety of dispersed recreation activities such as: hunting, camping, picnicking, etc.

Alternative 3 provides fewer miles of system trails for motorized use than Alternative 2. However, it provides the greatest number of dual-use routes open to both licensed and unlicensed vehicles. This provides the most equitable mix of both vehicle types and closely reflects the existing condition. It should be noted that the dual use of routes by licensed and unlicensed vehicles could present safety concerns. Dual use roads would only be designated following an evaluation of the risks involved.

Several roads in the north Big Belts would remain closed to motorized travel during the spring break-up period from April 15th to June 1st. That restriction was previously implemented to reduce impacts resulting from wheeled vehicle use on soft roadbeds. Retaining the spring route restriction would help minimize damage that may occur as a result of seasonal weather conditions. It would also provide helpful information to those visitors seeking motorized travel opportunities in the spring.

Inventoried Roadless

Implementation of this alternative would result in approximately 132 miles of motorized routes within the Inventoried Roadless Areas. This represents an increase of approximately three miles over the existing condition identified under Alternative 1. Most of the use would be located in the same four Roadless Areas listed in Alternative 1. Because the Inventoried Roadless Areas do not possess strong wilderness attributes, this may be of minimal impact. However, the presence of motorized routes within Roadless Areas could diminish the opportunity for solitude many people seek in those areas (see Appendix B).

Motorized Opportunities

Implementation of this alternative would authorize motorized use on 80 miles of system trails, 119 miles of system roads, and 281 miles of dual use routes.

This alternative would provide numerous and expanded OHV opportunities. It would provide 358 miles of system routes (trails and dual use roads) for unlicensed trail vehicles (50 inches or less in width). This is an increase of approximately 269 miles over the existing condition.

Only street legal vehicles would be allowed on system roads. Alternative 3 would increase, by 4 miles, the total number of system roads closed to motorized use yearlong. This is one of two alternatives providing for dual-use of licensed and unlicensed vehicles. Implementation of Alternative 3 could result in 281 miles of (high clearance) dual-use routes. This represents an increase of approximately 72 miles more than Alternative 2. Dual use roads would only be approved and incorporated into the Forest Road System following analysis, determination of safety, and final approval by the Forest Supervisor. It may take several years to complete the required analysis for all of the proposed dual use roads. Implementation of this alternative would not result in the immediate designation of dual use roads.

Alternative 3 would designate 3.6 miles of trail in the north Big Belt Mountains open to motorcycles but not to ATV's. This is approximately four miles less than proposed under Alternative 2 but represents an increase of about 1.6 miles over

the Existing Condition in Alternative 1. While the level of motorcycle use remains relatively constant, there are individuals who prefer a single-track experience. The separation of ATV's and motorcycles on some trails would be popular with bike enthusiasts and enhance their recreation experience. Because motorcycle trails are narrower than ATV routes, they would be less intrusive upon the landscape.

This is one of two action alternatives that would promote motorized use in the north Big Belt Mountains. It should be noted, this might be one of the few locations on the Helena Forest where motorized use could be designated with minimal resource impacts. If this alternative were implemented, the area could be recognized for its motorized opportunities. However, increased OHV use in the north Big Belts could diminish the recreational experience and enjoyment level for some visitors (including motorized users).

Snowmobile trails would remain as currently designated. In addition, some high elevation areas (63,519 acres) would provide opportunities for off-route snowmobile use. Under this alternative snowmobile use would be restricted to the period from December 2nd to May 15th. If snowmobile access were necessary prior to December 2nd, that activity would have to be authorized by the District Ranger. The existing winter range areas for wildlife would be expanded to 165,782 acres and closed to snowmobile travel off designated routes. This would be a reduction in open snowmobile areas of approximately 50,630 acres.

Off-route Travel

Motorized travel would be allowed up to 300 feet off designated routes for firewood gathering, big game retrieval, and camping. This off-route travel exception would not comply with the existing three-state OHV decision and resulting special order. Under the existing condition, off-route travel up to 300 feet is only allowed to access dispersed campsites. Implementation of this travel restriction on the Helena Forest may cause confusion with visitors who also recreate on other National Forests in Montana. This off-route travel restriction would provide expanded access opportunities over the existing condition (Alternative 1) that would be very popular with many forest visitors.

This access opportunity could diminish the recreation experience for visitors who do not want any off-route travel. This alternative would generally be more restrictive than the proposed action but provide additional opportunities (firewood gathering and game retrieval) over the existing condition. Travel up to 300 feet would be allowed off system trails under this alternative but not the Proposed Action (Alternative 5).

Game Retrieval & Disabled Hunter Access

Opportunities for game retrieval and special access to hunters with disabilities are often related directly to motorized access. This alternative would designate 130 miles and the greatest number of routes providing some type of retrieval access. Depending upon location, retrieval routes would be supported by many hunters. Conversely, use of designated retrieval routes may adversely impact some walk-in hunters.

There are no routes proposed specifically for hunters with disabilities. However, the extensive number of motorized routes in this alternative could provide additional access opportunities for disabled hunters,

Non-motorized Opportunities

Of the 170 miles of trail identified under this alternative, 90 miles or 53% would be managed for non-motorized use. This alternative does not propose any new non-motorized trails. Approximately 52 miles of the non-motorized trails are located within the Gates of the Mountains Wilderness. It should be noted that mountain bikes are not allowed within the Gates of the Mountains Wilderness.

Although motorized routes are open to non-motorized travel, past experience indicates they are not frequently used for hiking or horseback riding. However, motorized trails are frequently used for mountain biking. It's likely a network of motorized trails in the north Big Belts would become a popular destination for mountain bikers.

Displacement

The continuation or increase of motorized use could displace an unknown percentage of non-motorized recreationists to other areas. Because the north Big Belt travel area was frequented predominately by motorized users, the number of displaced recreationists would be minor. Visitors who prefer to recreate in areas with no motorized use could find many alternate areas on the Helena Forest.

Under this alternative there would be an increase of 266 miles of system roads and trails open to motorized use over the existing condition. If motorized use in the north Big Belts increased notably, it's possible some motorized users could be displaced to other locations. Suitable areas for the displaced motorized users would depend largely upon other travel plan decisions made on the Helena National Forest. If sufficient OHV opportunities were not provided on the Helena Forest, motorized enthusiasts could potentially be displaced to private lands or adjacent National Forests. Those motorized opportunities are also becoming more limited.

Under this alternative there would be approximately 14 more miles of motorized routes than currently exist (Alternative 1). Although motorized travel routes increase, the number of system roads open only to street legal vehicles would decrease.

Operational Costs

Approximately 50% (73 miles) of the existing "system" trails would be reconstructed to meet Forest Service standards. An additional 21 miles of system road or unclassified routes would be converted to trail. At a reconstruction cost of \$12,000 per mile, the total expense for existing trail improvements are estimated to be approximately \$1,128,000. An additional 13 miles of new trail would be constructed at a cost of approximately \$234,000. Total estimated costs for construction/reconstruction would be about \$1,362,000.

Under Alternative 3, there would be a total of 170 miles of trail to maintain annually. The cost of maintaining 90 miles of non-motorized trail would be about \$9,900. The additional cost for maintaining 80 miles of motorized trail is \$6,000. Total annual cost for trail maintenance would be approximately \$15,900.

Some level of trailhead development would be necessary to accommodate use of the trail system. Costs, which are currently unknown, would be determined primarily by the travel plan decision.

Administration of the retrieval program associated with hunting would result in additional costs to the Helena National Forest.

Travel Plan Complexity

Alternative 3 would implement similar restriction dates as Alternative 2. However, two additional restriction dates would be added. Under Alternative 3, the travel plan would be the most complex of all Action Alternatives due to additional vehicle/route types and opportunities (dual use, motorcycles, retrieval). This alternative would be less complex than the Existing Condition in Alternative 1. Alternative 3 does propose travel restrictions that are more complex than Alternatives 4 and 5.

Special Features

North of Trout Creek

Dual-use on several existing routes in the Devils Tower Inventoried Roadless Area would remain open (seasonally) to motorized use. This alternative would allow game retrieval during periods of restricted use. The opportunities for retrieval would be desirable for some mountain lion hunters. However, motorized use of those routes could reduce the opportunity for solitude during the winter. It should be noted, this Roadless Area currently receives very little non-motorized use from December through May.

Four motorized routes would be designated and maintained within the Middleman Mountain Inventoried Roadless Area: route 4155 (power line), route 4154, Kelly Ridge Trail, and route 4137 (Beartrap Gulch). The primary difference between this and Alternative 2 is the additional designation of retrieval routes.

The existing power line utility route would be designated and maintained for dual use. This route, open seasonally from May 16th through December 1st, would provide access from the OHV system in Cottonwood and Sweats Gulch to Hogback Mountain and roads in the Grouse Ridge area. Under this alternative the power line route would remain open during the big game hunting season. The dual use route would also be open for game retrieval during those periods when otherwise restricted. It may be difficult to administer the retrieval restriction on the power line trail. Some segments of the utility corridor would require reconstruction and/or relocation. Continued and increased use of the power line corridor could potentially expose segments of the power line and cause damage. This route has been very popular with 4x4 enthusiasts because it provides one of the most challenging high clearance routes in the north Big Belt Mountains.

A new road would be constructed in Sweats Gulch that is parallel with, and connects to, the power line route. The dual-use road would provide an OHV loop opportunity for unlicensed vehicles. Due to the steep terrain in the area, road construction may be costly.

Most proposed travel routes in this area already exist and would only require minor reconstruction. The proposed road and trail network would provide excellent 4x4 and ATV opportunities adjacent to the community of York. Off-highway vehicle use near York has the potential to negatively affect the community with noise, dust, litter, and congestion.

This alternative would also result in the construction and maintenance of two new motorized trails with seasonal restrictions. One trail would proceed from Beartrap Gulch to the Hidden Valley Road system. The other trail would connect Kelly Gulch to the Beartrap Gulch trail. Due to steep terrain, this Kelly Ridge Trail would be costly to construct. Unlike Alternative 2, the Kelly Ridge Trail would not provide access to the Hidden Valley Road system during the big game hunting season.

Roads in the Hidden Valley system would be open to dual use from May 16th to October 14th. Routes in that area would be managed similar to Alternative 2.

A large network of dual-use roads is proposed in the area of Grouse Ridge. While those routes would be closed for spring break-up, they do offer numerous loop opportunities for licensed and unlicensed vehicles.

Trout Creek to Avalanche Creek

A dual-use road is proposed through Sunshine Basin between Grouse Ridge and the Magpie Road. Legal right-of-way access must be obtained prior to any route designation across private land. The route would be closed to wheeled motorized travel from December 2nd through May 15th. It would provide a valuable connection between roads and trails in the Grouse Ridge area with those in the Magpie drainage.

One major difference between this alternative and Alternative 2 is the proposed route to the north of Hedges Mountain. Under this alternative, the route would be constructed and maintained for dual use by motorized vehicles. Due to topography, the route would require numerous switchbacks and full bench construction. The proposed route would be open during the big game season and would certainly impact existing hunter use and activity. It would be very popular with the elderly and hunters with disabilities. This motorized route would provide direct access to the Hanging Valley National Recreation Trail and greatly increase visitor use of the trail. It might also increase the likelihood of motorized violations on the National Recreation Trail.

As identified under Alternative 2, a network of motorized routes is proposed for the area between Trout Creek and Magpie Gulch. Fewer new trails would be constructed in the Magpie Creek area under this alternative as compared with Alternative 2. There would not be a new motorized trail built in Coxcy Gulch or one extended from the Never Sweat Gulch road. However, a new motorized trail is proposed at the Forest boundary between Magpie Creek and Cave Gulch as

well as one adjacent to the Magpie Creek road from Hunters Gulch up to the Magpie meadows area. A short new motorized trail is also proposed at the upper end of the Magpie Creek road referred to as the Magpie Connection trail. This would result in fewer loop travel opportunities as compared with Alternative 2.

There are two primary differences between Alternatives 2 and 3. Under Alternative 3 there would be numerous opportunities for retrieval from December 2nd to May 15th when the routes would otherwise be closed. This provides expanded access to mountain lion hunters. Due to the few individuals who recreate in that area during the winter, there should be minimal social effects based on winter retrieval routes.

Unlike Alternative 2, this alternative does not propose designation of a separate OHV area west of Cave Gulch. While this may not provide the ATV or motorbike opportunities that some individuals seek, it does result in potentially fewer social and resource impacts.

South of Avalanche Creek

Dual-use roads are proposed for the Ridge road #4161, Spring Gulch road, road up the ridge south of Spring Gulch and north of Upper #2 Gulch, Debauch Gulch roads, Jimmy's Gulch area and the Blacktail road. These roads are relatively low maintenance standard roads and would be suited for dual use. The Debauch Gulch roads and Jimmy's Gulch roads are currently closed yearlong and do not provide any loop opportunities. The Ridge road is critical as a north/south connection route through the project area as well as providing access to several trailheads. The Blacktail road is an important access route to the southern portion of the Ridge road and the trail #142 trailhead. The Spring Gulch road provides important access to the Bilk Mountain trail #232 trailhead.

The route up the ridge south of the Spring Gulch road and north of Upper #2 Gulch provides a loop opportunity to 4x4 and ATV enthusiasts in this area. However, this loop encroaches into a yearlong closure to motorized vehicles. This motorized encroachment, particularly during the hunting season, would reduce the quality of the hunting in this area. The portion of the route on the ridge between Upper #2 Gulch and Spring Gulch is quite steep and would lead to accelerated soil movement if not built to standard.

East of Divide & Dry Range

The Vermont Gulch road is open yearlong and is an important motorized access to the Long Gulch area for hunting, firewood gathering and mineral prospecting, etc. The Bridge Gulch and Thomas Creek roads provide a loop route opportunity in the summer and game retrieval during the big game hunting season. Slough Creek is currently closed yearlong and does not connect with any other road. It would be opened during the summer and for game retrieval. The Atlanta/Mule/Camas Ridge road system would continue to provide motorized access for Dual use in this area. The motorized routes in Vermont Gulch, Bridge Gulch, Thomas Creek, Slough Creek and the Camas Ridge road would provide loop travel opportunities in this area. All of these routes, except for the Vermont Gulch road, would be closed during hunting season except for game retrieval.

Because of the number and remoteness of these game retrieval routes, they would be difficult to enforce and may negatively impact non-motorized hunting use.

Alternative 4

Motorized travel throughout the area would be substantially reduced and existing off-highway vehicle opportunities would be displaced from the north Big Belt Mountains. Of the four action alternatives, this is the most restrictive to motorized travel. Because the north Big Belts do not contain popular destination sites, such as mountain lakes, recreation use levels would probably never equal current levels resulting from motorized use.

Motorized access for the elderly and persons with disabilities would be very limited in some areas. This alternative is expected to result in a decrease of big game hunters within the project area. This alternative could decrease the few existing user conflicts between motorized and non-motorized visitors.

Although motorized access would be limited, legal rights-of-way would still be needed in some locations. Over the long-term, development of new unauthorized trails would be greatly reduced. However, immediately upon implementation of this alternative some OHV users may be so disgruntled that they violate the restriction and create additional unauthorized routes.

Several roads in the north Big Belts would remain closed to motorized travel during the spring break-up period from April 15th to June 1st. That restriction was previously implemented to reduce impacts resulting from wheeled vehicle use on soft roadbeds. Retaining the spring route restriction would help minimize damage that may occur as a result of seasonal weather conditions. It would also provide helpful information to those visitors seeking motorized travel opportunities in spring.

Inventoried Roadless

Implementation of this alternative would result in approximately 13 miles of motorized routes within the Inventoried Roadless Areas. This would be a decrease of 116 miles from the existing condition identified under Alternative 1. Of all the alternatives, this would be the most beneficial to the wilderness character of the Roadless Areas. Most of that motorized use would occur on system roads and adjacent to the Roadless Areas boundaries. Because the Inventoried Roadless Areas do not possess strong wilderness attributes, this may be of minimal impact. However, the presence of motorized routes within Roadless Areas could diminish the opportunity for solitude many people seek in those areas (see Appendix B).

Motorized Opportunities

Implementation of this alternative would allow motorized use on 136 miles of system roads and none on system trails. Dual use routes would not be authorized. Because unlicensed OHV's are not allowed on "system" roads, this alternative would eliminate off-route motorized opportunities in the north Big Belts. Alternative 4 would reduce the road system by 241 miles from the

Existing Condition in Alternative 1. This alternative would increase, by 244 miles, the total number of system roads closed to motorized use yearlong.

Alternative 4 would provide no OHV opportunities. This is a reduction of 89 miles from the existing condition identified in Alternative 1. There would be no opportunities for unlicensed ATV's, motorcycles, or 4x4's pickups. The lack of opportunities may cause some motorized users to violate travel plan restrictions.

Snowmobile trails would remain as currently designated. In addition, some high elevation areas (8,538 acres) would provide some limited opportunities for off-route snowmobile use. Under this alternative snowmobile use would be restricted to the period from December 2nd to May 15th. If snowmobile access were necessary prior to December 2nd, that activity would have to be authorized by the District Ranger. The existing winter range areas for wildlife would be expanded to 220,763 acres and closed to snowmobile travel off designated routes. This would be a reduction in open snowmobile areas of approximately 105,611 acres.

Off-route Travel

Under this alternative motorized travel would not be allowed off system roads for any recreation activities. Due to the lack of motorized trail use identified under this alternative, motorized access in the north Big Belts would be very limited. This may be very unpopular with many publics because it would greatly limit dispersed recreation opportunities. This off-route travel restriction would not comply with the 2001 OHV decision. It would be extremely difficult to enforce travel restrictions that do not allow for any off-route wheeled motorized travel. This travel restriction could greatly reduce the amount of dispersed camping that traditionally occurred on the Helena Forest.

Game Retrieval & Disabled Hunter Access

Opportunities for game retrieval and special access to hunters with disabilities are related directly to motorized access. This alternative would designate no motorized routes or unique opportunities for game retrieval. In addition, the lack of dual use routes and motorized trails could greatly limit existing game retrieval opportunities.

No routes are identified providing special access for qualified hunters with disabilities. Because this alternative provides extremely limited motorized access into the north Big Belt Mountains, it would greatly reduce existing motorized hunting opportunities for individuals with disabilities.

Non-motorized Opportunities

Of the 202 miles of trail identified under this alternative, 202 miles or 100% would be managed for non-motorized use. This alternative proposes 22 miles of new construction for non-motorized trails. An additional 34 miles of trail would be converted from either existing "system" or unclassified roads. About 52 miles of the non-motorized trails are located within the Gates of the Mountains Wilderness. It should be noted that mountain bikes are not allowed within the Gates of the Mountains Wilderness.

This alternative would greatly enhance the recreation opportunities and experience and non-motorized visitors. It's probable the north Big Belt Mountains would become more popular for a variety of non-motorized recreation activities. All aspects of "quiet" recreation (picnicking, hiking, sight-seeing, and walk-in hunting) would be enhanced. However, access to many dispersed areas would be limited due to the lack of designated motorized routes.

The lack of designated travel routes may also diminish opportunities for mountain biking. That use should occur on established travel routes and this alternative provides the fewest miles of designated roads and trails.

Displacement

Alternative 4 would displace all existing OHV use out of the north Big Belts analysis area. Depending upon future Helena Forest travel decisions, OHV users may, in effect, be displaced off the Forest. If sufficient OHV opportunities were not provided on the Helena Forest, motorized enthusiasts would be forced to travel longer distances to participate in their recreational pursuits. The distance motorized users would be displaced could be dependent upon travel decisions on the Lewis & Clark and Beaverhead-Deerlodge National Forests.

The lack of motorized access could also displace many elderly and persons with disabilities. Because the population in Montana and throughout the United States is aging, the percentage of elderly is currently growing each year. Those individuals often seek dispersed recreation opportunities that are located near motorized access routes. Implementation of this alternative would greatly limit opportunities the Helena Forest has to meet demands for motorized access requested by the elderly.

The lack of motorized access could also displace younger individuals who do not wish to walk long distances to participate in their recreation activities. The lack of motorized access could affect their level of participation in activities such as: picnicking, camping, fishing, nature study, photography, fishing, etc.

Under this alternative there would be 330 fewer miles of motorized routes than currently exist under Alternative 1.

Operational Costs

Approximately 50% (73 miles) of the existing "system" trails would be reconstructed to meet Forest Service standards. An additional 60 miles of "system" road or unclassified routes would be converted to non-motorized trail and also require reconstruction. At a reconstruction cost of \$12,000 per mile, the total expense for existing trail improvements are estimated to be approximately \$1,596,000. An additional 22 miles of new trail would be constructed at a cost of approximately \$396,000. Total cost estimate for construction/reconstruction is \$1,992,000.

Under Alternative 4, there would be a total of 202 miles of trail to maintain annually. The cost of maintaining 202 miles of non-motorized trail would be about \$22,220.

Some level of trailhead development would be necessary to accommodate use of the non-motorized trail system. Costs, which are currently unknown, would be determined primarily by the travel plan decision.

Due to past levels of motorized use in the north Big Belt Mountains, this alternative could be very unpopular and initially very costly to enforce.

Travel Plan Complexity

Alternative 4 would create three restriction dates as opposed to the four under the Proposed Action. Because there would be no OHV use allowed, a minimum number of vehicle types and dates would be necessary. It's reasonable to assume that simplified travel restrictions would result in fewer violations and reduced law enforcement costs.

Special Features

North of Trout Creek

The Cochran Gulch Trail would be constructed and maintained for non-motorized use. It would connect the Beaver Creek Fishing Access Site to the Missouri River Canyon trailhead. The trail would be located primarily within open grasslands and difficult to maintain an established tread. Because the trail would somewhat parallel the existing American Bar Road, it's anticipated visitor use would be minimal.

The power line trail would be designated and maintained for non-motorized use and connect Cottonwood Gulch with Hogback Mountain. Motorized use of that route would only be authorized for maintenance of the utility line. Due to the steep elevation gain, the power line route would not be popular for non-motorized activities.

A new trail would also be constructed and maintained for non-motorized use in Beartrap Gulch. The trail would follow an existing closed road to the ridge above Soup Creek. The trail would then proceed north from that location to Soup Creek and eventually connect with the power line trail. Most use on this trail would probably occur during the big game hunting season.

Another new trail would be constructed between Forest Road 138 and the Beaver Creek Road. This new trail would be constructed in Cottontail Gulch and provide access within one mile of the Refrigerator Canyon Trail. While this route may be difficult to construct, it would provide access into an area that currently receives very little visitor use.

Trout Creek to Avalanche Creek

A new trail would be constructed and maintained for non-motorized use adjacent to Trout Creek. This trail would connect the popular Trout Creek Canyon Trail with Sunshine Basin. At Sunshine Basin the trail would terminate when it reaches private property. Due to terrain limitations, the trail would be difficult to construct in some locations. Because there would be no through access on the private lands in Sunshine Basin, trail use would be minimal.

The Cave Gulch and Never Sweat Trails would be maintained for non-motorized use. Because the Cave Gulch Trail was badly eroded by recent floods, the trail would need major reconstruction or, more likely, relocation.

A new trail would be constructed for non-motorized use connecting Hedges Mountain to the existing Hanging Valley National Recreation Trail. That trail would also extend north creating a Magpie Crest Trail. Because this trail would link to other non-motorized trails in the area (Hanging Valley, Cave Gulch, Never Sweat) overall non-motorized trail use would probably increase.

All existing motorized trails, including the Ridge road #4151, in the Magpie to Avalanche area would be changed to non-motorized trails, thus greatly improving the non-motorized recreational experience in this area. Yearlong public use of this area would greatly decrease given the limited motorized access opportunities.

This alternative provides the least opportunity for snowmobile use in this area. Only the upper Magpie drainage would open to off route snowmobile travel.

South of Avalanche Creek

The effects of this Alternative for this area are somewhat similar to Alternative 5, except that a new non-motorized trail is proposed in Johnnies Gulch, between Whites Gulch and the upper end of Greenhorn Gulch. Also, the Greenhorn Gulch road, Spring Gulch road, and upper portion of the Blacktail road would be non-motorized routes further enhancing the non-motorized recreational experience of this area.

East of Divide

The entire Atlanta/Mule/Camas Ridge road system would become a non-motorized trail, greatly limiting the general public access to the Camas Lake trail #140 trailhead. With this alternative, an individual would have to walk approximately 7 miles to reach Camas Lake instead of the current 1.25 miles.

The southern portion of the Wagner Gulch road, and the Vermont Gulch and Long Gulch roads would become closed yearlong, limiting public use of this area. Ridge road #4161 would become a non-motorized trail, further limiting public use of this area to only those who are physically able to walk these long distances.

Alternative 5 – Proposed Action

The Proposed Action would segregate motorized and non-motorized use by drainage. This alternative seeks to provide some motorized opportunities while limiting potential conflicts between motorized and non-motorized recreationists. Implementation of this alternative would eliminate the existing unclassified routes currently used by both licensed and unlicensed vehicles. Because motorized use would be confined to fewer travel routes, use of those routes could increase and the resulting recreation experience may be diminished.

Although the majority of proposed motorized routes currently exist, many segments would require relocation and/or reconstruction. All motorized roads

and trails would be maintained to Forest Service standards to ensure visitor safety and resource protection.

It's difficult to determine if user conflicts would increase or decrease under this alternative. Reducing opportunities for motorized use could concentrate users on the remaining routes and potentially cause an increase in the number of conflicts between motorized users. This could also cause an increase in the number of conflicts between the motorized users and the nonmotorized users who use the same routes. On the other hand, conflicts between motorized and nonmotorized users could decrease on the routes that were previously available to both groups. This is because those routes would no longer be available to motorized users – only nonmotorized. While user conflicts do occasionally occur in the north Big Belts, it has not been a major problem in the past.

Specific roads would not be identified for closure to motorized use during the spring break-up period. This would result in fewer travel restriction dates and a more user-friendly Forest Visitor Map. Because the dates and locations of spring route closures could change annually, the public may not be well informed of seasonal restrictions. As a result, forest visitors could drive many miles to a specific location only to learn that access was unexpectedly restricted. This may result in some frustration and anger. Additionally, this action would also place a greater responsibility upon Ranger Districts to monitor roads previously closed for spring break-up. If roads were soft and susceptible to resource damage, they would be closed through special order until the condition of the road improved.

Inventoried Roadless

Implementation of this alternative would result in approximately 63 miles of motorized routes within the Inventoried Roadless Areas. This would be a decrease of 66 miles from the existing condition identified in Alternative 1. Because the Inventoried Roadless Areas do not possess strong wilderness attributes, this may be of minimal impact. However, the presence of motorized routes within Roadless Areas could diminish the opportunity for solitude many people seek in those areas (see Appendix B).

Motorized Opportunities

Implementation of this alternative would authorize the use of motorized vehicles on 57 miles of system trails and 243 miles of "system" roads. Only street legal vehicles would be allowed on system roads.

Under this alternative there would be no opportunities for dual use of licensed and unlicensed vehicles on Forest Roads. As a result, there would be fewer opportunities for ATV's and motorcycles than under Alternatives 1,2 and 3. ATV's and motorcycles could not use Forest Roads unless the vehicles were licensed and street legal.

Alternative 5 would provide very limited 4x4 routes and opportunities desired by some motorized enthusiasts. A few of the more challenging system roads would be appropriate for four-wheel drive vehicles but offer no high clearance opportunities.

Implementation of this alternative would reduce system roads by approximately 135 miles. This alternative would increase, by 142 miles, the total number of system roads closed to motorized use yearlong. That reduction could affect many visitors who seek motorized access to specific dispersed recreation sites.

The 57 miles of OHV trails would be constructed and maintained for motorized vehicles 50 inches wide or less. This is 32 fewer miles than currently available for that use. Approximately 3 miles of new trail would be constructed for motorized travel. This alternative would not authorize any trails specifically for motorcycles. Individuals seeking single-track motorized trails would not be provided any opportunities in the north Big Belt Mountains.

Because motorized use would be confined to fewer travel routes, use occurring on those routes could increase and the resulting recreation experience may be diminished.

The North Big Belt Mountains is one area on the Helena National Forest where motorized use became firmly established and popular in the past. If sufficient designated routes were not provided in this area, future motorized opportunities on the Helena National Forest would be limited.

Snowmobile trails would remain as currently designated. In addition, some high elevation areas (63,519 acres) would provide opportunities for off-route snowmobile use. Under this alternative snowmobile use would be restricted to the period from December 2nd to May 15th. If snowmobile access were necessary prior to December 2nd, that activity would have to be authorized by the District Ranger. The existing winter range areas for wildlife would be expanded to 165,782 acres and closed to snowmobile travel off designated routes. This would be a reduction in open snowmobile areas of approximately 50,630 acres.

Off-route Travel

Motorized access would be allowed within 300 feet of open system roads if that use did not result in resource impacts. This off-route exception would provide motorized access primarily for dispersed camping but also for other uses. It would provide access for a variety of dispersed recreation opportunities and ensure safe off-route parking. Many forest visitors desire motorized access off roads and have grown accustomed to that practice on Helena National Forest lands.

While this travel policy would enhance existing dispersed recreation opportunities in the north Big Belts, it does have the potential to result in resource damage in some locations. This travel management direction would place a greater responsibility upon the Ranger Districts to monitor use and manage travel within 300 feet of open roads. The interpretation of what constitutes resource damage could certainly be confusing for forest visitors. As a result, the 300 foot travel allowance may be difficult to administer.

This off-route travel exception would not comply with the existing three-state OHV decision and resulting special orders. The existing regulation allows off route travel only to access dispersed campsites. Unlike Alternative 5, the existing 300 foot exception is also applicable to motorized trails. Implementation

of this travel restriction on the Helena National Forest may cause confusion with visitors who also recreate on other National Forests in Montana.

Game Retrieval & Disabled Hunter Access

Opportunities for game retrieval and special access to hunters with disabilities are often related directly to motorized access. This alternative would not currently designate any specific retrieval routes in the north Big Belts.

Under Alternative 5, specific roads could be identified in the future for game retrieval and/or access for disabled hunters. Those routes could change, as necessary, to provide management flexibility. This would not allow individuals seeking those opportunities any chance to plan their hunting trips in advance. However, the lack of identified retrieval routes and/or access routes for hunters with disabilities does simplify the Helena Forest Visitor Maps.

Non-motorized Opportunities

Of the 188 miles of trail identified under this alternative, 131 miles or 70% would be managed for non-motorized use. This is an increase of 42 miles over the existing condition identified in Alternative 1. This alternative proposes construction of about 10 miles of new non-motorized trail. Approximately 52 miles of the non-motorized trails are located within the Gates of the Mountains Wilderness. It should be noted that mountain bikes are not allowed within the Gates of the Mountains Wilderness.

Although motorized trails are open to non-motorized travel, past experience indicates they are not frequently used for hiking or horseback riding. However, the 57 miles of motorized trails could become popular for mountain biking.

Due to the reduction in motorized routes, this alternative could enhance opportunities for a variety of dispersed recreation activities including: walk-in hunting, mountain biking, and horseback riding.

Displacement

To a large extent, the more challenging OHV opportunities that currently exist would be eliminated. Depending upon other Helena Forest travel decisions, an unknown number of OHV users could, in effect, be displaced off the Forest. The displaced motorized enthusiasts would be forced to travel longer distances to participate in their recreational pursuits.

Although only 57 miles of motorized trail would be identified under Alternative 5, some non-motorized users may be displaced. Individuals seeking “quiet” non-motorized areas could find other suitable areas on the Helena Forest for their activities.

Operational Costs

Approximately 50% of the existing “system” trails (73 miles) would be reconstructed to meet Forest Service standards. An additional 37 miles of system roads or unclassified routes would be converted to trail and also require reconstruction. At a reconstruction cost of \$12,000 per mile the total expense for

existing trail improvements are estimated to be approximately \$1,320,000. An additional 13 miles of new trail would be constructed at a cost of approximately \$234,000. Total estimated costs for construction/reconstruction would be about \$1,554,000.

Under alternative 5, there would be a total of 188 miles of trail to maintain annually. The cost of maintaining 131 miles of non-motorized trail would be \$14,410. The additional cost of maintaining 57 miles of motorized trail would be \$4,275. Total annual cost for trail maintenance would be \$18,685.

Existing trailhead facilities within the north Big Belts do not meet visitor or resource needs. Under the Proposed Action, trailheads would be developed or improved at 14 locations. Trailhead facilities, primarily consisting of a graveled parking lot and signs, would greatly enhance user convenience and mitigate resource impacts. Total estimated recreation costs for trailhead development in the north Big Belts would be approximately \$64,000. With the exception of the Never Sweat Gulch Trailhead, annual maintenance costs for each trailhead would be minimal.

Implementation of this alternative would result in greater administrative costs to monitor spring road conditions. If Forest employees did not close roads before they were damaged, additional road maintenance costs would also be incurred.

Travel Plan Complexity

Alternative 5 would identify three restriction dates for motorized travel in the north Big Belts. The travel map would be simplified because there would be no dual use routes and only one classification for trail vehicles. It's reasonable to assume that simplified travel restrictions would result in fewer violations and greatly enhance law enforcement efforts. While simplified travel maps are easier to understand and enforce, they do limit recreation opportunities.

Special Features

North of Trout Creek

The power line utility corridor would be classified as a system trail and maintained for motorized vehicles up to 50 inches wide. The route would continue to provide a popular motorized connection between Cottonwood Gulch and Hogback Mountain. Motorized use of the trail would be restricted seasonally from December 2nd to May 15th. The power line would no longer be available for full sized 4x4 vehicles. The loss of this high clearance opportunity would not be popular with individuals who have enjoyed that activity in the past.

Roads with seasonal restrictions would be designated in the Cottonwood and Sweats Gulch area. Those routes would continue to provide access for a variety of recreation opportunities, especially hunting and dispersed camping. However, as system roads they would not be open to unlicensed vehicles such as ATV's and motorcycles.

A new trail would be constructed linking the above listed roads to the Bull Run Gulch road network. The existing Browns Gulch Road would be converted to a motorized trail and provide access from the York Road to Bull Run Gulch and the

Sweats/Cottonwood area. If a trailhead is developed at Browns Gulch there would be increased traffic on the Trout Creek Road east of York. It's reasonable to assume there would be ATV and motorcycle traffic on the Trout Creek Road between the trailhead and the community of York and between the trailhead and Vigilante Campground.

The main road in the Hidden Valley area would be open to licensed vehicles except during the big game hunting season (October 15th through December 1st). Due to the high elevation of the area, that road would not receive much use until mid to late June. It would provide some opportunities for gathering firewood and viewing wildlife/scenery. Spur roads off the main Hidden Valley Road would remain closed to all motorized vehicles yearlong. Without some type of physical closure, it may be difficult to enforce travel restrictions on those spur routes.

Two new non-motorized trails would be constructed and designated. One trail would connect the Beaver Creek Fishing Access Site to the Missouri River Canyon Trailhead. The proposed Cochran Gulch route would be difficult to maintain because it would be located in open grasslands. Because use of this trail is expected to be very limited, the trail tread would fade quickly. It should be noted, the trail would mostly parallel the existing American Bar Road.

The other non-motorized route would be the Beartrap Gulch Trail. It would proceed northwest and connect to Forest Road 298-A1. The trail may be popular with some hikers and it could offer a nice loop opportunity for mountain biking. However, most use of this trail would probably occur during the big game hunting season.

Trout Creek to Avalanche Creek

A trail would be designated between Grouse Ridge and the Magpie Road. Legal right-of-way access must be obtained prior to any route designation across private lands. The new trail (approximately 2.5 miles long) would connect two Forest Roads. Unless the trail vehicles are licensed and street legal, the trail would only provide very limited motorized opportunities. In all likelihood, the use of this route would encourage unlicensed vehicles on the Grouse Ridge and Magpie Roads.

The Rattlesnake Gulch Road would remain open yearlong to all motorized vehicles. Legal right-of-way access would be required across private land. That access is extremely important because the Rattlesnake Road connects to other roads and trails in the area. Forest Roads #4136-A3 and 4136-A4 would be maintained as four-wheel drive routes providing seasonal access. The Kingsberry and Holiday Gulch Roads would be very popular during the summer and fall providing access to a variety of dispersed recreation opportunities. (The alternative map incorrectly designated the Horse Ridge route as Holiday.)

Motorized use would be allowed seasonally on the road from the saddle at Rattlesnake Gulch to the top of Hedges Mountain. It would be a popular route for 4x4 enthusiasts who have enjoyed that opportunity in the past. Because this would be a system Forest Road, it would only be authorized to licensed vehicles. As a result, the road would not be open to unlicensed ATV's and motorcycles.

This would probably create some enforcement problems. It should also be noted the road would not be open to motorized travel during the big game hunting season. Those hunters who currently use the route to provide motorized access to Hedges Mountain would be displaced.

The Cave Ridge and Never Sweat Trails would be identified and maintained for motorized use. While the Never Sweat Trail would remain open yearlong, the Cave Ridge Trail would be open for motorized use from May 16th to December 1st. Both the Cave Gulch Trail and Never Sweat Trail were both designated as motorized trails about ten years ago and became very popular. The Cave Ridge Trail would replace the former Cave Gulch Trail that was destroyed as a result of fire and subsequent flooding.

A new non-motorized trail would be constructed providing access between the Hanging Valley National Recreation Trail and upper Magpie Gulch.

Both the Never Sweat and Cave Ridge Trails would connect to another motorized trail that proceeds from Cave Gulch to Hellgate Gulch along the Forest boundary. Much of that route currently exists. This new route would provide motorized trail access to Hellgate Gulch.

The upper portion of the Hellgate Trail #264 from Carpenter Gulch up would be a non-motorized trail, providing a non-motorized recreational experience for this area as well as potentially improved hunter success. User created ATV trails up Doolittle, Gabish, and Fisher Gulches would be eliminated. The user created ATV trail up Carpenter Gulch would become a system, motorized trail. A new trail would be constructed at the Forest boundary between Magpie Creek and Cave Gulch as well as the new trail referred to as the Magpie Connection trail, a short trail in the upper Magpie drainage. Short section of new trail would be constructed at the end of an existing road in the upper Hellgate Gulch area connecting the road with a user created ATV trail. Interconnecting ATV trail loop opportunities would be provided, but not as many as with Alternatives 1, 2 and 3.

South of Avalanche Creek

Effects for this area are similar to Alternative 1, except that a new non-motorized trail is proposed in Johnnies Gulch, providing a trail connection between Whites Gulch and Greenhorn Gulch. Also, the trailhead for trail # 142 located on road #4171 A-1 would be moved 1 ½ miles south to the ridge. These changes would provide better public access and use of this area.

East of Divide & Dry Range

Effects for this area are similar to Alternative 1, except that the Bridge Gulch, Thomas Creek roads and the side roads off of the Atlanta Creek/Mule Creek road would be closed yearlong, resulting in a more enhanced non-motorized recreation experience.

A new road is proposed in the Wagner Gulch area around a section of private land connecting with the existing low standard Avalanche Butte/ridge road, providing unobstructed motorized public use between the ridge road and the

Wagner Gulch road. This is necessary as the current landowner is not willing to provide a public right-of-way across their land in this area.

Conclusions

All of the proposed travel plan alternatives, including Alternative 1 (No Action) are generally consistent with forest-wide recreation standards in the 1986 Helena NF Forest Plan. But the standards themselves are not very encompassing and are out-dated. There is no standard for the allocation of non-motorized and motorized recreation opportunities. Standard #1 emphasizes dispersed recreation and discourages construction of new developed recreation facilities. With the exception of the new (but low-key) trailheads proposed in Alternative 5, none of the alternatives includes new campgrounds or other recreational developments.

Trail standards stem largely from the Forest Service Trails Handbook, FSH 2309.18, and primarily address trail maintenance priorities—correcting unsafe conditions, resource damage, etc. New trails are to be compatible with the recreation setting and management area goals. These standards are implicit in the action alternatives: all system trails will be built to standard and trail maintenance will be done on a priority basis. All of the action alternatives could substantially change the recreational transportation picture in the north Big Belts and thus require serious reconfiguration of the trail (and access road) network. So it is likely that some trails will not, at least in the short term, meet Forest Plan standards for upkeep and maintenance.

The north Big Belt Mountains are scenically impressive and provide many local recreation opportunities. The mountain range is easily accessed from Helena and Townsend. The Big Belts lie directly adjacent to one of the most popular recreation spots in Montana along the Missouri River, which is now mostly contained in Canyon Ferry Reservoir and upper Holter Lake. The Missouri River corridor is the scene of considerable recreational activity by Montana standards. The area is also experiencing subdivision and demographic growth.

The north Big Belts Mountains are not a recreational Mecca despite all of the activity around Canyon Ferry and the Missouri River corridor. The terrain is steep and dry, and past mining has disfigured many of its drainage bottoms. In contrast to the south Big Belts, this part of the mountain range contains few quality recreation destination features such as fishable rivers, lakes or sub-alpine hiking terrain. As a result, other than trails and a small number of trailheads, the Forest Service has built relatively few recreational facilities in the travel plan area. Recreational use is seasonal and peaks during the fall big game hunting season.

Recreation in the north Big Belts is activity-specific and travel-oriented. That is, lacking large campgrounds and terrain where a multitude of recreational activities can take place, this area of the Big Belts provides dispersed recreation opportunities for people who auto tour, hunt, picnic, horse ride, target practice, recreational prospect, and photograph wildlife. These activities are most often centered around driving and day-use, although car camping occurs and Vigilante Campground in Trout Creek is usually full on summer weekends.

Over the years, the north Big Belt Mountains have become an accepted place for OHV driving. In part, an extensive network of roads built by miners, homesteaders, ranchers, and FS personnel during the past 140 years has accommodated this OHV use. But some trails have been built expressly for recreational riding and hiking. OHV drivers include people who access and use dispersed recreation areas off roads and trails in passenger cars, vans, RVs, camper trucks, as well as 4x4 pickup, ATVs and motorcycle sport riders. Combined, these forest users currently use a maze of roads and trails across the north Big Belts.

The 2001 State OHV policy changed the north Big Belts travel situation by banning cross-country driving and implementing a designated route system. But a site-specific travel plan is needed for the north Big Belts to better address local resource problems and to bring unclassified roads under some type of management. The recreational effect of travel planning in the analysis area is described extensively in this document. The main features of each travel plan and their potential effects on forest visitors are summarized here.

Alternative 1

The new (2001) State OHV policy confines users to designated routes that are signed with Forest road markers. The HNF visitor map shows these designated routes (roads and trails) and an array of seasonal and vehicle type closures. On forest system roads users would be street legal in a licensed rig with a valid driver's license. Users may also ride system trails on an ATV or motorcycle, provided it is 50 inches or less in width, but neither the users nor the sport-riding vehicle would need to be licensed. Users could expect to see mountain bikers, horse riders and hikers on these same trails, so safety could be a concern. Some 129 miles of road would be available for use in local Roadless Areas in the north Big Belts.

About 30 miles of unclassified or non-system routes would also be available for driving unless they are specifically closed and signed. The State OHV policy shows what type of vehicle is appropriate (and legal) to the size of the existing tread—a single track for a motorcycles, a two-track less than 50 inches in width for ATVs, and larger tread for pickups and SUV's. However, these distinctions could still be confusing on the ground despite what is shown on OHV posters and brochures in local Forest Service and BLM offices. Because **dual use** (where licensed and unlicensed vehicles and operators share the same route) would be allowed on these routes, there would be potential safety concerns (collisions) with the mix of ATV, motorcycle, pickup, horse, mountain biker and hiker traffic.

Users could travel up to 300' off the designated route for dispersed camping, but not for picnicking, fishing, firewood cutting, game retrieval, or other activities. This would be a departure from FS policy prior to 2001 State OHV plan and might limit access to favorite recreation spots in the north Big Belts. Enforcing this off-route policy could also keep the Forest Service busy because many people who have driven off-route for years for purposes other than just camping find the logic of this rule hard to understand. Still, obvious stream bank erosion, user-created OHV routes, weeds and trash at some of these dispersed sites are clear indications why this policy was imposed.

The Alternative 1 travel plan would not be too different from the way the Forest Service has always managed the north Big Belts, with the important exception of the designated route system implemented by the State OHV plan. The Forest Service plans to build more trails and better trailheads to accommodate more motorized and non-motorized use but this is not tied to any travel plan that you know of other than the 1986 Forest Plan. The “bigger picture” and its effects on different types of recreationists over the long term are unclear.

Alternative 2

Alternative 2 presents different travel and recreation scenario than the existing condition. A site-specific travel plan would direct FS management rather than the 2001 State OHV and 1986 Forest Plan. Travel-wise, things would be more black and white. First, the forest visitor map would show 4 seasonal road closures and several game retrieval dates. Second, motorized travel would be allowed on only system routes or roads and trails. Street-legal vehicles would be allowed on 120 miles of system roads. Another 122 miles of system trail would be available for use by vehicles (ATVs and motorbikes) less than 50 inches in width.

The biggest change would be that all unclassified routes would either be brought into the designated route system as **dual use** roads (for 4x4 vehicles, ATVs and motorcycles) or they would be closed. About 100 miles of unclassified route would be obliterated but another 209 miles would be available as dual use routes, contingent on a route safety analysis and approval by the Helena NF Forest Supervisor. Users would encounter licensed and unlicensed ATVs and motorcycle operators on the dual use routes, and could meet an occasional group of mountain bikers or horse-riders. This mixed use would present some safety hazards.

More OHV use would occur in the north Big Belts than in past years. Of importance, the combined trails and dual use routes would provide about 229 miles over what was available under the 1986 Forest travel plan. Much of this road system would be suitable for high-clearance, four-wheel drive rigs. About 13 miles would be specifically designated for motorcycle riding—11 more than before. A 400-acre area in Horse Gulch would be designated as an ATV and motorcycle sports-riding area, which would be the only exception to the designated route riding policy. The snowmobile travel system would remain unchanged. Some 134 miles of road would be available for driving in local Roadless Areas in the North Big Belts.

The off-road travel policy would be a little different than the OHV plan (existing condition) because users could drive 300’ off-route not only to find a dispersed camp, but also to retrieve game and cut firewood. Still, users would not be allowed to pull off-route to picnic, day-hike, park for hunting, stage mountain bike rides, watch wildlife, or other activities. This could be a problem for some family members with limited mobility or who are accustomed to picnicking, scouting wildlife or doing other activities in those areas. There would still be enforcement problems with the off-route rule.

People who enjoy non-motorized recreation would also benefit under this new travel plan because it would provide for the construction of 5 new miles of non-

motorized trail. Users could hike, mountain bike, or horse ride on another 97 miles of existing trail (from a total of 219), although 52 miles lie within the Gates of the Mountains Wilderness, which is closed to mountain bikes. Still, the numerous OHV opportunities in this travel could diminish an outdoor experience if one prefers quiet trails and recreation. Users may eventually abandon the north Big Belts in favor of areas with more OHV travel restrictions.

Alternative 3

Alternative 3 would be only slightly different than Alternative 2, especially for non-motorized recreationists. However, the plan is very different from the existing management situation. Five seasonal route or area restrictions and 4 game retrieval dates would make the forest visitor map and road signs somewhat easier to follow. All unclassified roads would be converted to travel use or would be closed. All motorized travel would be confined to designated roads and trails.

This travel plan would be geared toward accommodating 4x4 vehicles as well as smaller ATVs and motorcycles. A key difference between the Alternatives 2 and 3 are that in the latter, **more dual-use routes** would be open to both licensed and unlicensed vehicles—about 281 miles. These dual use routes would be analyzed for safety and approved by the Forest Supervisor. Users could drive on most of the dual use routes with a high clearance, four-wheel drive pickup. About 80 miles of system trail would be dedicated to ATV travel, and another 3.6 miles to motorcycle riding. Users could also encounter hikers, mountain bikers, and horse riders on this road and trail network. About 132 miles of road would be retained in local Roadless Areas in the north Big Belts.

Users could travel 300' off-route to camp, gather firewood and retrieve big game. However, picnicking, wildlife viewing or other recreational activities would not be allowed off-route, due to concerns over environmental degradation. This would be more inclusive than the State OHV policy but may hinder a user's ability to participate in dispersed recreation activities. In addition, FS law enforcement officers may question you if you are parked off-route without obvious camping, hunting or firewood gathering equipment.

People who use their OHV for sport riding and hunting would be drawn to the area in increasing numbers; especially those that live in areas where local travel plans are more restrictive of OHV use—that is, ATVs, motorcycles and 4x4 rigs for sport riding and hunting. The area would probably get regional recognition among sport riders for this reason. This increase in popularity and use would create more law enforcement problems and ATV-motorcycle accidents.

No new quiet or non-motorized trails would be built under this travel plan. However, users could hike, mountain bike or ride horses on 90 miles of existing non-motorized trail. Over half of these are in the Gates of the Mountain Wilderness--where mountain biking is not allowed. Users that prefer quiet trails and recreation may feel compelled to move their activities to other areas with less OHV activity.

Alternative 4

This alternative would be very different from how the north Big Belts are currently being managed under the State OHV plan. Four seasonal route or area restriction dates would simplify the travel plan and the forest visitor map. All motorized travel would be confined to designated routes. Unclassified roads and trails would either be converted to quiet (non-motorized) trail or they would be closed and/or obliterated. This would reduce the number of motorized routes in Roadless Areas to 13 miles.

This alternative is clearly oriented to **non-motorized use**—hiking, mountain biking, horse riding, and other quiet recreation. Users could travel on about 136 miles of designated road in the north Big Belts. However, OHVs would not be allowed on any system trails, which is a major departure from current management. Dual use would also not be allowed, making the safety issue moot. 202 miles of non-motorized system trail would be available for hiking, mountain biking, and horse riding. This total would include 22 miles of newly constructed and 34 miles of unclassified routes that would be converted to quiet trail. The net result would be a more extensive quiet trail system in north Big Belts than what exists today.

The reduced number of system roads could limit access to favorite dispersed recreation areas. Motorized travel would not be allowed off-route for any recreation activity. Combined, this could be a major impact to recreationists who have traditionally car-camped, picnicked, fished, hunted or staged hikes, mountain bike, or OHV rides in dispersed recreation sites near primitive roads and streams. There would be a drop in public visitation to the Big Belts because people who prefer or require motorized recreation would move on to other areas.

The north Big Belt's lack of destination features (rivers, lakes, developed campsites) and rugged, dry terrain would not cause a large increase in non-motorized recreation use of the area despite the OHV closures. Recreational experiences (solitude, isolation) would be enhanced if users have the means and ability to participate in walk-in hunts, picnicking, sightseeing and other recreational activities. For some, big game hunting would be enhanced (because of more game cover and security) but for others it would be diminished by lack of OHV access.

Because this plan is a substantial departure from past historical use, there would continue to be OHV violations and law enforcement problems. Public acceptance among some forest recreationists could take a while.

Alternative 5

Alternative 5 falls somewhere between the motorized (Alternatives 1-3) and non-motorized (Alternative 4) alternatives. It would depart from current management with a reduced number of seasonal closures (4) and a more finely tuned system of designated routes and trails (a site-specific travel plan). The seasonal road restriction system would be flexible and would not name specific roads that could be closed during spring break-up. Users would need to contact Forest Service offices to determine where they can go in certain areas, which could be a problem at times.

This alternative also deals with unclassified roads—they would be either incorporated into the transportation system or closed and/or obliterated. Some 135 miles of previously unclassified and system road would be eliminated from the transportation system. The amount of road miles in local Roadless Areas would be reduced to 63, which would be more in-sync with Roadless Area management objectives.

Motorized and non-motorized recreation would be segregated by drainages. Users could drive on about 243 miles of system road as long as they are street legal (licensed vehicle, licensed operator). However, **dual use would not be allowed on any system road**. Users could ride ATVs or motorcycles on 57 miles of trail, including 3 miles of newly built trail. There would be no trails specifically dedicated to motorcycles and there would be few challenging 4x4 rides to take. This would be about 32 fewer motorized trail miles than provided in the existing travel plan, and contrasts with the high level of OHV road and trail miles proposed in Alternatives 2 and 3. Users may encounter hikers, mountain bikers, and horse riders on this trail network. Therefore, safety would be an issue.

Of the 188 system trails in the north Big Belts, users could enjoy quiet recreation on 131 miles, or about 70% of them. This would be a big increase of 42 miles of non-motorized trail over current management and another 10 miles of new trail would be built. Both motorized and non-motorized users would be able to access this trails network via 14 new or reconstructed trailheads. Because many of these trails see limited use except during hunting season, their associated trailheads would not much more than a graveled parking area, kiosk and signing, and perhaps sanitation facilities. It would be more recreation infrastructure than presently exists and it should enhance visitor comfort and recreation experiences.

This alternative allows users to travel off-route within 300' of a designated road--but not trail--for **any** recreational activity. This is in contrast to the State OHV policy and the other alternatives. It would allow users to participate in a variety of traditional dispersed recreation activities along streams and designated roads without fear of law enforcement encounters and citations. Users would be well apprised by FS signing and brochures that these areas would be closely monitored and closed where resource and management problems are occurring.

This alternative leans more towards non-motorized recreation than motorized when compared to Alternatives 1, 2 or 3. The number of OHV trail miles would be substantially reduced and dual use would not be allowed. Some OHV enthusiasts, particularly sport-riders, would be displaced to other areas where OHV use would be better accommodated and less restrictive. However, the dedicated OHV trail system and new trailheads would continue to support some local use. There would still be a lot of system road available for travel, touring, and fall hunting.

The more extensive non-motorized trail system would draw more quiet trail enthusiasts to the area, but not in any great number because the north Big Belt's rugged, dry terrain and lack destination features. This low-use (and quiet, isolation) would be an added benefit for some trail users but low-use trails would

probably not be as well maintained as others that see greater use. The presence of OHV traffic in the general area may still discourage people from using the available quiet trails.

Transportation, Affected Environment

Introduction

The Big Belt Mountains are accessed by an extensive road and trail system. The road system now consists of a mixture of old and newer roads, with many of the older roads in disrepair.

Almost all of the roads are single-lane, native surface roads. Within the analysis area there are roads owned by the counties, private landowners and the Forest Service. The maintenance level of the roads (the amount of attention the road receives annually) varies widely. Road maintenance is performed annually on the main county and National Forest System Roads (NFSRs) and sporadically on all of the other roads. Many of the roads are in poor locations (narrow canyon bottoms), which increases maintenance needs and means that the roads are prone to wash out during the fairly common flood events that occur in the Big Belt Mountains. In the last twenty years most of the major roads have been extensively damaged by flood events. These floods cause much sedimentation to the area creeks and increase maintenance costs. By contrast, most of the minor roads in the area require little maintenance and seldom are damaged during flood events.

Analysis Area

The area has a mixture of travel management, with large portions of the area closed to motorized vehicle use, while other areas have all of the existing roads and trails open to motorized vehicles. With the adoption of the Multi-State OHV decision in 2001, wheeled motorized vehicles are restricted to existing roads and trails in the whole analysis area. Snowmobile use is generally restricted to the higher elevations, but some low elevation areas are open to snowmobile use. These areas are discussed in more detail below.

North of Beaver Creek/Gates of the Mountains

Area Wide Travel Restrictions

This area is closed year-long to motorized use except for the Willow Creek Road, the roads to the Big Log, Spring Gulch, and Hunters Gulch Trail Heads, the American Bar road, and the road north of American Bar, all of which are open to licensed vehicles year-long. The area is closed to snowmobile use yearlong.

There are numerous trails in the Gates of the Mountains Wilderness; all of these trails are closed to all mechanized vehicles.

Trail and Road Conditions

The Willow Creek and American Bar Roads are in poor condition. Both of these roads are rough, have poor drainage, and need improvements to bring them up to their objective maintenance levels. The roads to the Big Log, Spring Gulch and Hunter's Gulch Trailheads are in good condition and only need minor work to bring them up to their objective maintenance level.

Most of the trails in the Gates of the Mountains Wilderness area are in poor condition. There is a considerable deferred maintenance backlog on these trails.

Beaver Creek to Trout Creek (west of the Nelson-York Road)

Area Wide Travel Restrictions

The roads and trails in this area are closed to motorized vehicles from December 1 to May 15 to enhance big game winter range, except for a small area at the heads of Lion and Barnes Gulches; roads and trails in this area are open to motorized vehicles yearlong. A one-half mile strip north of the Trout Creek road is closed to motorized vehicles yearlong to eliminate the creation of motorcycle trails that cause excessive soil movement. This area is closed to snowmobile use yearlong.

Specific Route Restrictions

Main Beaver Creek Road, Nelson-York Road, Owl Creek Road, and the Eldorado Bar Gulch Road are open to highway vehicles yearlong. These roads provide access to private and National Forest lands. Recorded easements are needed on the Eldorado Bar road where it crosses private land.

Road and Trail Conditions

All of the roads in this area are in poor condition except for the Beaver Creek Road below the junction with the road to American Bar. This section of the Beaver Creek Road was rebuilt in the late 1980's and has a gravel surface with adequate drainage and good sight distance. All of the other roads have native material surfacing that ruts easily when wet. The roads also have lost their original drainage structures, allowing water to run down the roads causing damage to the road surface and delivering sediment into adjacent streams. Most of the roads have poor sight distance, making them unsafe. The roads need to be reconstructed to provide adequate drainage and sight distance and in most cases need gravel surfacing to reduce sedimentation and facilitate maintenance.

There are no National Forest System Trails (NFST's) in this area and few non-system trails.

Beaver to Trout Creek (east of the Nelson-York Road & below Hogback Mountain)

Travel Restrictions

The roads and trails in the portion of this area between Beaver Creek and Bull Run Gulch and below Slaughter Pen Gulch are closed to motorized vehicles from December 1 to May 15 to enhance big game winter range. This same area is also closed to snowmobile use from December 1 to May 15. Between Bull Run Gulch and a half-mile north of Trout Creek the roads and trails are open to motorized vehicles yearlong and this area is open to snowmobile use. A one-half mile strip north of the Trout Creek road is closed to all motorized vehicles yearlong to eliminate the creation of motorcycle trails that cause excessive soil movement. Snowmobile use is

Specific Route Restrictions

Kelly Gulch Road - This road, from Trout Creek to the ridge, is open to all motorized vehicles yearlong. The road provides access to private homes.

Road and Trail Conditions

The roads in this area are in fair condition. All of the roads are single-lane, with a native material surface. Some of the roads have recently been rebuilt for the Bull-Sweats Timber Sale. The roads need drainage improvements, but due to the low traffic volumes and fairly gentle terrain the horizontal and vertical alignments are adequate.

There are no NFST's in the area, but there are several non-system trails. The non-system trails include several hill climbs that cause severe erosion and are unsafe for inexperienced riders.

Hogback - Grouse Ridge Area

Travel Restrictions

This roads and trails in this area are open to motorized vehicles yearlong, except as noted below. The entire area is open to snowmobile use.

Specific Route Restrictions

Lower Beaver Creek Road - This road is open to highway vehicles year-long up to the gate near Burnt Gulch. From the gate to Trout Creek the road is open to highway vehicles, except for a closure from 4/15 to 6/1. This spring closure protects the road surface during wet conditions.

The Hidden Valley Road system (Road No. 4119 and spurs) is closed yearlong to wheeled motorized vehicles, and open to snowmobiles from December 1 to May15.

Two roads in the Middleman Mountain area are closed to all motorized vehicles yearlong.

Road and Trail Conditions

The Beaver Creek Road and the roads in the Hidden Valley area are in fair to good condition. These roads were built in the 1980's and have adequate drainage and alignment. There is deferred maintenance work to be done on these roads, but little of the work is critical for resource protection or safety. The five bridges on the Beaver Creek road are all functionally obsolete and should be replaced. One of the bridges is scheduled for replacement in the summer of 2003. The other roads in the area are in poor condition. All of these roads have poor drainage and alignment. Some of them, such as the Jim Ball Basin and the Power Line Road have serious safety concerns due to steep grades and poor alignment.

There are no NFST's in the area and few user created trails.

Upper Trout Creek

Travel Restrictions

There is a one-half mile strip north of the Trout Creek Road that is closed to all motorized vehicles yearlong, as is the area southeast of Trout Creek between Swamp Gulch and Hanging Valley. The rest of the roads and trails in the area are open to motorized vehicles yearlong. Snowmobile use is allowed in the area except for the areas described above.

Specific Route Restrictions

Trout Creek Road – This road is open to highway vehicles up to Vigilante Campground yearlong. This road provides access to private land, a trailhead and campground. The old road from the Vigilante Campground through the Trout Creek Canyon has been replaced with a trail only open to non-motorized use. The first one-half mile of this trail is accessible to persons with disabilities. The trail from the Vigilante Campground to Hanging Valley is also closed to all motorized vehicles.

Road and Trail Conditions

The roads in the area are in good condition, with few resource or safety problems. The road in the Vigilante Campground will be graveled in the summer of 2003.

Both the Trout Creek Canyon and the Hanging Valley Trails have been reconstructed in recent years and both trails are in good condition.

Oregon-Cave Area

Travel Restrictions

A one-quarter mile strip on either side of the Jimtown road is closed to all motorized vehicles yearlong to prevent creation of new motorized trails. The roads and trails in the area west of this strip are open to motorized vehicles yearlong, but the Johnny's Gulch Road is the only designated route through the

closure strip. The roads and trails in the area east of this strip are closed to all motorized vehicles from December 1 to May 15 to enhance big game winter range, but the only designated routes through the closure strip are the York and Kingsberry Gulch Roads. The roads and trails above Big Rattlesnake Gulch and the Never Sweat Gulch Trail are open to motorized vehicles yearlong. Snowmobile use in the area follows this same pattern, with snowmobile use allowed west of the Jimtown Road except for the one-quarter mile strip west of the Jimtown Road. East of the Jimtown Road no snowmobiling is allowed below the area bounded by the Big Rattlesnake Gulch Road and the Never Sweat Gulch Trail.

Since the Cave Gulch Fire of 2000, many of the roads and trails in the area east of the Jimtown Road have been closed to motorized vehicles by an emergency closure order. This closure order only allows motorized vehicles on the York and Kingsberry Gulch Roads. The Kingsberry Gulch Road is closed to motorized vehicle use from December 1 to May 15. This emergency closure has been in place since October 2000 and is set to expire in October of 2003.

Specific Route Restrictions

Jimtown Road - This road is open to highway vehicles year-long. This road accesses private land and connects York with the Canyon Ferry area.

Lower York Gulch Road and Johnny's Gulch Road - These roads are open to all motorized vehicles year-long. These roads access private land.

Road and Trail Conditions

The Jimtown Road is in good condition, but all of the other roads in the area are in poor or very poor condition. The roads have poor drainage, which leads to surface erosion and rutting. The roads have steep grades and blind curves, which make them unsafe. The Cave Gulch Road was washed out by a series of floods in 2001 and 2002. The road is now unusable and must either be rebuilt or relocated. The other roads in the area were not substantially damaged during the Cave Gulch Fire or the subsequent floods.

The only NFST in the area is the Cave Gulch Trail. This trail was washed out in the floods of 2001 and 2002, with large portions of the trail completely destroyed. There are many non-system trails in the area and most of them were not damaged during the fire and flooding. These trails were not built to any recognized standard and therefore contain steep pitches and inadequate tread width in many places.

Magpie Creek

Travel Restrictions

The existing roads and trails in this area are open to motorized vehicles yearlong, except for the restrictions noted below. The area is open to snowmobile use, and the Magpie Road is groomed for snowmobile use on an intermittent basis.

The Cave Gulch Fire Emergency Closure, discussed above, is in effect for this

whole area. The only routes open to motorized vehicles are the Magpie Road and the road to the Bar Gulch Cabin.

Specific Route Restrictions

Upper Magpie Road - This section of road is open to highway vehicles, with a spring closure from 4/15 to 6/1, from the gate in section 9 to the top of the Big Belts Divide.

Two roads in the head of Cooney Gulch are closed yearlong to motorized vehicles.

Road and Trail Conditions

The Magpie Road is an aggregate surfaced road from its junction with state highway 284 to the gate in section 4, T. 11 N., R. 1 E. This section of the road is in good condition with fair drainage and good alignment. Since the Cave Gulch Fire of 2000 small debris flows have periodically blocked the road and plugged some of the culverts. The upper section of the road (past the gate) has a native material surface and is in fair condition. This section has poor drainage and good alignment. Plans have been made to make drainage and surface improvements to the entire road, but the funding for this work was withdrawn for fire suppression and it seems doubtful that the funding will be restored.

All of the other roads in the area are native material surfaced roads with poor alignment and poor drainage. Most of these roads have suffered damage due to debris flows following the fire and are in need of deferred maintenance work. Some of the roads will receive some maintenance work under the Cave Gulch Salvage Timber Sale, but this work will not solve all of the problems.

There are two NFST's in the area, the Never Sweat and Hunter's Gulch Trails. Both of these trails have been damaged as a result of flooding following the fire, but the damage to the Hunter's Gulch Trail has been much more severe. Maintenance work will repair the Never Sweat Trail, but the Hunter's Gulch Trail would need to be largely relocated.

The floods that followed the fire damaged all the non-system trails in the area. If these trails are to be reopened to the public, they will need to be repaired.

Hellgate Gulch

Travel Restrictions

The existing roads and trails in this area are open to motorized vehicles yearlong. The area is also open to snowmobile use.

The Cave Gulch Fire Emergency Closure, discussed above, is in effect for this whole area. The only route open to motorized vehicles is the Hellgate Road; this road is currently open only to vehicles less than 50" in width due to severe flood damage that happened in 2001.

Road and Trail Conditions

The Hellgate Road was severely damaged in floods during the summer of 2001. Large portions of the road were washed out and a substantial amount of material washed off the road into the creek. The road was minimally reconstructed in 2002, and is now open only to trail vehicles. Additional work would have to be done to the road before full-size vehicles can safely use it.

The Hellgate Gulch and the Little Hellgate Trails are the only NFST's in the area. The Hellgate Gulch Trail was damaged by the 2002 floods and needs to be constructed. The Little Hellgate Trail goes through the Cave Gulch Fire area, but suffered little damage due to the fire. There are many non-system trails in the area. Most of them were damaged in the fire or subsequent floods and require reconstruction if they are to be brought up to a recognized trail standard.

Avalanche Creek

Travel Restrictions

The existing roads and trails in the area northwest of the creek and east of the creek above Tucker Gulch are open to motorized vehicles yearlong, with the exceptions discussed below. The roads and trails southeast of the creek from the forest boundary to Tucker Gulch are closed to motorized vehicles yearlong.

The Cave Gulch Fire Emergency Closure, discussed above, is in effect for the area west of Avalanche Creek. During the emergency closure there are no routes in this area open to motorized vehicles.

Specific Route Restrictions

Avalanche Creek Road – This road would be open to highway vehicles yearlong, up to the gate in section 6. Beyond the gate the road is closed to motorized vehicles from April 15 to June 1, to protect the road surface in wet conditions.

Ridge road, No. 4161, - This road is open to motorized vehicles, except for a hunting season closure from 9/1 to 12/1.

Road and Trail Conditions

The Avalanche Creek Road is in fair condition. Many of the undersized culverts on the road were replaced in 2001, but there are still culverts on the road that restrict fish passage and are undersized. The road surface is rough and hard to maintain and there are several blind curves on the road. Surface drainage needs to be improved on the whole length of the road. The Ridge Road is discussed below under the East of the Divide section. All of the other roads in this area are in poor condition, with poor alignment and drainage.

The NFST's in the area all have deferred maintenance needs. The trails have poor drainage and this has contributed to a deterioration of the tread. There are several non-system trails in the area and all of them are in poor condition. These trails are often located in drainage bottoms and are prone to washing out in floods.

Whites Gulch to Confederate

Travel Restrictions

The roads and trails in the area west of the Greenhorn Gulch Road are closed to motorized vehicles yearlong, except for the designated routes discussed below. The existing roads and trails east of the Greenhorn Gulch Road are open yearlong, except for the routes discussed below. The snowmobile closures follow this same pattern with the area west of the Greenhorn Gulch Road closed to snowmobiling and the area east of the road open.

Specific Route Restrictions

Whites Gulch Road - This road is open to highway vehicles year-long up to the closure area beginning at Park Gulch. The trail from Park Gulch to the top of the divide is open to snowmobiles from 12/2 to 4/15. Recorded easements are needed on this road where it crosses private land near Horse and Park Gulches.

The Schabert Mine Road - This road is closed to all motorized vehicles yearlong.

Springs Gulch road, No. 1020 - This road is open to highway vehicles, except for a spring closure from 4/15 to 6/1. This closure protects the road surface during wet conditions.

The Greenhorn Gulch Road – This road is open to highway vehicles yearlong.

Road and Trail Conditions

All of the roads in the area are in poor or very poor condition. The Whites Gulch Road has substantial drainage problems and other deferred maintenance needs. The Springs Gulch Road also has poor drainage and is eroding in several locations. The alignment of these two roads is acceptable. The Greenhorn Gulch Road and the Confederate Gulch Road have both very poor drainage and alignment. These roads are very unsafe and have erosion problems. The other roads in the area have similar problems, but the safety issues are much less due to the low traffic volumes on the roads.

The only NFST in the area is the snowmobile trail in upper Whites Gulch. This trail is seldom used and is only on the map for its northern mile. There are some non-system trails in the area, but they get little use and have few resource or safety problems.

East of the Divide

Travel Restrictions

The existing roads and trails in this area are open to motorized vehicles yearlong, except for the routes in two areas. The roads and trails in a small area between Lind Creek and Greens Gulch are closed to motorized vehicles yearlong except the roads discussed below. The roads and trails in the Thomas Gulch area are closed to motorized vehicles from October 15 to June 30. The area is open to

snowmobiling except for the two areas described above; they are both closed to snowmobiling.

Specific Route Restrictions

Wagner Gulch Road - This road is open to highway vehicles use yearlong up to the south section line of section 35, R2E, T12N. From that point to the end, the road will be open to all motorized vehicles, except during hunting season, 9/1 to 12/1.

The Ridge Road – This road is closed to motorized vehicles between September 1 and December 1 from Whites Pass to Wagner Gulch. This closure was a part of the Wagner-Atlanta Timber Sale and has not gone into effect yet, but should be implemented by the fall of 2003.

Road and Trail Conditions

The Wagner Gulch and Lambing Camp Roads are both in good condition. These roads were built in the 1970's and have adequate drainage and are generally safer for the amount and type of traffic they receive. The Ridge Road is in very poor condition with many very steep sections that erode badly and are very dangerous, especially when wet or snow covered.

Confederate to Boulder Baldy

Travel Restrictions

The existing roads and trails in the Blacktail area are open to motorized vehicles yearlong, except for the routes discussed below. Snowmobiles are allowed in this area. The roads and trails in the rest of the area, except for the area around Boulder Baldy Mountain are closed to wheeled motorized vehicles from October 15 to May 15. This area is closed to snowmobiles from October 15 to December 1. The area around Boulder Baldy Mountain is closed to all motorized vehicles yearlong.

Specific Route Restrictions

Blacktail Creek Road - This road is open to all motorized vehicles, except for a closure in the spring from 4/15 to 6/1. This closure protects the road surface during wet conditions.

The Slough Creek and the Debauch Gulch Roads - These roads are closed to all motorized vehicles yearlong.

Road and Trail Conditions

The roads in this area are in fair to good condition. All of the roads are single-lane, have a native material surface and adequate horizontal and vertical alignment. The roads all need drainage improvements, but are safe for the amount and type of traffic they receive.

There are several NFST's in the area. Most of these trails have been rebuilt in recent years and so are in good condition. There are a few non-system trails in

the area and all of these are in poor condition. The non-system trails need drainage, tread and clearing work to bring them up to an appropriate standard.

Atlanta Creek Area

Travel Restrictions

The existing roads and trails in this area are closed to all wheeled motorized vehicles from October 15 to May 15. The area is closed to snowmobiles from October 15 to December 1.

Road and Trail Conditions

The main Atlanta Creek Road is in good condition. This road was built in the late 1980's and has good drainage and alignment. All of the other roads in the area are in poor condition. These roads were built by miners or created through use. The roads are located on ridges or in stream bottoms with steep grades and few drainage features. Due to the steep grades and the poor locations the roads are prone to erosion and are unsafe.

There are several NFST's in the area and these trails are all in poor condition. The trails have poor drainage and in some cases poor location. The trails all have deferred maintenance backlogs.

Dry Range

Travel Restrictions

On National Forest Land the existing roads and trails in the Dry Range area are open to motorized vehicles yearlong. To access any of the National Forest Land private land must be crossed. This private land is closed to the public, so in effect there is no public use of the roads and trails in this area. Snowmobiles are allowed in this area, but due to a lack of snow and access across the private land there is no opportunity for the public to snowmobile on this land.

Road and Trail Conditions

The roads in this area are in poor to fair condition. All of the roads are single-lane, have a native material surface and adequate horizontal and vertical alignment. The native material becomes impassable when wet, and so the roads would need to be surfaced if they were to be used during the wet times of the year. The very low traffic volumes and lack of access make improvements impractical and a low priority.

There are several no NFST's in the area.

Transportation, Environmental Consequences

Introduction

In all alternatives wheeled motorized vehicles would be prohibited from cross-country travel.

In all of the alternatives, roads and trails identified as travel routes cross private land where there is no recorded easement. To ensure these routes will remain open to both administrative and public use, easements need to be obtained from the private landowners. This would be a separate effort and is outside the scope of this analysis.

Almost all of the road maintenance effort is done on only a few of the major roads in the area. These are the main roads that provide access to the area and these roads are maintained so passenger cars can use them. These main roads remain open in all of the alternatives and so unless funding levels change there will be little or no difference in how roads in the area are maintained.

Effects Common to All Action Alternatives

In all of the action alternatives, wheeled motorized vehicles would be restricted to designated routes. This would make it clear as to whether or not a route could be used by wheeled motorized vehicles, removing public uncertainty and making enforcement easier.

Roads Analysis

The Helena NF Roads Analysis divided all of the roads in the area into nine categories (combinations of high, medium or low value and high, medium or low concern). A map showing the roads by category for the North Belts is in the roads analysis document (Draft, October 2002). All of the high value-high concern roads in the area are the major arterial roads that parallel streams in the bottoms of narrow canyons. All of these roads remain open in all of the alternatives. These roads should be the priority roads to be reconstructed in the future.

The roads analysis recommends that roads with rated low value-high concern be removed from the road system, but there are no roads with this rating in the North Belts area. The remaining routes include those that have a mixture of value and concern ratings. These are the routes that are largely being evaluated in the alternatives. It is important to note that there are currently 82 miles of road in the roads analysis inventory that are currently closed (yearlong restricted). All of the action alternatives have no less than 86 miles proposed for closure yearlong.

Alternative 1 – No Action

Transportation System

The Affected Environment section addresses the transportation system for this alternative. Only licensed vehicles operated by licensed operators would be able to use the roads in the area. This alternative has by far the greatest number of roads open for all or part of the year, but there are no dual-use routes or routes open for retrieval. The Miles of Roads and Trails by Alternative Table in Chapter 2 shows how this alternative compares to the others.

The travel management for this alternative is moderately complex. There are several different seasonal restrictions and in many areas all existing roads and

trails are open to motorized vehicles, based on the Multi-State OHV Decision of 2001. **The Open Motorized Routes by Alternative** Chart at the end of this section visually compares how many routes are available for motorized vehicles in this and the other alternatives.

Safety Concerns

The Affected Environment section discusses the safety concerns for this alternative. Ongoing improvements address the safety concerns, but with expected funding levels only a few of the most serious safety problems can be solved each year. Not allowing unlicensed vehicles or operators on roads limits accidents between trail vehicles and highway vehicles. Few of the motorized trails in this alternative were designed and constructed for motorized trail vehicles. This increases the likelihood of trail vehicle accidents, due to narrow tread width, inadequate sight distance, steep pitches and substandard signing. These accidents would result in property damage and injuries, and on rare occasions there may be a death caused by a trail vehicle accident.

Road and Trail Closures

There are now about 82 miles of road closed to motorized vehicles yearlong in the North Belts. These roads are closed by gates and/or signs and remain in the road system.

Implementation Costs

It is assumed that the current maintenance and reconstruction activities would continue as they have in the recent past. In recent years, approximately \$50,000 per year has been spent on road maintenance in the North Belts. This figure varies from year to year depending on weather and available funding. No new roads or trails would be constructed or converted and no roads or trails would be closed or decommissioned. The Cost by Alternative for Construction/Conversion Table (in Chapter 2) shows the implementation costs for all of the alternatives.

Alternative 2

Transportation System

The transportation system would change substantially in this alternative. The main arterial and collector roads would remain open to only licensed vehicles, but most of the local roads would become dual-use routes. These dual-use routes would be open to all wheeled motorized vehicles, including trail vehicles operated by unlicensed operators. Almost 50 miles of existing roads would be converted to motorized trails and 27 miles of new motorized trails would be constructed. Another feature of this alternative is that many of the roads and motorized trails that are closed during hunting season would be open for retrieval of downed big game. Please see the Miles of Roads and Trails by Alternative Table in Chapter 2, which displays how the alternatives compare to each other.

The travel management for this alternative is fairly complex, with routes having a variety of restrictions. These restrictions apply to both the season of use and to the type of vehicle that can use a route. This complexity would require many

travel management signs and a clear, easy to understand travel management map. The effort to procure and install the signs, and to produce and distribute the map, would be substantial. Even with good signing and maps there would be many travel management violations in the first few years of implementation. The large number of motorized travel routes that would be closed during hunting season, but open the rest of the year would make enforcement during hunting season especially difficult. Having routes open for retrieval would be new to the public, and would require clear signing and education to be successful. The Open Motorized Routes by Alternative Chart in this section visually shows how complicated the travel management is for this alternative.

Safety Concerns

The safety concerns on the arterial and collector roads listed in the Affected Environment Section would still apply to this alternative. These concerns would be addressed during normal maintenance and reconstruction activities. The large number of dual-use routes in this alternative raises a safety concern. If a highway vehicle collides with a trail vehicle on one of these routes there is a great chance that the trail vehicle operator would be seriously injured or killed. The dual-use routes would all be local routes, with slow design speeds, but each route must be well signed to alert drivers and operators that there is a mixture of highway and trail vehicles operating on the route. There have been a limited number of dual-use routes in the Elkhorn Mountains for the last five years and accident records do not show a large increase in serious injuries or deaths on these routes. The extensive motorized trail system could mean an increase in trail vehicle accidents. Most of these accidents could involve property damage and/or injuries, but occasional deaths may also occur.

Road and Trail Closures

This alternative would close yearlong 39 miles of roads that are now open for at least a portion of the year. This means a total of 122 miles of road would be closed to all motorized vehicles in the area. Nine miles of these closed routes would be recontoured and 54 miles would be ripped and seeded. Decommissioning these 63 miles would reduce the need for any maintenance on these roads, but the cost saving would be very small, since very little money is now spent maintaining these roads. The remaining 59 miles would be closed by gates and/or signs and would remain in the road system.

Implementation Costs

It is assumed that the current maintenance and reconstruction activities would continue as they have in the recent past. In recent years, approximately \$50,000 per year has been spent on road maintenance in the North Belts. This figure varies from year to year depending on weather and available funding. This alternative features constructing several new motorized trails and one new dual-use route. This construction is estimated to cost a little more than \$500,000. Forty-eight miles of existing roads would be converted to motorized trails at a cost of about \$240,000. Almost 70 miles of road would be decommissioned by ripping and seeding at a cost of \$207,000. Extensive signing would be needed for the dual-use routes, retrieval routes, and new routes. It is estimated the cost of this signing effort would be about \$75,000. The total cost of implementation is

estimated to be \$1,130,000. The Cost by Alternative for Construction/Conversion Table shows the implementation costs for all of the alternatives.

Alternative 3

Transportation System

The transportation system would be changed substantially in this alternative. The main arterial and collector roads would remain open to only licensed vehicles, but most of the local roads would become dual-use routes. These dual-use routes would be open to all wheeled motorized vehicles, including trail vehicles operated by unlicensed operators. Five miles of new dual-use routes and about 20 miles of new motorized trail would be constructed. About 20 miles of existing roads would be converted to motorized trails. Many of the motorized routes closed yearlong in Alternative 2 are closed seasonally in this alternative. Another feature of this alternative would be that many of the roads and motorized trails that are closed during hunting season and the winter would be open for retrieval of downed big game. The Miles of Roads and Trails by Alternative Table in Chapter 2 shows how this alternative compares to the others.

The travel management for this alternative would be quite complex, with routes having a variety of restrictions. These restrictions apply to both the season of use and to the type of vehicle that can use a route. This complexity would require many travel management signs and a clear, easy to understand travel management map. The effort to procure and install the signs, and to produce and distribute the map, would be substantial. Even with good signing and maps there would be many travel management violations in the first few years of implementation. The large number of routes open for retrieval would be new to the public, and would require clear signing and education to be successful. Abuse of the retrieval routes could lead to adverse environmental effects, resulting in the need to close some routes to retrieval. The Open Motorized Routes by Alternative Chart in this section visually shows how complicated the travel management would be for this alternative.

Safety Concerns

The safety concerns on the arterial and collector roads listed in the Affected Environment Section would still apply to this alternative. These concerns would be addressed during normal maintenance and reconstruction activities. The large number of dual-use routes in this alternative raises a safety concern. If a highway vehicle were to collide with a trail vehicle on one of these routes, there would be a great chance that the trail vehicle operator would be seriously injured or killed. The dual-use routes would all be local routes, with slow design speeds, but each route must be well signed to alert drivers and operators that there is a mixture of highway and trail vehicles operating on the route. There have been a limited number of dual-use routes in the Elkhorn Mountains for the last five years and accident records do not show a large increase in serious injuries or deaths on these routes. The motorized trail system means there could be some trail vehicle accidents, which could result in property damage and injuries. On rare occasions there could be a death caused by a trail vehicle accident.

Road and Trail Closures

This alternative would only close yearlong 4 miles of roads or motorized trails that are now open for at least a portion of the year. This means a total of 86 miles of roads would be closed to motorized vehicles yearlong. All of these roads would be closed with gates and/or signs and would remain in the road system.

Implementation Costs

It is assumed that the current maintenance and reconstruction activities would continue as they have in the recent past. In recent years approximately \$50,000 per year has been spent on road maintenance in the North Belts. This figure varies from year to year depending on weather and available funding. This alternative features constructing several new motorized trails and new dual-use routes, this construction is estimated to cost about \$330,000. Twenty-one miles of existing roads would be converted to motorized trails at a cost of about \$105,000. Gates would be used to close 86 miles of road at a cost of \$43,000. Extensive signing would be needed for the dual-use routes, retrieval routes, and new routes. It is estimated the cost of this signing effort would be about \$75,000. The total cost of implementation is estimated to be \$567,000. The Cost by Alternative for Construction/Conversion Table shows the implementation costs for all of the alternatives.

Alternative 4

Transportation System

The transportation system would change substantially in this alternative, with the non-motorized trail system more than doubling and with the motorized travel routes shrinking by almost two-thirds. Only licensed vehicles operated by licensed operators would be able to use the roads in the area. The Miles of Roads and Trails by Alternative Table in Chapter 2 shows how this alternative compares to the others.

The travel management for this alternative is very simple, with routes generally open yearlong to licensed motorized vehicles or closed yearlong. There would be about 40 miles of roads open to motorized vehicles seasonally. Even though the travel management would be simple, it would be a radical departure from the existing condition; so good signing and maps would be essential to gain public acceptance and compliance. The effort to procure and install the signs, and to produce and distribute the map, would be substantial. Even with good signing and maps, there would be many travel management violations in the first few years of implementation.

Safety Concerns

The Affected Environment section discusses the safety concerns on the arterials and collector roads for this alternative. Ongoing improvements address the safety concerns, but with expected funding levels only a few of the most serious safety problems can be solved each year. The roads that remain open would be the most heavily-traveled roads in the area and also would be the ones with the

greatest safety concerns. Not allowing unlicensed vehicles or operators on roads could limit accidents between trail vehicles and highway vehicles. The lack of motorized trails would mean there would be few, if any, trail vehicle accidents.

Road and Trail Closures

This alternative would close yearlong 245 miles of roads or motorized trails that are now open for at least a portion of the year. These means a total of 327 miles of roads would be closed to all motorized vehicles yearlong. Seventy-nine miles of these closed routes would be recontoured and 208 miles would be ripped and seeded. Decommissioning these 287 miles would reduce the need for any maintenance on these roads. There would be some long-term savings in maintenance, but the cost saving would be fairly minor, since very little money is now spent maintaining these roads. The remaining 40 miles would be closed by gates and/or signs and would remain in the road system.

Implementation Costs

This alternative has by far the highest cost to implement, more than double the next closest one. This high cost would be due to the large number of new non-motorized trails that would be constructed and the large number of roads and motorized trails that would converted to non-motorized trails. The new non-motorized trails would cost about \$400,000, converting roads to non-motorized trails would cost an additional \$360,000, and converting motorized trails to non-motorized trails would cost \$310,000. The alternative also proposes decommissioning almost 300 miles of roads or trails. It is estimated that it would cost \$1,809,000 to do all of this decommissioning. This brings the total cost of implementing this alternative to almost three million dollars. The maintenance needs on the roads remaining open would not be much different than any of the other alternatives, because even though there would be much fewer miles of road open, those miles would be the ones currently being maintained. Long-term maintenance needs on the decommissioned routes would decline, but very little money is now spent maintaining these routes. Unless funding increases, maintenance on the roads remaining open would not see a substantial change in how they are maintained.

Alternative 5 – Proposed Action

Transportation System

The transportation system would change substantially in this alternative. The main arterial and collector roads would remain open, but many of the local roads now open would be closed yearlong. This means that during certain times of the year, like hunting season, the few local roads remaining open would be more heavily used. There would be no dual-use routes, meaning only licensed vehicles operated by licensed operators would be able to use the roads in the area. The motorized trail system would have many changes, but the net miles in the system would remain about the same. Many of the trails now open yearlong would have use seasonally restricted. Forty miles of non-motorized trails would be added to the system, more than in any alternative other than Alternative 4. These additional miles of non-motorized trails would disburse users. The Miles

of Roads and Trails by Alternative Table in Chapter 2 shows how this alternative compares to the others.

The travel management in this alternative is fairly simple. There would be only two seasons of closure, hunting season and winter, which would greatly simplify signing and mapping. There would be no dual-use routes, meaning that the roads would only be open to licensed vehicles and all of the motorized trails would be open to vehicles less than 50" in width.

In all of the other alternatives many of the main roads would be closed during spring breakup, but in this alternative there would be no closure during this season. When the ground thaws out in the spring the road surface and subgrade become saturated and lose most of their structural strength. Even light traffic can rut the road surface, allowing water to run down the road, eroding the fine material off the road. Losing this fine material would increase maintenance costs, shorten the life of the road surfacing material, and may contribute to degraded water quality if a stream is near the road. Emergency closures could be put into place on roads during spring breakup, but this would require vigilant monitoring and there would be a very good chance traffic would be allowed to damage these roads during the spring.

Safety Concerns

The Affected Environment section discusses the safety concerns for the arterials and collectors in this alternative. Ongoing improvements address the safety concerns on these roads, but with expected funding levels only a few of the most serious safety problems could be solved each year. Not allowing unlicensed vehicles or operators on roads limits accidents between trail vehicles and highway vehicles. The motorized trail system means there could be some trail vehicle accidents, which could result in property damage and injuries. On rare occasions there could be a death caused by a trail vehicle accident.

Road and Trail Closures

This alternative would close yearlong 142 miles of roads or motorized trails that are now open for at least a portion of the year. This means a total of 224 miles would be closed to all motorized vehicles in the area. Nine miles of these closed routes would be recontoured and 54 miles would be ripped and seeded. Decommissioning these 63 miles would reduce the need for any maintenance on these roads, but the cost saving would be very small, since very little money is now spent maintaining these roads. The remaining 161 miles would be closed by gates and/or signs and would remain in the road system.

Implementation Costs

It is assumed that the current maintenance and reconstruction activities would continue as they have in the recent past. In recent years approximately \$50,000 per year has been spent on road maintenance in the North Belts. This figure varies from year to year depending on weather and available funding. This alternative features constructing several new motorized trails and one mile of new road; this construction is estimated to cost about \$230,000. Thirty miles of existing roads would be converted to motorized trails at a cost of about \$150,000

and 7 miles of existing roads would be converted to non-motorized trails for an additional \$40,000. About 20 miles of motorized trails would be converted to non-motorized trails at a cost of about \$210,000. Sixty-three miles of road would be decommissioned, most of them by ripping and seeding. The total cost for this decommissioning would be about \$300,000. Signing would be needed for the implementation of this alternative. It is estimated the cost of this signing effort would be about \$40,000. Fourteen miles of road would be closed by gates with an estimated cost of \$7,000. The total cost of implementation is estimated to be about one million dollars. The Cost by Alternative for Construction/Conversion Table shows the implementation costs for all of the alternatives.

This alternative proposes trailhead improvements at locations described in Chapter 2. There are also proposed road, trail, and watershed improvement projects listed in Chapter 2. The costs for these improvements are shown in the table below. The recreation projects would be funded by both recreation facilities and roads funds, while the watershed project would all use roads funds. Total cost for all of this work is estimated to be about \$400,000

Alternative 5, Recreation and Watershed Improvement Projects

Recreation Projects	
Project Name	Estimated Cost
Blacktail Trailhead	\$5,000
Whites Trailhead	\$5,000
Spring Gulch Trailhead	\$5,000
Kentucky Gulch Trailhead	\$5,000
Wagner Gulch Trailhead	\$5,000
Nary Time Trailhead	\$5,000
Timber Gulch Trailhead	\$5,000
Thompson Gulch Trailhead	\$5,000
Magpie Meadows Trailhead	\$5,000
Hellgate Gulch Trailhead	\$5,000
Camas Ridge Trailhead	\$5,000
Browns Gulch Trailhead	\$5,000
Confederate Gulch Entrance	\$7,500
Whites Entrance	\$7,500
Benton Gulch Entrance	\$7,500
Avalanche Entrance	\$7,500
Hellgate Entrance	\$7,500
Magpie Entrance	\$7,500

Recreation Projects	
Beaver Creek	\$7,500
Neversweat Trailhead	\$25,000
Cave Gulch Trailhead	\$12,000
Total	\$149,500

Watershed Projects	
Project Name	Estimated Cost
Indian Creek Tributary Culvert	\$5,000
Hidden Valley Culverts	\$5,000
Pikes Gulch Culvert	\$5,000
Beaver Creek Reroute	\$5,000
Magpie Rd. Drainage	\$3,000
Harris Gulch Road	\$35,000
Hellgate Trail	\$30,000
Avalanche Road	\$120,000
Thompson Gulch Trail	\$5,000
Springs Gulch Road	\$10,000
Miller Gulch Ford	\$5,000
Whites Gulch Road	\$10,000
Ridge Road	\$5,000
Total	\$243,000
Combined Total	\$392,500

Conclusions

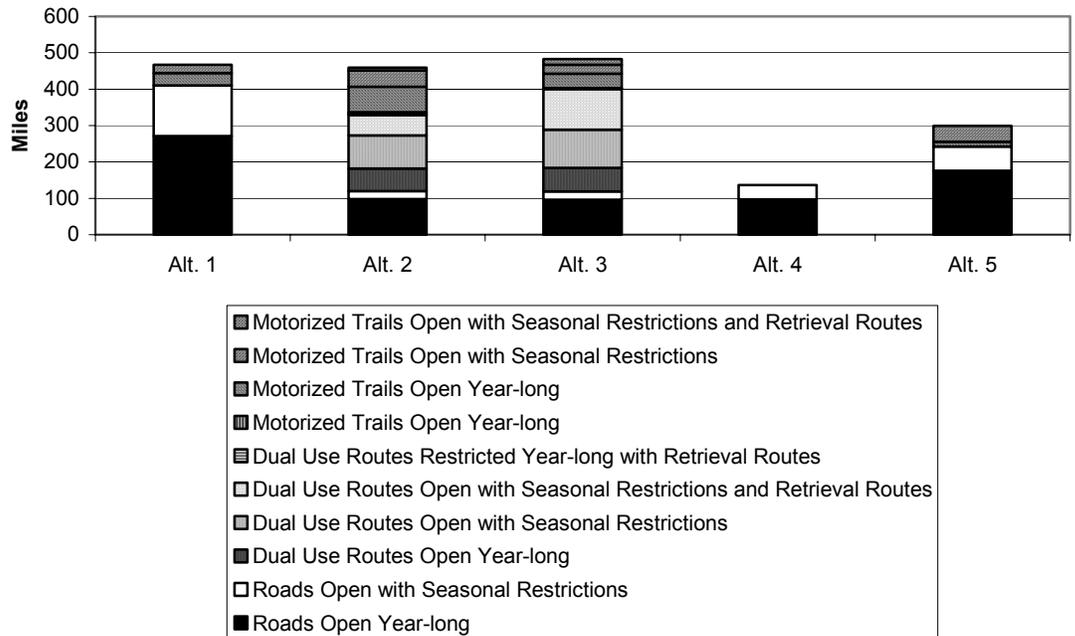
All of the action alternatives substantially change the transportation system.

Alternatives 2 and 3 wouldn't dramatically change the amount of roads or trails open to motorized vehicles, but they would change the makeup of the system. Both alternatives would make many of the local roads dual-use routes, allowing highway and trail vehicles to share the same route. This raises serious safety concerns that would require a substantial signing and educational effort to overcome. Alternative 2 greatly would expand the motorized trail system, while Alternative 3 would feature more dual-use routes. Both of these alternatives would have routes open for retrieval during hunting season or the winter. Enforcing the retrieval route restrictions could be difficult and would need

widespread public support to be successful. The non-motorized trail system would not change substantially in either of these alternatives.

Alternatives 4 and 5 would reduce the amount of roads and trails open to motorized vehicles to a large degree. The transportation system makeup would remain the same, with highway and trail vehicles not being allowed to use the same routes (unless the trail vehicle is licensed and operated by a licensed driver). Alternative 4 has no motorized trails and would reduce the miles of roads open by almost two-thirds. This alternative would also more than double the miles of non-motorized trails. Alternative 5 wouldn't change the miles of motorized trails substantially, but there would be many specific trail changes and many more of the trails would have seasonal restrictions. Many roads now open for all or parts of the year would be closed in this alternative. The trailhead and watershed improvement projects that are a part of this alternative could largely be implemented in any of the other alternatives.

Open Motorized Routes by Alternative



Heritage, Affected Environment

Introduction

The Big Belt Mountains are rich in prehistory and history. This is primarily due to the mountain range's proximity to the Missouri River-Townsend basin area (now Canyon Ferry Reservoir) to the west, and the Smith River country to the east. Archaeological research shows that both drainages were scenes of extensive American Indian occupation extending back some 11,000 years. Over many millennia Indian populations made frequent use of the intervening Big Belt

Mountains. The mountain range contains one of Montana's great placer gold fields in Confederate Gulch and sits in close proximity to another major strike at Last Chance Gulch in Helena. These and other area gold discoveries led quickly to the rapid non-Indian or white settlement of southwest Montana. This long human legacy is evidenced by archaeological sites and historic ruins throughout the mountain range. Thus, the proposed North Big Belts travel plan has the potential to directly and indirectly affect heritage resource sites.

Analysis Area

Some 176-heritage resource sites are currently identified within the north Big Belts analysis area. Of this total, 62 identified heritage sites are the product of past American Indian activity. Ancient Indian camps comprise the majority of prehistoric sites in the analysis area. Some archaeological sites may reflect habitation of the area by ancestral Salish, Blackfeet, and Shoshone Indians (Greiser 1994:34-55), who today attach great significance to these ancient remains. Many archaeological sites were undoubtedly destroyed when drainage bottoms were extensively hydraulic mined and dredged from the 1870s-1940s. Past road construction, timber harvest, livestock grazing, and prospecting have also done considerable damage. A few rockshelters have been looted. Rock art panels in Avalanche Gulch and Hellgate Gulch have been destroyed or degraded by past road construction, on-going road maintenance (dust, gravel) and vandalism (Loubser 2002).

The remaining 114 sites are historic ruins that reflect the non-Indian settlement of this region. The Big Belts, and its adjacent foothills and valley bottoms, have been the scene of industrial activity for 140 years. Hydraulic mining, in particular, has had a devastating effect on heritage resource. No exact tally can be given because the land features containing these sites have long since been destroyed. But remnant sites and other evidence suggest that the American Indian occupation here was considerable. By the same token, many of these historic mining operations are now considered to be heritage resources.

The patchwork of private and National Forest lands in the analysis area is the product of this early mining and homesteading history. Some people continue to work their patented mining claims within National Forest boundaries. But many have built homes and recreational residences on these old mining claims and homestead entries. Of significance to this analysis, the network of mining, stagecoach, homesteading, and ranch roads throughout the north Big Belts laid down the transportation "footprint" that became the foundation of the Helena National Forest's travel system.

The Helena Forest Reserve was created in 1906. The Big Belts portion was originally divided among four ranger districts. A ranger station established in 1911 at Nelson on Beaver Creek administered the Checkerboard or Nelson District (MacLean ND). It later became the Canyon Ferry Ranger District until the construction of Canyon Ferry Dam in the 1950s. Administrative duties were then moved to Helena and divided between the Helena and Townsend Ranger Districts. Trails and two-track roads were established or improved by Forest rangers to assist in wildfire detection and protection, and to administer range allotments and mining permits.

Following World War I, the Forest Service actively began to study outdoor recreation needs on National Forest land (Williams 2000:56-59). The policy was to allow space for recreation rather than to build-up formal facilities. The agency encouraged the development of private recreational residences under Special Use Permits (SUP) and on designated residential tracts. In the analysis area, a handful of cabins in Magpie Gulch were built or acquired on both patented and un-patented mining claims by private citizens for this purpose (Horstman 1996). Several private and Special Use permitted-recreational cabins in Magpie Gulch burned in the 2000 Cave Gulch Wildfire (Davis 2001:127-140).

Drought and the Great Depression led to the abandonment of many homesteads during the 1930s. But the Depression also caused a peak in small-scale “subsistence” mining in the analysis area, accounting for numerous mining claims, prospect pits, trenches, trails and two-track roads. The Depression also led to the creation of the Civilian Conservation Corp (CCC) (Steen 1976:214-216). One of two CCC camps on the Helena NF operated at the site of the Thompson Guard Station in the south Big Belts. CCC crews performed a variety of outdoor work, and built the first *bona fide* recreation trails and improved some old mining and FS administrative roads in the analysis area.

World War II brought many changes to the Forest Service. Timber, minerals, and livestock production, spurred initially by wartime emergency and then by the post-war economic boom, became an agency focus (Coutant ND; Davis 2003:11-16; Hirt 1994; Williams 2000:88-111). Better mechanized equipment allowed for accelerated timber harvest and many road improvements. For example, the old Trout Creek road was improved to open up timber harvest in the Indian Creek area in the late 1940s. In 1956, a route connecting Beaver Creek and Trout Creek road was built to facilitate timber harvest in the Hogback area. Although repeatedly washed out and rebuilt, this loop route was used for timber hauling until the severe 1981 flood. Timber purchasers built the existing road through Magpie Gulch in the 1960s atop an old mining road through the gulch bottom, as well as in Whites, Thompson, Wagner and other main and side gulches. Timber haul and skid roads became *de facto* parts of the forest travel network.

National Forests also experienced a post-war recreation boom, and the agency responded by improving old CCC campgrounds and trails or by building new ones, beginning in the 1960s. Few recreation facilities were built in the north Big Belts, apparently due to terrain limitations, aesthetic considerations and budgetary constraints. But an extensive road and trail system was already in place for recreationists thanks to past mining, homesteading, ranching and forest administration. Big game hunters benefited by plentiful access into the mountain range, and hunting camps of all description were established next to forest roads and trails during hunting season. Car campers, picnickers, fishermen, horse-riders, firewood cutters, and 4-Wheel enthusiasts also made ready use of the extensive, though often vaguely defined, forest road and trail (and dispersed camping) network well into the 1970s.

Built in 1898, the first Canyon Ferry Dam created Lake Sewell. This pioneer hydroelectric facility submerged ranchland and travel routes along the Missouri River bottom. The second Canyon Ferry Dam, constructed in the early 1950s by the Bureau of Reclamation, created a much larger impoundment extending to

Townsend (Paladin and Baucus 1996:86-87). The larger reservoir was to become a highly popular recreation destination in Montana for boaters and fishermen. Today, the analysis area is easily accessed from public and private campgrounds, subdivisions, and ranches along the east shore of the reservoir.

In line with national trends, beginning in the early 1980s, commodity production declined in the north Big Belts due to environmental, economic, and other concerns (see Fedkiw 1999). There was a concomitant decline in new road construction, with the exception of roads accessing private land, rural homes and subdivisions, mining claims, SUP recreational cabins and power utilities, range allotments, and FS administrative sites. At the same time, the Forest Service was called upon to account for the number of road and trail miles built across National Forest lands. Concerns about forest road density and its effect on wildlife populations, fish habitat, stream and soil conditions, and other resources emerged as an important agency issue. The Forest Service committed to broad-scale, ecosystem planning in the 1990s. In the north Big Belts, this led to an integrated proposal to implement various vegetation and watershed projects and a new travel plan in the late 1990s. Parts of this project were abandoned after the disastrous Cave Gulch wildfire in the north Big Belts in 2000.

At the turn of the new Century, mining and minerals exploration continues at a fairly low level in the north Big Belts. Livestock grazing is still a major economic activity. Vegetation management, whether to reduce fire danger or to produce marketable timber, is a contentious public issue. New generations of recreation enthusiasts equipped with advanced gear now use the analysis area in apparently growing numbers. With 140 or perhaps 1000 years of history and prehistory as a precedent, user-created trail proliferation is still a problem, although new forest system trails also continue to be built. Allocating recreation opportunities among many different forest users in the Big Belts, while at the same time protecting forest resources and allowing for some level of commodity output, is a current Helena NF multiple-use management challenge. Whatever the outcome, people using this area of the Helena NF will leave another physical, and ultimately historical, imprint on the ground.

An on-the-ground compliance survey of every road and trail closures, new trailheads, and watershed projects proposed in the project alternatives has not been completed. Project planning occurred during the winter of 2002-2003, which precluded field searches because of snow-cover. Thus, it is not possible to assess the full effect of the alternatives on heritage resources. However, 36 CFR 800.4, the revised federal regulations implementing the National Historic Preservation Act (NHPA) of 1966, allows for a sampling based inventory and analysis “where alternatives under consideration consist of corridors or large land areas” and when the decision to defer final identification and evaluation of historic properties is provided in documents used by agency officials to comply with NEPA. This approach establishes the likely presence of properties within the area of potential affect for each alternative through background research, consultation and an appropriate level of field investigation.

A compliance inventory of all roads or trails scheduled for obliteration will be completed prior to implementation of the selected Alternative following the

Helena NF Site Identification Strategy (SIS). The forest SIS was also used to estimate potential project effect in areas where no past inventory has occurred. Some project inventory of road obliterations, new trailheads, and watershed projects will be completed during the period between the Draft and Final EIS.

Heritage, Environmental Consequences

Effects Common to All Alternatives

The effects of the north Big Belts travel plan has been evaluated using four criteria:

- the number of currently identified heritage sites affected by road and trail obliteration (ripping, contouring);
- the number of currently identified heritage sites affected by new trail construction;
- the number of currently identified heritage sites affected by watershed improvement projects; and
- the amount of access to heritage sites that is eliminated due to permanent road and trail closures and obliteration.

The first three criteria concern the physical effects of these ground-disturbing activities on heritage sites. The fourth criterion is social and more elusive. In one sense, permanent road and trail closures provide heritage resource protection. In another, they prevent public access for people who enjoy visiting heritage resource sites.

Effects Common to All Action Alternatives

The 2001 State OHV Plan benefited heritage resources by confining motorized travel to designated routes. The four action alternatives provide area-specific travel plans that would replace the State OHV Plan. Area-specific travel plans would extend this resource protection, although the amount of road and trail closure varies by Action Alternative.

Road obliteration, new motorized and non-motorized trail construction, and watershed improvements all would create ground disturbance that potentially affects significant heritage resources. As described above, mitigation measures could reduce the adverse impact of these activities on heritage sites but there would be an associated cost.

Road closures, maintained by gates, roadbed obliteration, or natural vegetation stocking, may block vehicle (and possibly equestrian and pedestrian) access to historic sites that people want to visit. This can be construed as a negative effect. Conversely, road and trail closures could benefit heritage resources by preventing easy vehicle, horse or foot access to sensitive sites and abate depreciative behavior such as vandalism and looting.

Heritage sites such as the sensitive rock sites at the canyon mouths within or near roads and trails that are retained under any of the action alternatives would

continue to be degraded by road maintenance and recreation, and commercial and administrative use of these main travel corridors. Contingent on the selected action alternative, public use could increase on these travel routes due to closures elsewhere in the north Big Belts, thus potentially accelerating on-going impacts.

Alternative 1 – No Action

This Alternative largely supports the status quo, as of 2001 when the State OHV plan was implemented. This alternative would provide plentiful access to heritage sites, which has both positive and negative implications, as described above. In the longer view, the lack of an area-specific travel plan would contribute to gradual attrition of the heritage resource base in the north Big Belts, especially in the face of demographic growth and changes just outside the project area boundaries. An area-specific travel plan, as proposed for the north Big Belts, could potentially direct public activities away from those sites and areas.

Direct Effects

The increased heritage site protection provided by an area-specific travel plan, as implemented by the action alternatives, would not occur under Alternative 1. This situation would continue to provide access to many heritage sites, albeit on designated routes as required by the 2001 State OHV plan. As a result, sites would continue to incur degradation and vandalism.

Conversely, the existing situation enables people to visit many heritage sites without the constraints of additional road and trail closures and restrictions (although travel would occur on designated routes and special travel closures could be implemented). People, including those with disabilities, could continue to enjoy motorized access to old historic wagon roads and old mining camps. This alternative does not call for road obliteration, trailhead development or watershed improvements—that is, ground disturbance—in contrast to the Action Alternatives, which would benefit heritage resources.

Indirect Effects

The 2001 State OHV plan protects many vulnerable heritage sites by eliminating cross-country travel. Still, in light of the prolific system and non-system roads and trails throughout the north Big Belts, and in absence of a mountain range-specific travel plan, under Alternative 1 many sites along or near designated routes will continue to be exposed to vandalism, artifact collecting and looting.

Alternative 2

Direct Effects

Currently, a total of **14** heritage sites are identified in a handful of the roads or road segments targeted for rip/seed. These and other currently unidentified sites could be harmed by obliteration work unless mitigation measures are implemented. A part of the historic (but National Register-ineligible) Whites-Benton Gulch wagon road would be obliterated under this alternative.

In general, since this alternative emphasizes motorized loop routes, the roads and trails proposed for closure and/or obliteration tend to be small side or parallel routes. Many of these are located in low to medium site probability areas on the Hellgate and Magpie Divide (road # 425, 693) and in the Lind Creek-Beaver Creek area on the east flanks of the Big Belts (road #259, 4161). However, a few areas would likely produce additional sites when the road/trail obliteration surveys are completed. These include some old routes in the Hogback and Indian Flats areas (road # 138, 4119) and some primitive roads (road # 4161) in the rolling foothills below the main Whites Gulch road. An array of heritage sites is currently known in these areas and the SIS would predict that others would be found.

Because of their locations, some new motorized trails have more potential to impact heritage sites than others. The proposed trail through Cave Gulch, the trail at the mouth of Magpie Gulch that connects with the open play area, and the old Magpie trail could directly impact at least **24** known sites and others would likely be discovered during heritage survey. The trails could be re-routed around identified heritage sites but they would still be vulnerable to artifact collecting and vandalism. One prehistoric site is currently identified in the proposed Horse Gulch OHV area but given the area's rolling terrain it is likely that others would be found there. Monitoring and protecting identified heritage sites in the OHV riding area could be difficult.

The proposed Kelly Run, Hedges Mountain complex, and Upper Trout Creek motorized trails presently are not associated with any identified heritage site. These trails cross medium to low site probability terrain—mountain ridges and canyons--so the effects of this new trail construction would likely be less on heritage resources than the aforementioned routes.

Indirect Effects

The 2001 State OHV plan protects many vulnerable heritage sites by eliminating cross-country travel. A mountain range-specific travel plan, as proposed in Alternative 2, would further protect many sites exposed to depreciative behavior by eliminating easy access to them. The obliteration of 100-plus miles of road and trail would be a positive step toward this end, although some people with a legitimate heritage resource interest could be prevented from visiting some sites. At the same time, Alternative 2 proposes to build some 30 miles of new motorized and non-motorized trail (mostly motorized) and an OHV open riding area that would offset the benefits created by road closure and obliteration and expose sites to artifact collecting, vandalism and other depreciative behavior.

Alternative 3

Direct Effects

Like Alternative 2, because of their locations, some trails have more potential to impact heritage sites than others.

The proposed motorized trail through Cave Gulch, the old Magpie trail, and trail #243 near Sweats Gulch could directly impact at least **18** known sites and others

would likely be discovered during heritage survey. The trails could be re-routed identified heritage sites but they would still be vulnerable to artifact collecting and vandalism. This could easily be facilitated with motorized transportation. A trail through the bottom of Cave Gulch would be of particular concern.

The trails on Hedges Mountain and Middleman Mountain (Kelly Ridge) cross over tough country that would likely reveal few heritage sites upon compliance inventory. Past surveys on these high ridges in the north Big Belts have not come up with much, but a few sites could be found.

Indirect Effects

The 2001 State OHV plan protects many vulnerable heritage sites by eliminating cross-country travel. However, this alternative does not go much beyond the OHV plan and proposes to construct 18 miles of new trail—the bulk of which is motorized. So many sites would still be exposed to vandalism, artifact collecting, and looting.

Alternative 4

Direct Effects

Ground disturbance associated with closing/obliterating roads and trails could adversely affect **18** known heritage sites unless mitigation measures were implemented. The historic Whites Gulch-Benton Gulch wagon road would be impacted by road obliteration.

The 287 miles proposed for closure and obliteration pass through environments favorable to human occupation and use in the north Big Belts. Thus, road obliteration proposed in the Hogback and Indian Flats area (#138, 4119), in Holiday Gulch (#4136), below the Whites Gulch road (#4161) within Confederate and Whites Gulches (#4161, 8971) could impact more sites than the 18 noted above. Numerous archaeological sites have been recorded in the Hogback-Indian Flats and Holiday Gulch areas, and there are nearby but unexplored areas (where roads pass through) with equivalent potential for prehistoric and historic ruins. Given the intense mining history in both drainages, Confederate and Whites Gulches could potentially yield another 10-15 mining-related sites during road obliteration surveys.

Some areas where road obliteration is scheduled have less heritage resource potential, including the patchwork of primitive roads in the Hellgate and Magpie Divide (#425, 693), in Lind Creek (#4161), in Debauch Creek (#4171) and below Baldy Mountain (#575, 4185). The terrain is rugged and waterless, or both. Past surveys in the Debauch Creek drainage have come up with very little.

The construction of proposed hiking trail through Cave Gulch, Johnnies Gulch, Sweats Gulch and Cochran Gulch (near Beaver Creek of the Missouri River), could directly impact at least **21** known sites and others would likely be discovered during heritage surveys. The trails could be re-routed around identified heritage sites but they would still be vulnerable to artifact collecting and vandalism. A trail through Cave Gulch and Cochran Gulch would be of particular concern because of fragile prehistoric and historic ruins there.

Few sites are located within or near the proposed quiet trails on Hedges Mountain, in upper Trout Creek, and in Cottontail Gulch near Trout Creek. Much of the terrain is steep and dry, offering limited potential for human habitation use. However, compliance surveys of these trail projects prior to construction would likely reveal a few sites. These trail routes could likely be modified to avoid directly impacting identified sites but any portable artifact nearby (i.e., old bottles) would still be vulnerable to collection.

Indirect Effects

The 2001 State OHV plan protects many vulnerable heritage sites by eliminating cross-country travel. By eliminating access through road obliteration, Alternative 4 reduces the number of available roads and trails by a third, which would provide substantial protection to a wide range of sites now vulnerable to vandalism, artifact collecting and looting.

Alternative 5 – Proposed Action

Direct Effects

Approximately 63 miles of road and trail are scheduled for obliteration. A total of **12** heritage sites could be affected by this activity unless mitigation measures are implemented.

Road obliteration proposed in areas with high potential for heritage sites include Hogback Mountain and Indian Flats area (#138, 4119), and Devils Tower (#4125, 4127), below the Whites Gulch road (#4161). Areas with less potential include the Hellgate and Magpie Divide (#425, 693) and Lind Creek (#4161). A handful of additional sites would likely be discovered during road obliteration surveys.

Alternative 5 proposes to construct about 14 miles of new non-motorized (3.3) and motorized trail (9.7) or road (0.9). Some new trail construction has more potential to impact heritage sites than others.

The proposed hiking trail in Cochran Gulch (near Beaver Creek of the Missouri River), Johnnies Gulch, and Magpie Crest could directly impact at least **6** known sites and others would likely be discovered during heritage survey. The trails could be re-routed identified heritage sites but they would still be vulnerable to artifact collecting and vandalism.

This alternative also proposes to construct or reconstruct 14 trailheads. A total of 7 heritage sites are currently identified within these project areas that could be adversely affected unless specific mitigation measures such as buffering were implemented.

Some 15 proposed watershed improvements could potentially affect another 10 previously identified sites. Most of the watershed projects are simple culvert replacements and road repair work that would have minimal impact on heritage sites. A few, such as the proposed roadwork and culvert replacement along the Indian Creek Road #138, could be much more impacting to heritage resources. Archaeological testing and mitigation would need to precede implementation of these projects, which would increase implementation costs.

Heritage Sites in Trailheads and Watershed Projects in Alternative 5

Project Type	# of Projects	# Previously Inventoried	# Affected Sites
Trailhead	14	10	7
Watershed	15	9	11

Indirect Effects

The 2001 State OHV plan protects many vulnerable heritage sites by eliminating cross-country travel. A mountain range-specific travel plan, as proposed in Alternative 3, would further protect many sites exposed to vandalism, artifact collecting and looting by eliminating easy access to them.

Conclusions

Travel planning has both positive and negative effects on heritage resources. By eliminating cross-country travel, the 2001 State OHV plan has already reduced access to many vulnerable heritage sites. The additional travel management, which would eliminate system and non-system roads and trails in the north Big Belts, would provide another layer of heritage resource protection, as described in the various travel alternatives.

In this light, **Alternative 1**, the No Action, offers little additional heritage protection beyond what is provided by the 2001 OHV plan or as a result of individual road-trail closure orders. Some re-contouring would occur in the Cave Gulch fire area and vegetation would be allowed to grow up in the road or trail prism on another 23 miles. Many miles of road and trail would still be available for public use, which has both positive (allows for site visitation) and negative (provides opportunities for vandalism and depreciative behavior) aspects.

Alternative 2 would obliterate some 100 miles of road and trail but add another 33 miles of new, mostly motorized trail and an OHV riding area. The benefits of road obliteration and access elimination would be offset by the new OHV trails and concentrated riding areas in the foothills of the Big Belts. It would still provide public access to a wide range of sites, which could be construed as both a positive and negative benefit. By virtue of eliminating some roads and trails, Alternative 2 would provide more resource protection than Alternatives 1 and perhaps 3, but less so than either Alternatives 4 or 5.

Alternative 3 is similar to Alternative 1 in that it allows motorized travel on existing designated routes and would construct another 18 miles of new, mostly motorized trail. Road or trail closures are not part of this alternative, which would eliminate concerns about the ground-disturbance atop heritage sites caused by road obliteration. However, this alternative does not offer much additional resource protection than what is afforded by the 2001 State OHV Plan. Plenty of roads and trails would be open for a person wishing to access historic ruins, which would have a negative effect in the long term.

Alternative 4 emphasizes quiet trails. It calls for the elimination of some 287 miles of road and trail, which would restrict vehicle access to a wide range of identified (and yet to be discovered) heritage sites. By this criterion, Alternative 4 offers the most heritage resource protection in the long term. However, in the short term, this road obliteration (ripping, contouring) would potentially affect the largest number of heritage resources among the alternatives. Various mitigation measures could be imposed to reduce the level of site impact. This alternative would also have the greatest negative impact on the ability of the public to access remote historic ruins in the north Big Belts.

Alternative 5 would obliterate 63 miles of existing road and construct 14 miles of new motorized and non-motorized trail. Alternative 5 also would construct new trailheads and implement watershed restoration projects, which is different from the other alternatives. Using the criterion of ground-disturbance, Alternative 5 would be more ground-impacting than Alternatives 1, 2 and 4, but somewhat less than Alternative 4. From the standpoint of public access, this alternative is more restrictive of motorized access than Alternatives 1, 2 and 3 but less restrictive than Alternative 4.

All of alternatives, including the No Action, meet the forest-wide standards for heritage resources in the 1986 Helena NF Forest Plan. All ground-disturbing projects would be preceded by a compliance-level survey that meets the requirements of the National Historic Preservation Act, as amended. Surveys would precede road obliterations, new trailhead construction, and watershed improvement projects. National Register evaluations would be completed as necessary, and heritage sites would be preserved in place to the extent possible. The Montana State and various Tribal historic preservation officers will be given the opportunity to review environmental documents prepared for the north Big Belts travel plan and offer their comments.

The adverse effect of road obliteration could be partly offset by implementing mitigation measures. Specifically, archeological sites or historic roads in ruins proposed for obliteration could be avoided—ripping or contouring would not be done within the boundaries of identified sites. The roadbed could be filled with topsoil and seeded, which would have the added advantage of masking the site.

Another potentially negative aspect of road and trail closures is that public access is more restricted for those people who genuinely enjoy visiting archaeological and historic sites in remote forest settings. The type of indirect effect is difficult to quantify because the number of people who visit sites in the Big Belts is unknown. But it is safe to assume that some people will see road closures (and obliteration) in the Big Belts as an infringement on their ability to visit heritage sites. To some extent, road closures could make FS monitoring and administration more difficult.

Lands/Special Uses, Affected Environment

Introduction

The majority of National Forest System (NFS) lands located within the North Belts Travel Plan Boundary were first reserved from the Public Domain for National Forest purposes by Presidential Proclamation on October 3, 1905. This proclamation established the Big Belt Forest Reserve, which included lands located east of the Missouri River. These lands were then transferred to the Helena National Forest by Executive Order 881 on July 1, 1908.

Private Land

Today there are approximately 14,000 acres of private land within the planning area, exclusive of the large blocks of contiguous private land located in the Elk Ridge, Jim Ball, Snedaker Basin, Benton Gulch and Democrat Gulch areas. Access to many of these private in-holdings is contingent on crossing NFS lands, while access to the National Forest, in many cases, is through adjacent private land.

Of the 14,000 acres, some were patented under the Mineral Act of May 10, 1872, with patenting through this method reaching its peak between 1890 and 1900. There is little active mining on these private lands today. Many of those in the northern portion of the planning area have been developed as residential property, with year-round residences having been constructed on them. The unincorporated community of York evolved through the mineral patenting process. Roughly nine miles of the Trout Creek drainage were patented and placer mined in the late 1800's. Within the last fifty years the mineral surveys were subdivided and developed as residential properties. Today York is comprised of over 100 year-round homes.

Most of the private land within the planning area began as homesteads. These were patented under the Homestead Act of May 20, 1862. Perfecting ownership under the Homestead Act peaked in the 1900-1920 period. These lands too serve as residential or ranch property today, with many having been subdivided in the recent past. Subdivisions within the planning area are located in Eldorado Heights, Eldorado Bar, American Bar, Jim Town, and Nelson. Ranching operations are based on Metropolitan Bar, Elk Ridge, Jim Ball and Snedaker Basins, Upper Trout Creek, Benton Gulch, and portions of the Dry Range.

Many of the private parcels are small and scattered along drainage bottoms. Some contain summer cabins or yearlong residences, such as the case with Magpie Creek, Cayuse Gulch, and White Gulch. Quite often, many of the Forest travel routes cross private parcels, some with public rights-of-ways and some without.

The Dry Range is an isolated, checkered board portion of the Forest that is legally accessible to the public by floating the Smith River only. There are no public right-of-ways for any of the roads entering the Dry Range and the adjacent landowners restrict public access across their land, thus isolating this area from the public. Given the Forest's inability to obtain public access to this area, many

of the federal lands have been exchanged to adjacent landowners for land along the Smith River or other locations.

Private Uses of NFS Lands

There are several permitted private uses of the National Forest within the planning area. They include such uses as gas pipelines, electrical power lines, electronic and radio repeater communication sites, livestock pastures, road uses, water transmission lines, and snow survey sites. Many are centered around the community of York where there are access roads, residences, power lines, and community improvements located on NFS lands.

The Hogback Mountain Communications Site was formally set aside as such in 1981. It includes the Forest Service lookout and two other communications facilities. Access to this site is by wheeled vehicle on the Beaver Creek/Hogback Road June through November. Snowmobiles are used the balance of the year. The Lewis & Clark County Sheriff's Office is currently authorized to operate a radio repeater off of Hedges Mountain. Their motorized access is via York and Kingsberry Gulch Roads.

The Yellowstone Pipe Line (YPL) Company operates a 6-inch buried gas pipe line that moves various petroleum products between Great Falls and Helena. It crosses onto the Forest in the Eldorado Bar area, and exits in Upper Beaver Creek. It has been in place since 1960, access is by the York-Nelson, Favorite Gulch, and Beaver Creek Roads. There are also numerous lower standard system and non-system roads that provide access to the right-of-way.

North Western Corporation (NOR) owns, maintains, and operates roughly 75 miles of aerial and buried power line within the planning area. A significant 100 kV aerial line crosses the Forest in roughly the same location as the YPL pipe line, transmitting power between Butte and Great Falls. A buried power line runs up the ridge between Cottonwood and Sweats Gulch, delivering power to the Hogback Mountain Communications Site. An aerial distribution line runs northeast, cross-country, from Hauser Dam, delivering power to the Beaver Creek drainage. The remainder of the distribution lines are located within or adjacent to the major roads, and provide service to the many homes in the planning area. NOR access to the numerous rights-of-way rely on the roads mentioned above in the YPL section, on the motorized trail that runs from Cottonwood Gulch to Hogback, on a non-system road located northeast of Hauser Dam, and on numerous lower standard system and non-system roads.

PPL Montana operates the Hauser Dam Hydroelectric Project along the western edge of the planning area. The Federal Energy Regulatory Commission licenses this project. Approximately 620 acres of NFS lands along the east side of the Missouri River were withdrawn from entry for this power project. Access to the dam and its associated improvements is by County Road along the east side of Hauser Lake.

Livestock pasture areas are permitted through Special Use authorization in the Lind Creek area to local ranchers. Two snow survey courses are located east of Boulder Baldy Mountain; one on Camas Ridge and one to the north along Mule

Creek. These sites are maintained through the use of system and non-system travel routes in the area. The following table is a summary of the private Special Uses authorized and those pending within the project area.

Authorized Private Special Uses

Type	Number Authorized	Application Pending	Remarks
Private Access Roads	10	4	Most permits are for access to private residences.
Year-Round Residences	7		All but two included in York Townsite Area.
Communications Uses	4 permits 21 tenants	2	Hogback Mountain Communications Site, and Hedges Mountain temporary repeater.
Buried Gas Pipe Lines	9 miles	1	Yellowstone Pipe Line Co. - Buried 6" line. Application is pending regarding repairs.
Aerial and Buried Power Lines	75 miles		NorthWestern Corporation - Includes the 100kV Rainbow Butte Line, and the Cottonwood and Hauser Dam distribution lines.
Community Improvements	2		York Comm. Club; Mike Smith Memorial and York Cemetery
Water Transmission lines	2		Teague Ranches
Snow survey courses	2		Montana Dept. of Natural Resources

Road Status

There are multiple road jurisdictions within the North Belts Travel Plan Boundary. Highlighted below are several of the more important road segments and their status. Unless otherwise noted, one can assume that a road crossing private land is privately owned, and one located on NFS lands is owned and controlled by the Forest Service.

Land Adjustments

The Forest Service continues an on-going effort at consolidating land ownership within the planning area, and acquiring isolated tracts of valuable habitat.

Currently, land adjustment efforts are ongoing in the York area, Nelson area, and Dry Range. The Forest Plan identified the York area as a priority for disposal of isolated and intermingled National Forest ownership. To this end, the York Townsite Act Sale will culminate in conveyance of roughly 40 acres of National

Forest lands to Lewis & Clark County, who will in turn convey individual tracts to affected permittees and adjacent landowners. Special Use Permits, encroachments, and encumbrances will be eliminated. Ownership boundaries will follow more logical lines. Community properties will convert to private property, thereby allowing expansion or revision without Forest Service oversight. This project is expected to be completed in the near future.

The Harlen land exchange is located in the Nelson/Beaver Creek area. It would result in Forest Service acquisition of private lands at Nelson and north of the Beaver Creek Road. We would be receiving stream frontage and floodplain and the bulk of the private lands that are located adjacent to the proposed Big Log Addition to the Gates of the Mountains Wilderness. We would be conveying stream frontage and floodplain, and an area currently authorized by Special Use Permit.

The Butkay private land tract is also located in the Beaver Creek drainage. This is a 60 acre undeveloped homestead that the Forest Service would like to acquire. Beaver Creek bisects this property, with its high fish, wetland, and floodplain values. The asking price far exceeds the preliminary appraised values, but we continue to make our interest in this property known to the owners.

East of York, in Kelly Gulch, there are two permitted cabins that serve as private year-round residences. One is classified as an isolated cabin, and permitted as such by the Forest Service. The other is authorized by BLM grant under an Occupancy Lease. The Forest will be completing an analysis of these occupancies of NFS lands, and resolving the long-term occupancy issue. A land exchange that would convey into private ownership is one possible alternative. In the late 1990s, the Townsend Ranger District completed an analysis of the isolated cabins authorized by Special Use Permits located in the Magpie Creek, Avalanche Creek, and Blacktail Creek areas. As a result of the analysis, those permits will not be reissued following their termination dates. During the analysis process, a few of the cabin owners requested that their cabins be considered for the cabin rental program. This is currently being considered and could result in 1-2 cabins in the project area being added to the cabin rental program.

Several private land parcels within the Magpie Creek drainage were acquired by the Forest Service in the late 1980s in an effort to reduce the large amount of private in-holding in this area. Today, there are only a few small, scattered private parcels left.

The Forest Service is currently negotiating a land exchange with an adjacent landowner in the Dry Range involving isolated federal land in this area in exchange for isolated private land within the southern portion of the Big Belts. Upon completion of this land exchange, there would potentially be only five isolated federal sections left within the Dry Range.

Priority Rights-of-Way to Pursue

The following rights-of-way should be priorities to acquire, although they are not necessarily listed in order of priority.

Priority R-O-W to Acquire

Road Name/Number	Location Pvt ROW	Current Ownership	Remarks
Jim Town Rd #231	Sec. 1/2 sec. 33, T11N, R1W	Private/FS	Route provides access to York/Canyon Ferry. One segment of private road located south of the Johnny's Gulch intersection.
York Gulch Rd #4136	Sec. 8, 11,12,15,16, T11N, R1W	Private/FS	Route provides access to Hedges Mountain. Multiple pvt. segments of private rd.
Favorite Gul Rd #4125	Sec. 25, 26,34,35, T12N, R2W	Private/FS	Route provides access to Favorite Gul and Eldorado Bar. Working with Homeowner's Assoc. and County to grant to County.
Elk Ridge Rd #4143	Sec. 17,18, 19,20,21,29, T13N, R1E	Private/FS	Route provides access to Elk Ridge. Current access relies on landowner permission/FWP block mgmt. Reciprocal opportunity exists with current spec.use applicant.
Avalanche Cr Rd #359	Sec. 14, 15 & 21, T10N, R1E SW ¼, Sec. 20, T11N, R2E	Private/FS	Public ROW needed on road where it crosses private land below forest boundary. ROW needed across private land at junction with Cayuse Cr.
Hellgate Rd #693	Sec. 9, 16 & 17, T10N, R1E Sec. 26 & 27, T 11N, R1E	Private/FS	Public ROW needed on this road where it crosses private land to reach the National Forest. ROW needed across private Land in Fisher Gul. and the Argo Mine site.
Whites Gul Rd #587	Sec. 11, 14 & 15, T10N, R2E	Private/FS	ROW needed across private land south of Park Gul.

Isolated or checkerboard Forest Service lands, such as Elk Ridge, the Dry Range, and federal land north of Wagner Gulch, are not accessible to the public as the adjacent private land owners do not allow public access across their property. This has effectively isolated 6,240 acres on the Townsend Ranger District and 2,610 acres on the Helena Ranger District from public use. Most of the current private landowners are not interested in allowing a public easement across their lands. The Helena Ranger District is currently evaluating a private

access request in the Elk Ridge area that might result in an exchange of reciprocal access rights.

Lands/Special Uses, Environmental Consequences

Effects Common to All Alternatives

Selection of any alternative that requires permitting of private/corporate access would require additional special use administrative time to process and respond to the access need.

Effects Common to All Action Alternatives

Selection of any alternative that requires permitting of private/corporate access would require additional special use administrative time to process and respond to the access need.

Alternative 1 – No Action

Private Uses of NFS Lands

Access would continue across NFS lands by landowners to private lands, utility companies would maintain/improve their corridors and improvements, communications companies would continue to operate off Forest Service Communications Sites. In addition, miscellaneous private ventures would be authorized on NFS lands. Based on past trends, one would expect one to two new private road applicants each year for the foreseeable future. These would be the result of new developments on private land or discovery of unauthorized private use that should be permitted.

NorthWestern Corporation currently operates and maintains a buried power line that runs from Cottonwood Gulch up to the Hogback Mountain Communications Site. This power line right-of-way has been converted by users over the past ten years to a motorized trail. Portions of the trail are located on steep and erosive soils. There are numerous resource concerns if use of this trail is to continue in its current location.

There are currently fifteen Private Road and Special Use access permits issued within the North Belts Travel Plan project area that authorize exclusive access to the permit holders on roads that are closed yearlong to the general public. Use of these roads is limited to the permit holder, and in most cases gates/signs effectively prohibit public motorized use.

There are also roads that cross private land within or adjacent to the National Forest that are not open to public use and are not authorized under Special Use Permit. The largest areas within the project area are Elk Ridge, the Dry Range, and Wagner Gulch, where private landholders have effectively closed access to National Forest lands to the general public by closing private roads on private land.

Analysis Concern/Indicator

Miles of Gated Road on NF used by Permittees (but not public)	Acres of Public Land Accessible to Permittee/Landowner (but not public)*
D-1: 30.25 miles	D-1: 9,680 acres (along rds.)
D-2: 5.9 miles	D-1: 6,240 acres (isolated FS acres)
Project area total: 36.15 miles	D-2: 1,882 acres (along rds.)
	D-2: 2,610 acres (isolated FS acres)
	Project area total: 20,412 acres

* Acres of public land accessible to permittee assumed to be a corridor ¼ mile wide on each side of permitted road, for a total width of ½ mile.

Alternative 2

Private Uses of NFS Lands

The effects on the Lands/Non-Recreation Special Use resource associated with this alternative would be very similar to those of the 'No Action' alternative. Access would continue across NFS lands by landowners to private lands, utility companies would maintain/improve their corridors and improvements, communications companies would continue to operate off Forest Service Communications Sites, and miscellaneous private ventures would be authorized on NFS lands. Based on past trends, one would expect one to two new private road applicants each year for the foreseeable future. These would be the result of new developments on private land, or discovery of unauthorized private use that should be permitted.

NorthWestern Corporation currently operates and maintains a buried power line that runs from Cottonwood Gulch up to the Hogback Mountain Communications Site. This power line right-of-way has been converted by users over the past ten years to a motorized trail. Portions of the trail are located on steep and erosive soils.

The fifteen Private Road and Special Use access permits currently issued within the North Belts Travel Plan project area would still be necessary. Use of these roads is limited to the permit holder, and in most cases gates/signs effectively prohibit public motorized use. Under Alternative 2, multiple land/homeowners in York Gulch/Big Rattlesnake Gulch would need Special Use Permit(s) to access their private property year-round, as this alternative places a seasonal restriction on Forest Development Road (FDR) 4136. The additional 5 miles and 1600 acres of NF land on D-2 accessible to permittees/landowners shown in the table below (along roads) would be the result of this restriction. This alternative also places additional seasonal restrictions on FDR 298, which accesses the Hogback Mountain Communications Site. Longer term Travel Closure Permits would have to be issued to the communication site permittees to facilitate their continued year-round access.

There are also roads that cross private land within or adjacent to the National Forest that are not open to public use and are not authorized under Special Use

Permit. The largest areas within the project area are Elk Ridge, the Dry Range, and Wagner Gulch, where private landholders have effectively closed access to National Forest lands to the general public by closing private roads on private land.

The slight difference between this alternative and Alternative 1 on the D-1 miles and acres along roads is that the 1/2 mile of road along the lower portion of Park would be opened to vehicles 50 inches or less instead of remaining closed yearlong to wheeled vehicles.

Analysis Concern/Indicator

Miles of Gated Road on NF used by Permittees (but not public)	Acres of Public Land Accessible to Permittee/Landowner (but not public)*
D-1: 30.75 miles	D-1: 9,840 acres (along rds.)
	D-1: 6,240 acres (isolated FS acres)
D.2: 10.9 miles	D-2: 3,482 acres (along rds.)
Project area total: 41.65 miles	D-2: 2,610 acres (isolated FS acres)
	Project area total: 22,172 acres

*Acres of public land accessible to permittee assumed to be a corridor ¼ mile wide on each side of permitted road, for a total width of ½ mile.

Alternative 3

Private Uses of NFS Lands

The effects on the Lands/Non-Recreation Special Use resources associated with this alternative would be very similar to those of Alternatives 1 and 2. Access would continue across NFS lands by landowners to private lands, utility companies would maintain/improve their corridors and improvements, communications companies would continue to operate off Forest Service Communications Sites, and miscellaneous private ventures would be authorized on NFS lands. Based on past trends, one would expect one to two new private road applicants each year for the foreseeable future. These would be the result of new developments on private land, or discovery of unauthorized private use that should be permitted.

NorthWestern Corporation currently operates and maintains a buried power line that runs from Cottonwood Gulch up to the Hogback Mountain Communications Site. This power line right-of-way has been converted by users over the past ten years to a motorized trail. Portions of the trail are located on steep and erosive soils.

The fifteen Private Road and Special Use access Permits currently issued within the North Belts Travel Plan project area would still be necessary. Use of these roads is limited to the permit holder, and in most cases gates/signs effectively prohibit public motorized use.

Under Alternative 3, the existing seasonal restriction on the road to the Hogback Mountain Communications Site (FDR 298) is eliminated. This would remove the seasonal requirement for Travel Closure Permits for communication site permittees.

There are also roads that cross private land within or adjacent to the National Forest that are not open to public use and are not authorized under Special Use Permit. The largest areas within the project area are Elk Ridge, the Dry Range, and Wagner Gulch, where private landholders have effectively closed access to National Forest lands to the general public by closing private roads on private land.

Analysis Concern/Indicator

Miles of Gated Road on NF used by Permittees (but not public)	Acres of Public Land Accessible to Permittee/Landowner (but not public)*
D-1: 30.75 miles	D-1: 9,840 acres (along rds.)
D-2: 10.9 miles	D-1: 6,240 acres (isolated FS acres)
Project area total: 41.65 miles	D-2: 3,482 acres (acres along rds.)
	D-2: 2,610 acres (isolated FS acres)
	Project area total: 22,172 acres

*Acres of public land accessible to permittee assumed to be a corridor ¼ mile wide on each side of permitted road, for a total width of ½ mile.

Alternative 4

Private Uses of NFS Lands

The effects on the Lands/Non-Recreation Special Use resource associated with this alternative would be somewhat different than those associated with the other alternatives. Obligatory access would continue across NFS lands by landowners to private lands, utility companies would maintain/improve their corridors and improvements, communications companies would continue to operate off Forest Service Communications Sites, and miscellaneous private ventures would be authorized on NFS lands.

Several additional or longer private and special use access routes would have to be authorized within the project area as a result of implementation of Alternative 4. Private and special use access that would require permitting includes the following areas: Elk Ridge, Kingsberry Gulch, Devils Tower, Hogback Mountain Communication site, Harris Gulch, Park Gulch, Boulder Creek, Spruce Creek, Atlanta/Mule Creek road (#575), and Camas Ridge trail #140. At least 20 additional private access permits would be required. Added to the fifteen already authorized, it would bring the total number of permitted private routes in the project area to roughly thirty-five. This would add to the miles of gated road and associated acres accessible only to permittees. Selection of this alternative would require additional special use administrative and staffing time to process and respond to the additional private access needs.

Note that authorized private roads leave many publics with the impression of private, exclusive use of the National Forest lands. The public's understanding and acceptance of the need for permitted private access would suffer under this alternative.

Based on past trends plus the very limited number of open roads that remain, one would expect two to four new private road applicants each year for the foreseeable future. These would be the result of new developments on private land, or discovery of unauthorized private use that should be permitted.

NorthWestern Corporation and Yellowstone Pipe Line Company currently operate and maintain buried and aerial power lines and a buried gas pipeline within the project area. Rather than being a combination of open and restricted private roads, these service roads would all have to be permitted and gated. This would add to the miles of gated road and associated acres accessible only to permittees.

Analysis Concern/Indicator

Miles of Gated Road on NF used by Permittees (but not public)	Acres of Public Land Accessible to Permittee/Landowner (but not public)*
D-1: 26.25 miles	D-1: 8,400 acres (along rds.)
D-2: 20.4 miles	D-1: 6,240 acres (isolated FS acres)
Project area total: 35.85 miles	D-2: 6,528 acres (along rds.)
	D-2: 2,810 acres (isolated acres)
	Project area total: 23,978 acres

* Acres of public land accessible to permittee assumed to be a corridor ¼ mile wide on each side of permitted road, for a total width of ½ mile.

Alternative 5 – Proposed Action

Private Uses of NFS Lands

Access would continue across NFS lands by landowners to private lands. Utility companies would maintain/improve their corridors and improvements. Communications companies would continue to operate off Forest Service communications sites. Miscellaneous private ventures would be authorized on NFS lands. Based on past trends, one would expect one to two new private road applicants each year for the foreseeable future. These would be the result of new developments on private land, or discovery of unauthorized private use that should be permitted.

NorthWestern Corporation currently operates and maintains a buried power line that runs from Cottonwood Gulch up to the Hogback Mountain Communications Site. This power line right-of-way has been converted by users over the past ten years to a motorized trail. Portions of the trail are located on steep and erosive soils.

Roughly 18 additional private and special use access routes would have to be authorized immediately in the project area as a result of implementation of this area closure/designated route alternative. These, added to the fifteen already authorized, would bring the total number of authorized permitted private routes to roughly thirty three.

Under this alternative there would be no seasonal restriction on the use of the Hogback Mountain Road (FDR 298). This would eliminate the need for Travel Closure Permits that are currently issued to the communications site users during the spring break-up season.

Analysis Concern/Indicator

Miles of Gated Road on NF used by Permittees (but not public)	Acres of Public Land Accessible to Permittee/Landowner (but not public)*
D-1: 19.0 miles	D-1: 6,080 acres (along rds.)
D-2: 12.0 miles	D-1: 6,240 acres (isolated FS acres)
Project area total: 31.0 miles	D-2: 3,840 acres (along rds.)
	D-2: 2,610 acres (isolated FS acres)
	Project area total: 18,770 acres

* Acres of public land accessible to permittee assumed to be a corridor ¼ mile wide on each side of permitted road, for a total width of ½ mile.

Conclusions

Private uses of the National Forest and public access to the Forest will continue with any of the action alternatives. Some Alternatives will require more than others. Alternative 5 would result in fewer miles of roads and acres that are open to private use that are not open to public use as compared with the other alternatives. However, Alternative 2 And 3 would result in the greatest number of miles of roads open to private use, but not open to public use. Alternative 3 would result in the most acres open to private use, but are not open to public use.

Fire, Affected Environment

Introduction

The fire resource analysis for the North Belts Travel Plan relies upon direction and information found in the Helena National Forest Land Resource Management Plan (1986), the Helena NF Fire Management Plan (2002), the Big Belts Landscape Analysis (1994 and Update of 1998), and historical fire records for the Big Belt Mountains. Many of the vegetative communities and mosaic patterns within the Big Belts are a result of past fire occurrence. We do not have a complete record of this occurrence, although, based on tree scar data, past fire records, and aerial photo interpretation, we know that fires were very active prior to the arrival of Europeans to this area. In addition, most of the area has been burned over at least once, even within the past 120 years. The known fire

records date back to 1870 and show that the largest fires have occurred in the last 20 years.

National Fire Management Policy states that a fire burning on National Forest is either a wildland fire or a prescribed fire. A wildland fire that is human caused, occurs in an area without an approved fire management plan, or has no prescriptive factors, is a wildfire and requires appropriate initial attack response. A wildland fire may be managed to meet resource objectives, if it is in a previously approved area, is within prescriptive parameters, and is expected to stay that way.

Wildland Fire

The suppression history of the Helena National Forest typically has been aggressive control. This strategy has brought us through the old 10 A.M. policy whereby we were directed to have any new fires controlled by 10:00 A.M. the next day, to the appropriate suppression response based on the Fire Management Unit (FMU) involved. The Helena National Forest has three identified FMU's. The Helena National Forest Fire Management Plan allows for the appropriate response in FMU 1 (full suppression) and FMU 2 (flexible suppression), and wildland fire use as a *possible* response in FMU 3.

The analysis area is largely included in Fire Management Unit 2 (FMU 2) which allows for flexible suppression response.

Characteristics of the three FMU's:

FMU 1 - Full Suppression Response Strategy – Urban Interface & Other High Value / High Hazard Areas

- This area includes the wildland/urban interface and areas that have a high number of private land in-holdings.
- With the exception of Wilderness Areas, this FMU includes nearly all of the management areas on the Helena National Forest.
- All administrative sites fit within this FMU.
- Areas that are “Urban – Interface and Intermix” fit within this FMU, as do areas adjacent to interface and intermix.
- All vegetative and wildlife communities occurring on the Forest are found within this FMU.
- Management areas that fit within this FMU include: A1, H1, H2, R2, T4, all state and private lands protected by the Forest Service and BLM non-wilderness study lands.

FMU 2 - Flexible Suppression Response Strategy

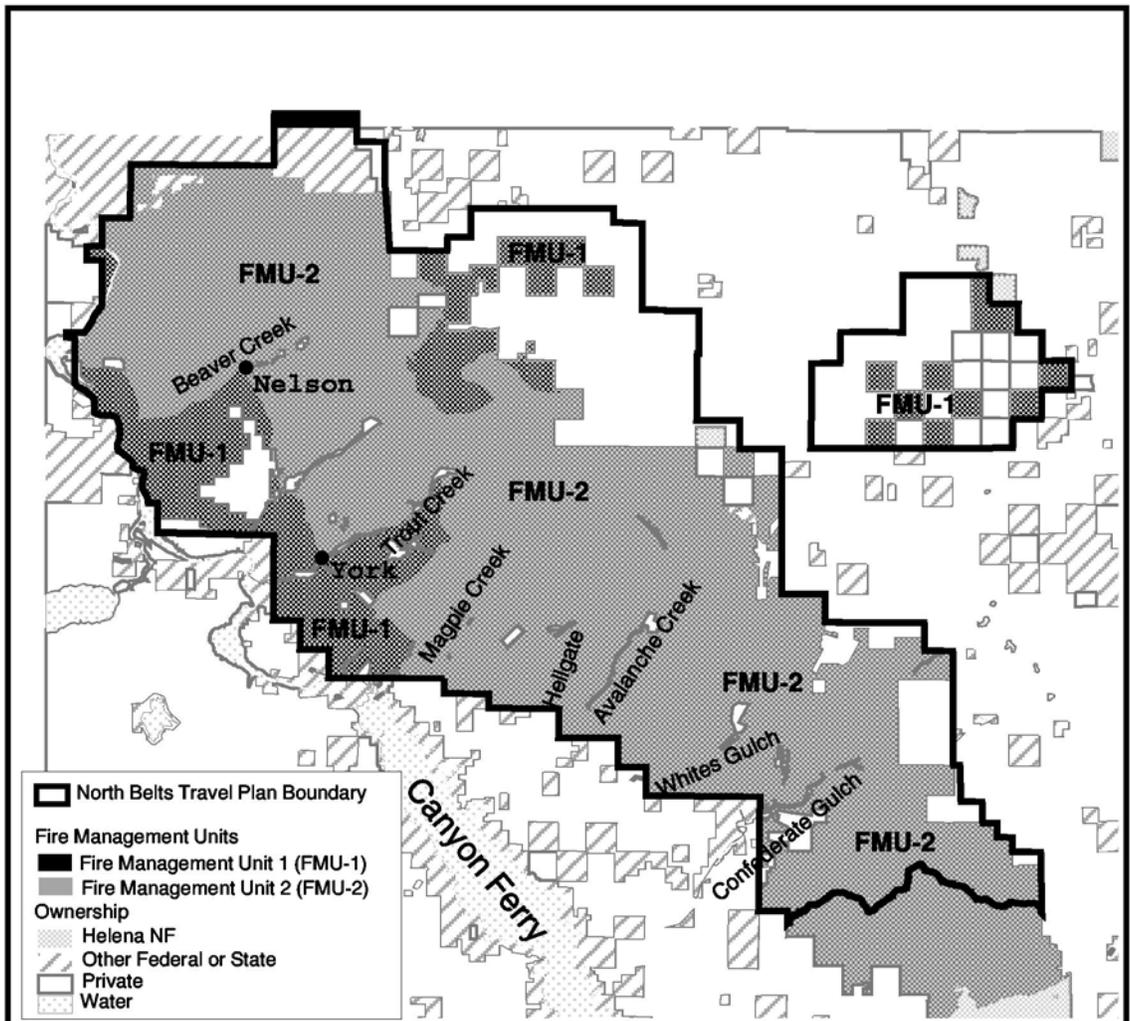
- Areas in this FMU include general forested and grasslands that have lower values at risk
- Represents areas on the Forest where the LRMP allows for a flexible suppression response and where there is not urban interface or intermix.

- All vegetative and wildlife communities occurring on the Forest are found within this FMU.
- Until the Big Belts Fire Management Plan is approved, FMU 2 will include the Gates of the Mountains Wilderness.

FMU 3 - Wildland Fire Use

- Currently there are no FMU 3 areas in the North Belts Travel Plan area, however a Wildland Fire Use plan is being developed for the Gates of the Mountains Wilderness Area and adjacent roadless areas. Once this plan is approved, it will amend the Fire Management Plan.
- The Scapegoat Wilderness and the core area of the Elkhorn Mountains are currently identified as the only FMU 3 areas on the Helena National Forest, both of which are outside this Analysis Area.

North Belts Fire Management Units



Prescribed Fire

For prescribed fires, a burn schedule and specific objectives should be completed for each project. The burn prescription should be plant specific (i.e. burning may set back such species as bitterbrush and Idaho or rough fescue, if done with insufficient soil moisture or when “greening up”). Prescribed burning should not exceed the natural fire frequency of the Fire Group (Fisher and Clayton). Prescribed fire will be used only during periods of adequate smoke dispersion and in areas where water quality can be adequately maintained. All burns will be conducted in accordance with the requirements of the Montana/Idaho State Airshed Group’s Smoke Monitoring Unit.

Analysis Area

This analysis is focused only on the currently managed Forest Service lands within the boundary of the North Belts Travel Plan area of the Big Belt Mountains in west-central Montana. While fires can easily cross boundaries onto or from adjacent state, private, or BLM lands, the travel management of these areas is outside the scope of this analysis.

Located north and east of Helena, Montana, the Big Belt Mountains include portions of the Helena National Forest, as well as some Bureau of Land Management (BLM) and private lands. In the early 1990’s, the agencies began to look comprehensively at the Big Belts and at the interrelationships of soil, water, vegetation, wildlife, and natural processes such as fire, and man’s activities. The results of this study are documented in the Big Belts Landscape Analysis of 1994, and the Update to the Big Belts Landscape Analysis of 1998. The Landscape Analysis clearly describes that fire has long played a major role in shaping the vegetation of the Big Belt Mountain’s ecosystems. Fires and the suppression of fires have had major effects on the composition, structure, and function of many of the plant and animal communities. Fires in the past included lightning caused fires, fires intentionally set by Native Americans for various purposes, fires accidentally set by miners and pioneers, and fires purposely lit by land managers to change the distribution of shrubs, grasslands, and trees on the landscape. Other factors that have influenced the process of fire include domestic livestock grazing, logging, insect infestations, disease epidemics, windstorms, and prolonged drought conditions. Humans have become extremely efficient and effective at suppressing fires in some vegetation types, and under certain weather conditions. As our knowledge, understanding and experience expand, it is becoming increasingly obvious that, in many situations, complete fire exclusion is detrimental to ecosystem health and proper functioning.

Fire is a primary natural disturbance in the Big Belt Mountains. Depending upon the fuel model, fuel moistures, general stand conditions and weather, fires can burn with varying severity and intensity ranging from low-intensity non-lethal ground fires, to moderate intensity, mixed severity fires, to high intensity, lethal, stand replacing crown fires. As documented in the Big Belt Landscape Analysis, effective fire suppression has substantially changed the amount and spatial arrangement of vegetation and woody fuels relative to the conditions maintained under natural disturbance regimes to the point where risk of catastrophic fire events is high given the proper conditions. In the last 50+ years, there have been

over 600 fires in the Big Belt Mountains, burning over 100,000 acres. Although most of these fires were lightning-caused, most of the acres burned can be attributed to four human-caused fires: The North Hills fire, which burned over 28,000 acres in 1984; the Beartooth Complex: 32,000 acres in 1990; the Cave Gulch fire: 28,000 acres in 2000; and the Maudlow/Toston fire which burned over 81,000 acres, also in 2000. Of these four fires, only the Maudlow/Toston fire was outside of the North Belts Travel Plan analysis area.

In ecosystems where fire has an important, dominating influence, as it does in the Big Belt Mountains, periodic changes in the system due to fire are essential to the functioning of the natural system. Such ecosystems are termed “fire dependent” and have been categorized into five groups called **fire regimes**. A natural fire regime is the total pattern of fires in vegetation, over time, characteristic of a natural region or ecosystem including variation of ignition, fire intensity and behavior, size of burn, recurrence (or return) intervals, and ecological factors.

Fire Regime Descriptors

Five combinations of fire frequency, expressed as fire return interval and fire severity, are defined in the following table. All five groups are represented to varying degrees in the Analysis area, with Groups I, II, and III predominant. Groups I and II include fire return intervals in the 0-35 year range. Group I includes ponderosa pine, other long-needle pine species, and dry-site Douglas fir. Group II includes the drier grassland types, tall grass prairie, and some chaparral ecosystems. Groups III and IV include fire return intervals in the 35-100+ year range; and Group V is the long-interval (infrequent), stand replacement fire regime.

The Five Historic Natural Fire Regime Groups

Fire Regime Group	Frequency (Fire Return Interval)	Severity
I	0-35 years	low severity
II	0-35 years	stand replacement severity
III	35-100+ year	mixed severity
IV	35-100+ year	stand replacement severity
V	>200 years	stand replacement severity

Fire Regime Groups I and II

These first two fire regime groups occupy nearly all the lower elevation zones across the U.S. These two regimes comprise for the most part, the FMU 1 areas identified on the Helena NF. They have been most affected by the presence of human intervention, and analysis shows that these types demonstrate the most

significant departure from historical levels. The departures are affected largely by housing development, agriculture, grazing, and logging. These areas are at greatest risk to loss of highly valued resources, commodity interests, and human health and safety. It is expected that these areas will continue to receive primary focus of wildland management agencies.

Fire, Environmental Consequences

Introduction

The quantitative effect of travel management on fire suppression and human-caused fire starts is difficult, if not impossible, to measure. Intuitively it can be stated that the more routes that are open for fire vehicle access, the better the suppression opportunities will be. Following that same logic, those same routes, if open to the public, will provide an increase in the risk of human-caused fire starts, under the right fuel and weather conditions, while also providing more opportunities for detection by forest users of new human-caused or lightning-caused fire starts. No historical evidence or current methodology exist that can provide any quantitative measure of these effects, due in large part to the random nature of fire and the many variables such as fuel conditions, weather, insect infestations, disease epidemics, and other factors that enter into a dynamic equation for fire starts, behavior, and effects. As such, *wildland fire* management cannot be considered a primary driver for travel planning. *Prescribed fire* on the Helena National Forest, on the other hand, relies to a great extent, on the ability for fire managers to access target burn areas by ground vehicles for both mechanical treatment and prescribed fire application and all subsequent control and mop-up operations. This is especially true in the lower elevation Ponderosa Pine ecosystems where historical natural fire return intervals are frequent (0-35 years) and the fires are of low intensity, but where current conditions are conducive to higher intensity, lethal severity fires, and exhibit the greatest departure from historical conditions of any of the Forest's fire-adapted ecosystems.

Effects Common to All Action Alternatives

Direct Effects

All of the Action Alternatives feature some combination of opening/closing roads and/or trails. Opening any new or currently closed roads or trails would have the effect of increasing the risk of human-caused fire starts during the times when vegetation is susceptible to combustion. This action would also allow vehicle access for fire suppression or prescribed burning activities being conducted by designated resources. Closing any currently accessible motorized route may have an impact on the response time and delivery of ground resources to any fire starts, or affect vehicle access to some prescribed burn areas, unless gating is used as the method of closure and access is permitted for Administrative uses. Closure of any roads or trails will also tend to reduce the risk of human-caused fires by limiting or eliminating vehicle access to these areas.

Indirect Effects

Firefighting suppression costs may increase due to the need for more extensive use of aerial firefighting resources such as helicopters, helitack crews, and retardant aircraft in areas that are no longer readily accessible by ground resources. In times of high fire activity, these resources may be scarce, being committed to other assignments locally, regionally, or nationally. In these cases, acres burned and total suppression costs may escalate substantially, based on the need for additional resources and incident duration required to reach containment and control objectives.

Alternative 1 - No Action

In the Analysis area, there are currently about 500 miles of roads in the North Belts Travel area available for fire management activities, including roads open yearlong and seasonally, nonsystem and closed yearlong with gates. There will be no change to the current management of travel routes in the Analysis area, therefore, the level of fire risk or fire management activities will not be affected by any new travel management changes resulting from the decision.

Wildfires will continue to be suppressed with an appropriate suppression response that results in minimum costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires will continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

Alternative 2

Under this Alternative, there would be about 300 miles of roads in the North Belts Travel area available for fire management activities, including roads open yearlong and seasonally, nonsystem and closed yearlong with gates. While the increase in “restricted yearlong roads” would decrease the risk of human-caused fires in those areas, there would be an increased risk of human-caused fires in the proposed 425-acre off-route vehicle use area and more than doubling the miles of motorized trails present in the existing condition. Access for fire suppression and fuels management projects would be substantially reduced.

Wildfires would continue to be suppressed with an appropriate suppression response that results in minimum costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

Alternative 3

Under this Alternative, there would be about 400 miles of roads in the North Belts Travel area available for fire management activities, including roads open yearlong and seasonally, nonsystem and closed yearlong with gates. There would probably not be a notable change to the current level of fire risk under this Alternative because the overall reduction of routes in the roads category would be offset by an increase of 113 miles of dual-use routes. Since there would be no decommissioning of existing roads, even those under yearlong closure, there

may be better opportunities for vehicle access for fire suppression or prescribed fire activities provided the roads were maintained as needed to ensure viable access.

Wildfires would continue to be suppressed with an appropriate suppression response that results in minimum costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

Alternative 4

Under this Alternative, there would be about 150 miles of road available for fire management activities, including roads open yearlong or seasonally and roads closed yearlong by gates. There would be a notable reduction in the level of risk associated with man-cause fire starts under this alternative due to the elimination of all motorized trails and a notable overall reduction in the miles of road open to motorized vehicles. Vehicle access for fire suppression and prescribed fire activities would also be substantially reduced due to the decommissioning of about 263 miles of existing roads by ripping and seeding and recontouring.

Wildfires would continue to be suppressed with an appropriate suppression response that results in minimum costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

Alternative 5 – Proposed Action

Under this Alternative, there would be about 176 miles of road open yearlong; 67 miles open with seasonal restrictions; and 224 miles restricted yearlong – with a maximum of 181 miles of these closed by gates. There should be a reduction in the level of risk associated with human-caused starts under this alternative due to the reduction in the number of miles of roads open without restrictions to wheeled motorized vehicles. There would also be slightly reduced access for vehicles used for fire suppression and prescribed fire activities primarily because of the approximately 9 miles of road slated for decommissioning by re-contouring. However, primary roads used for a full suppression response in the high value areas identified as comprising FMU 1, would be available for use by suppression resources and would not be part of the decommissioning process.

Conclusions

As previously stated, the quantitative effect of travel management on fire suppression and human-caused fire starts is difficult, if not impossible, to measure. It can arguably be stated that the more routes that are open for fire vehicle access, the better the suppression opportunities will be. Those same routes, if open to the public, will also provide an increase in the *risk* of human-caused fire starts under the right fuel and weather conditions, but will also provide more opportunities for detection of new human-caused and lightning-caused fire starts by forest users.

Therefore, the analysis of travel management alternatives on the risk of human-caused fires, for the most part, is a purely subjective exercise using probability and professional judgment to arrive at a conclusion. Fuels management projects, however, rely to a great degree on readily available administrative access for accomplishing land and resource objectives, so alternatives can be quantitatively measured in this area.

From a fire and fuels management standpoint, the two main issues are:

1. Vehicle access for personnel involved in fire suppression and fuels management projects such as timber and brush thinning, ladder fuel removal, building firebreaks, and prescribed burning projects.
2. Vehicle access by the public. Human-caused risk of fire starts increases as public access becomes more available.

The table below displays the relative degree (High, Moderate, Low) to which each alternative allows access for these two issues.

Relative amount of access provided by each alternative

Comparison Element	Alt. 1 No Action	Alt. 2	Alt. 3	Alt. 4	Alt. 5 Proposed Action
Access for fire and fuels management	High	High	High	Low	Moderate
Public access and associated risk of fire starts	High	Moderate	High	Low	Moderate

Forested Vegetation, Affected Environment

Introduction

Since the early 1950's roads have been built to access and haul commercial timber. These roads have provided continued access for forest management and opportunity for public firewood collection and other forest products.

Analysis Area

Silvicultural treatments (including timber harvest) are used to promote healthy, productive forest conditions. Often treatments can reduce or suppress insect and disease occurrences. An important indication of Forest health is the diversity and distribution of age classes and corresponding species composition. The greater the diversity and distribution of stand ages and species, the more resistant the entire forest is to large scale damage from any single insect or disease agent. A key element in the implementation of forest management practices that promotes biodiversity is the presence of an effective network of forest access roads.

There are approximately 500 miles of Forest Service roads within the North Belts travel planning area. These roads are the main avenues of access to the Helena National Forest once one leaves the county or state highways. Many of these roads were developed for long-term land and resource management purposes. They have also been used to access areas of the Big Belt Mountains for vegetation management for multiple resource objectives, as well as firewood gathering and other forest related activities for the last 40+ years.

A functional transportation system is key to providing access to forested areas of the Big Belt Mountains to facilitate vegetative management and other silvicultural treatments, resulting in more feasible and cost-effective projects. There are approximately 50,670 acres of lands within the suitable base in the analysis area. Approximately 45% – 50% of lands within the suitable timber base could accommodate additional access roads if management is planned in these areas.

Forested Vegetation, Environmental Consequences

Introduction

The effects indicators for timber resources are discussed as the change in opportunity for management of timber resources on suitable lands and public opportunity to collect firewood and other forest products.

Effects Common to All Alternatives

In most areas of the Helena National Forest, including the Big Belt Mountains, the suitable timber base has existing arterial or collector road access to the general forest area. Local roads are then needed to provide adequate access to the immediate area needing silvicultural or other treatment.

To assess the condition and health of forested stands, ongoing monitoring must be conducted across the North Belts. Existing roads contribute to access for the detection, prevention, and management of forest stands including the activities associated with responding to insect, disease and parasite attacks. This access is also important to facilitate vegetation management, including timber harvest, tree planting, silvicultural monitoring and inventory, and pre-commercial thinning. Without road access, many of these actions would be very expensive, if not impossible to accomplish. Management actions can often be readily and cost effectively implemented from a well-designed transportation system. As management opportunities arise, additional local roads may be needed to facilitate vegetation management activities. Road access adds value to any timber that might be harvested in the future; i.e. accessible timber has more value than timber without access.

Travel route restrictions would vary among action alternatives. However, in all cases, opportunities to access portions of the Big Belt Mountains, including the suitable timber base, would continue. The effect of each alternative is dependent on the amount of road access that is eliminated through road re-contouring, rip/seed activities, and in some instances gates.

Also, existing roads would continue to provide access for the public to collect forest products such as firewood, post and poles, Christmas trees and mushrooms.

Alternative 1 – No Action

Approximately 50% - 55% (26,500 acres) of suitable lands are currently accessible through the existing transportation system. These existing roads would continue to provide a means to access the Big Belts for management activities on the suitable timber base and transport log trucks as needed.

Approximately 86 miles of existing roads in this alternative would restrict access yearlong. These closures would be implemented using a combination of gates and signs. Opportunities to manage forests for vegetation management objectives with this alternative would continue and additional local roads may be needed to facilitate harvest opportunities. Vehicle access to conduct ongoing monitoring and evaluation of forest stands on routes restricted yearlong would not change.

Approximately 410 miles of roads (system roads and unclassified routes) open yearlong or open with seasonal restrictions are currently available to the public to gather fuel wood and other forest products. However, as directed by the Statewide Off-Highway Vehicle decision, vehicles used to collect firewood or other permitted products are restricted to designated routes, no off road travel is authorized.

Alternative 2

Approximately 50% - 55% (26,500 acres) of suitable lands would be accessible through this transportation system. These roads would continue to provide a means to access the Big Belts for management activities on the suitable timber base and transport log trucks as needed.

Approximately 125 miles of existing roads in this alternative would restrict access yearlong. These closures would be implemented using a combination of gates, signs, and a rip/seed/slash method. The rip/seed/slash closure method would occur on approximately 69 miles of road. Prisms would remain in place on roads with yearlong restricted access. Therefore, roads would remain available for long-term management of suitable lands. This closure method does not preclude management options in the future. However, re-establishing a drivable road prism may require minimal work with road maintenance equipment. Existing roads restricted yearlong, which are closed through rip/seed/slash method, would not be drivable. Therefore, vehicle access to conduct ongoing monitoring and evaluation of timber stands would be reduced. This would increase the cost of ongoing monitoring and evaluation of suitable lands that were once accessed by these existing roads. Opportunities to manage forests for timber management objectives with this alternative would continue. However, additional local roads may be needed to facilitate harvest opportunities.

Approximately 330 miles of roads (system roads and unclassified routes) open yearlong or open with seasonal restrictions would be available to the public to

gather fuel wood and other forest products. Use of motorized wheeled vehicles would be permitted within 300 feet of existing roads to facilitate collection of firewood or other permitted products.

Alternative 3

Approximately 50% - 55% (26,500 acres) of suitable lands would be accessible through the transportation system as described in this alternative. The existing roads would continue to provide a means to access the Big Belts for management activities on the suitable timber base and to transport log trucks as needed.

Approximately 90 miles of existing roads in this alternative would restrict access yearlong. These closures would be implemented using a combination of gates and signs; similar to Alternative 1. Road prisms would remain in place with yearlong restricted access; therefore remain available for long-term management of suitable lands. Vehicle access to conduct ongoing monitoring and evaluation of forest stands from roads restricted yearlong would not change. Opportunities to manage forests for multiple resource objectives with this alternative would continue and additional local roads may be needed to facilitate harvest opportunities.

Approximately 400 miles of roads (system roads and unclassified routes) open yearlong or open with seasonal restrictions would be available to the public to gather fuel wood and other forest products. Use of motorized wheeled traffic would be permitted within 300 feet of existing roads to facilitate collection of firewood or other permitted products.

Alternative 4

Approximately 30% - 35% (16,200 acres) of suitable lands would be accessible through the transportation system described in this alternative. The existing roads would continue to provide a means to access portions of the Big Belts for management activities on the suitable timber base and to transport log trucks as needed.

Approximately 327 miles of existing roads in this alternative would restrict access yearlong. These closures would be implemented using a combination of gates, signs, re-contour, and rip/seed/slash method. Prisms would remain in place on approximately 255 miles of road with yearlong restricted access. Therefore, these road segments would remain available for long-term forest management on suitable lands. The rip/seed/slash closure method would occur on approximately 191 miles of road. Road re-contour would occur on approximately 72 miles of road. These roads and the areas they access would no longer be available for management without new road construction when activities are planned in the future. Existing roads restricted yearlong, which are closed through rip/seed/slash method and re-contour, would not be drivable. Therefore, vehicle access to conduct ongoing monitoring and evaluation of forest stands would be reduced. This would increase the cost of ongoing monitoring and evaluation of suitable lands that were once accessed by these existing roads. This alternative would result in the highest cost increase to complete ongoing

field evaluations in which access was needed from roads closed by the rip/seed/slash and re-contour method. Opportunities to manage forests for multiple resource management objectives would decrease, as compared to Alternative 1, and additional local roads may be needed to facilitate cost efficient harvest opportunities.

Approximately 136 miles of roads (system roads and unclassified routes) open yearlong or open with seasonal restrictions would be available to the public to gather fuel wood and other forest products. However, vehicles used to collect firewood or other permitted products would be restricted to designated routes. Off-road travel would not be authorized.

Alternative 5 – Proposed Action

Approximately 45% - 50% (24,300 acres) of suitable lands would be accessible through the transportation system described in this alternative. The existing roads would continue to provide a means to access the Big Belts for management activities on the suitable timber base and to transport log trucks as needed.

Approximately 224 miles of existing roads in this alternative would restrict access yearlong. These closures would be implemented using a combination of gates, signs, road re-contour, and a rip/seed/slash method. The rip/seed/slash closure method would occur on approximately 54 miles of road. Prisms would remain in place on approximately 215 miles of road with yearlong restricted access. Therefore, these road segments would remain available for long-term forest management on suitable lands. Road re-contour would occur on approximately 9 miles of road. These roads and the areas they access would no longer be available for management without new road construction when activities are planned in the future. Existing roads restricted yearlong, which would be closed through rip/seed/slash method and re-contour, would not be drivable. Therefore, vehicle access to conduct ongoing monitoring and evaluation of timber stands would be reduced. This would increase the cost of ongoing monitoring and evaluation of suitable lands that were once accessed by these existing roads. Opportunities to manage forests for multiple resource management objectives would decrease, as compared to Alternative 1, and additional local roads may be needed to facilitate harvest opportunities.

Approximately 242 (system roads and unclassified routes) miles of roads open yearlong or open with seasonal restrictions would be available to the public to gather fuel wood and other forest products. Use of motorized wheeled traffic would be permitted within 300 feet of existing roads to facilitate collection of firewood or other permitted products.

Conclusions

Summary of Alternatives

Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Miles available for fuelwood collection	410 miles	330 miles	400 miles	136 miles	242 miles
% (Acres) Of Suitable lands accessible for forest mgt.	50%-55% (26,500)	50%-55% (26,500)	50%-55% (26,500)	30%-35% (16,200)	45%-50% (24,300)

Alternatives 1, 2, and 3 provide the best opportunity for continued management opportunities of the suitable timber base from existing roads. Alternative 4 provides the least opportunity for management of the suitable timber base from the existing transportation system. Alternative 5 provides less opportunity for management than Alternatives 1, 2, and 3 but more than Alternative 4.

Due to route restrictions, public firewood-gathering opportunities are limited to existing roadways in Alternatives 1 and 4. Alternative 4 provides the least opportunity to the public. Alternatives 2, 3, and 5 allow use of motorized wheeled traffic within 300 feet of existing roads to facilitate collection of firewood and other permitted products. Alternative 3 has the most miles of road available for fuelwood collection therefore, provides the greatest opportunity for the public to gather firewood.

Sensitive Plants, Affected Environment

Introduction

There are several sensitive plant populations within the project area.

Analysis Area

Generally the North Belts Travel Plan analysis area boundary has been used to address potential impacts to sensitive plants.

Sensitive Plant Habitats

This assessment takes into account the habitats and known population areas of five sensitive plant species known or suspected to occupy habitat within the Big Belts. Three sensitive species are known to occupy habitat within the Big Belt Mountains (Poole and Heidel 1993; Barton and Crispin, 2002): *Cirsium longistylum*, *Juncus hallii* and *Polygonum douglasii ssp. austinae*. *Cirsium longistylum* and *Polygonum douglasii ssp. austinae* are known to exist within the

North Belts Travel Plan area. *Juncus hallii* is not known to occupy habitat within the travel plan area, but there is potential that it does exist. It is possible that two more species, *Phlox kelseyi* var. *missouliensis* and *Botrychium paradoxum* could be present, although these species have never been found in the Big Belts.

Botrychium paradoxum has not been found in the Big Belts to date. The species has been found in other areas of the Helena Forest associated with high quality rough fescue grasslands, and can be found in sagebrush meadows.

Cirsium longistylum is known from numerous sites in the Big Belts and is the most common of these rare species in the area. This species occurs within moist meadows in the montane zone associated with species such as *Festuca scabrella* and *Festuca idahoensis* and is found in numerous roadside areas. The species is tolerant of disturbance to some degree as it is found in disturbed habitats.

Juncus hallii has not been located within the project area, but it is known to occupy habitat in one site in the Big Belts. This species is associated with moist to wet meadows and could occupy habitat where roads are located very close to wetlands. This species is associated with species such as *Polygonum bistortoides*, *Festuca idahoensis*, *Festuca scabrella*, *Iris missouriensis*, *Potentilla gracilis* in drier zones and with numerous *Carex* and *Juncus* species in more moist habitats.

Phlox kelseyi* var. *missouliensis has not been found in the Big Belt mountains to date. Numerous surveys have been conducted for this species and it has not been detected in surveys to date, though some populations could potentially occur. Associated species are *Festuca idahoensis* and *Festuca scabrella*.

Polygonum douglasii* ssp. *austinae has been found within the project area. General habitat is open gravelly shale-derived soil of eroding slopes/banks or usually moist barren shale slopes, associated with species such as *Pseudoroegneria spicatum*, *Potentilla glandulosa*, *Juniperus scopulorum*. Shale slopes fitting this description can occur along roadsides in the Big Belts.

Sensitive Plants, Environmental Consequences

Effects Common to All Alternatives

General effects on sensitive plants are negative due to potential ground disturbing activities. *Cirsium longistylum* is a possible exception to this, as this species occurs along roadsides, which are inherently disturbed areas. Ground disturbing activities, particularly when the soil surface is disturbed, cause negative impacts to sensitive plant populations. These factors include direct physical impacts to populations and the alteration of habitats adjacent to these populations.

Any increase in bare soil that is likely to cause an increase in weeds may have a long-term negative effect on sensitive plants and potential sensitive plant habitats. These invading species often out-compete native flora. Soil disturbance and erosion are all likely to increase the opportunity for weeds to

become established. Roadsides provide habitat for noxious weed species. Road management activities such as grading, widening and other improvements provide fresh seedbeds for noxious weeds and constitute an important threat to sensitive plant species. The use of herbicides is the most effective treatment for noxious weed occurrence particularly along roadsides. Herbicides can kill sensitive plants however, and known populations must be buffered from herbicide application.

Several sensitive species populations are known to occupy habitat along existing roads and in areas proposed for decommissioning as well as some new trails. Indirect impacts associated with illegal motorized vehicles, future road improvements and herbicide application could pose a threat to several adjacent populations however. This indirect impact is common to all alternatives.

Mitigation Measures

All known populations of sensitive species would be protected during ground disturbing activities, although individual plants may be eliminated. Herbicide applications (spraying) of roadsides and trailways would not occur within a specified buffer, depending on the herbicide used and the plant population involved.

Alternative 1 – No Action

Existing roads and trails would not have a major impact on sensitive plant species. Some activities associated with the roads have the potential to adversely affect plant populations however. Vehicles that travel outside the road or trail prism could adversely impact plants. Use of herbicides on noxious weeds could adversely affect sensitive plant species. Most road maintenance activities that stay within the existing prism would not pose a direct threat to those plant populations that are established along road and trailways.

Several plant populations are located adjacent to roads. Some of the roads in the Big Belts would be improved in future NEPA projects. Some of the projects have the potential to adversely affect sensitive plant populations, depending on the location and scope of the project. Those projects would require site specific analysis and survey for plant populations if appropriate.

Alternative 2

Alternative 2 has the potential to affect four known populations of *Cirsium longistylum*. All of the potential effects come from decommissioning of existing road or trail prisms that are within or near populations. The roads and trails that may potentially affect populations are shown in the following table.

Roads and Trails That May Potentially Affect Sensitive Plant Species

Road/Trail No.	Action Proposed	Species Present/ Suspected	Remarks/Mitigation
Rd 138-I1	Rip existing road	Cirsium longistylum	Known population very near proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 8971	Rip	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 287-E8	Rip existing Road	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 287-D1	Rip	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.

Alternative 3

Existing roads and trails would not have a notable impact on sensitive plant species. Some activities associated with the roads have the potential to adversely affect plant populations however. Vehicles that travel outside the road or trail prism could adversely impact plants. Use of herbicides on noxious weeds could adversely affect sensitive plant species. Most road maintenance activities that stay within the existing prism would not pose a direct, notable threat to those plant populations that are established along road and trailways.

Several plant populations are located adjacent to roads. Some of the roads in the Big Belts would be improved in future NEPA projects. Some of the projects have the potential to adversely affect sensitive plant populations, depending on the location and scope of the project. Those projects would require site specific analysis and survey for plant populations if appropriate.

Alternative 4

Alternative 4 has to potential to affect nine known populations of *Cirsium longistylum*. One of the potential effects is from construction of a new trail up Cottonwood Gulch. The other eight populations have the potential to be affected by decommissioning of existing roads or trails. The roads and trails that may potentially effect populations are shown in the following table.

Roads and Trails That May Potentially Affect Sensitive Plant Species

Road/Trail No.	Action Proposed	Species Present/ Suspected	Remarks/Mitigation
Cottonwood trail	New construction	Cirsium longistylum	Known population within ½ mile of new construction. Site specific evaluation required. Avoid disturbing population.
Rd 138-I1	Rip existing road	Cirsium longistylum	Known population very near proposed deconstruction. Site specific evaluation

			required. Avoid disturbing population.
Rd 4136-A3	Rip existing road	Cirsium longistylum	Known population in the vicinity of deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 1020	Rip existing road	Cirsium longistylum	Known population very near proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 8971	Recontour	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 4161-C1	Rip existing road	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 8968	Recontour	Cirsium longistylum	Known population very near proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 287-E8	Rip existing Road	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 287-D1	Recontour	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.

Alternative 5 – Proposed Action

Alternative 5 has the potential to affect four known populations of *Cirsium longistylum*. One of the populations may be affected by new construction of the Bilk Mountain trail while the other three are associated with trails or roads that are proposed for decommissioning.

Roads and Trails That May Potentially Affect Sensitive Plant Species

Road/Trail No.	Action Proposed	Species Present/ Suspected	Remarks/Mitigation
Bilk Mtn trail	New construction	Cirsium longistylum	Known population very near proposed construction. Site specific evaluation required. Avoid disturbing population.
Rd 138-I1	Rip existing road	Cirsium longistylum	Known population very near proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 287-E8	Rip existing Road	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.
Rd 4171-A1	Rip	Cirsium longistylum	Known population adjacent to proposed deconstruction. Site specific evaluation required. Avoid disturbing population.

Conclusions

Overall, alternative four poses the greatest potential to adversely affect sensitive species within nine known populations. Alternatives two and five pose a potential threat to four known populations. Alternatives one and three would not change the current situation, which is little impact directly from existing roads and trails. Indirect impacts associated with illegal motorized vehicles, future road improvements and herbicide application could pose a threat to several adjacent populations however.

Watershed, Affected Environment

Introduction

This report collectively evaluates both soil and water resources using an integrated assessment of watershed function and risk. The information presented in this analysis comes from a variety of sources including direct field examination of the project area (110 road sediment surveys) and a geographical spatial analysis on the computer where the roads and trails were intersected with watersheds, streams and landtypes.

Analysis Area

The North Belts travel planning analysis area is comprised of 47 separate watersheds in the northern Big Belt and Dry ranges of the Helena National Forest. These range in size from 0.41 square miles to 73 square miles. The analysis area is depicted on the map at the beginning of the document and the individual watersheds can be found in the project file. While the analysis was done on a watershed-by-watershed basis much of the information is aggregated up for this report. The watershed approach not only makes sense from a scientific perspective, but also is responsive to comments and allows us to make comparisons between our watershed approach and the commentors aquatic integrity analysis. Watershed specific information is in the project file and is available upon request.

Soils

Landtypes Affected by Roads and Trails

Within the North Belts Travel Planning Project area, there are 56 landtypes, or mapped soil units, affected by roads and trails. These mapped soil units are documented and described in "Soil Survey of Helena National Forest Area, Montana" (USDA Forest Service and Natural Resources Conservation Service 1988). A table displaying the characteristics for these landtypes, and the miles of roads crossing each landtype, can be found in the project file. A map of landtypes affected by roads and trails can be found in the project file as well.

Soil Productivity

In general, roads and trails are a “dedicated use” for lands that comprise the road prism. In this context, impacts to soil productivity resulting directly from the presence of roads and trails are not evaluated for compliance with Region 1 soil quality standards, because the affected land is managed for transportation uses and is not managed for vegetation production.

Under current conditions soil productivity has been withdrawn on lands affected by about 928 miles of existing roads and trails within the North Belts Travel Planning Project area. These lands are dedicated to transportation and access uses.

Transportation uses can indirectly impact soil productivity on lands outside the road or trail prism when travelers establish new routes, especially to avoid trail obstructions and crossing difficult terrain or wet areas. Soil impacts associated with user-established routes can occur on all types of roads and trails, whether those routes are used for motorized or non-motorized access.

Lands affected by user-created roads and trails have not been dedicated to transportation uses. This degrades soil quality on areas that are identified for other types of uses in the Forest Plan, such as timber or forage production, and provision of wildlife or fisheries habitat. The exact amount of area affected by these soil impacts has not been quantified for the North Belts Travel Planning Project Area.

Sensitive Soils

“Permanent roads do affect soil hydrologic function, however, their evaluation is more appropriately done on a watershed basis” (U.S.D.A. Forest Service 1999, page 3). For example, surface water runoff is increased on soils compacted by roads or trails. This increased runoff leads to accelerated soil erosion from road surfaces, and can contribute to increased sedimentation in streams. “Sensitive soils” will be evaluated as indicators for addressing risks of road impacts on watershed function. “Sensitive soils” are defined as landslide-prone soils, highly erodible soils, and wet soils. “Sensitive soils” are selected as indicators because they represent landscapes most vulnerable to impacts from roads or trails.

Landslide-prone Soils

Landslide-prone soils are found in landtypes 15 and 150 (landtype aggregate 6). Soils derived from colluvium can also be susceptible to localized slumping. These colluvial soils are found in landtypes 14A and 14B (landtype aggregate 5).

There are about 31 miles of existing roads and trails crossing these landslide-prone or slump-prone soils within the North Belts Travel Planning Project area. These landslide-prone or slump-prone soils also tend to contain wet areas, and will also be discussed under the section describing wet soils.

Highly Erodible Soils

Soils with topsoil formed in loess influenced by volcanic ash are highly erodible, and are found on landtypes 12B, 12C, 56, 59, 76, 76A and 89. Soils formed from granitic bedrock are also highly erodible, and are found on landtypes 12C, 56, 56A, 69, 76, 76A and 89 (landtype aggregates 10, 22, 23 and 24).

There are about 12 miles of existing roads and trails crossing these highly erodible granitic and loess soils within the North Belts Travel Planning Project Area. Landtypes 12B and 12C also contain wet areas, which is discussed in the next section.

Wet Soils

Soils with shallow water tables or wet areas are located on landscapes with poor drainage or within riparian areas surrounding streams, springs or seeps. These wet areas are found contained within landtypes 12A, 12B, 12C, 13A, 14A, 14B, 15, 100 and 150. Wet soils typically do not comprise the entire area within these landtypes, but are often found in depressional or concave-shaped areas on the landscape.

There are about 94 miles of existing roads and trails crossing these soil types containing wet areas within the North Belts Travel Planning Project area. It is important to note that 31 of these 94 miles of road coincide with lands described under landslide-prone soils. Also, about 4 of these 94 miles of road coincide with lands described under highly erodible soils.

Summary of Sensitive Soils

Combining landslide-prone, highly erodible, and wet soil types, there are about 103 total miles of existing roads and trails crossing sensitive soils within the North Belts Travel Planning Project Area. This is out of a total of about 928 miles of roads and trails on lands within this project area. Of these miles, 460 miles are on federal lands and the remaining are on private land.

Water

Watershed Conditions

Overall Watershed Conditions

There are 460 miles of forest system roads within these watersheds with a total of 928 miles of road and trails both system and non-system and private. The road density ranges from close to zero miles per square mile to 5.1 miles per square mile for forest system roads. When all the trails and roads in the analysis area are included, the densities range from .02 to 5.3 miles per square mile.

Within these watersheds 13 have been listed as High risk in the roads analysis. This risk rating is based on road density, miles of road within the Riparian Habitat Conservation Area (RHCA), and the number of road stream interactions, e.g., stream crossings or roads adjacent to streams as depicted in the spatial analysis. There are three watersheds that rated out as moderate. There are 40 Roads

(171 miles) that are listed as high risk in the roads analysis and 25 (49 miles) roads that are listed as moderate risk. These risk ratings are based on miles of road in slide prone soils, miles in erosive soils, miles within RHCA, miles within wet soil types, and number of road stream interactions.

The following table depicts key watershed indicators for the existing condition:

Indicator	Existing Condition
Miles of road in landslide-prone soils	31
Miles of road in highly erodible soils	12
Miles of road in wet soil types	94 (31 miles coincide with landslide-prone soils, and 4 coincide with highly erodible soils)
Miles of road and motorized trail within the RHCA	214
Number of road/stream interactions from forest system roads	449 (this does not include roads that are closed year long and unclassified routes)
Sediment yield from forest system roads	228 to 579 tons/year

Sediment

Road sediment surveys have been conducted at 110 sites within the analysis area. Measurements taken were then put into the WATSED sediment model and sediment projected for each site. There was a total of 142 tons of sediment estimated coming from all of the surveyed sites combined. This equates to anywhere from 228 to 579 tons of sediment coming from forest system roads within the analysis area. Information by watershed is in the project file and available upon request.

Watershed, Environmental Consequences

Introduction

For direct and indirect effects, the geographic scope for environmental effects analysis will be the road and trail corridor. For cumulative effects in high-risk watersheds, the geographic scope for environmental effects will be the watershed scale. For all other cumulative effects, the geographic scope for environmental effects will be the project area scale.

Effects Common to All Alternatives

Soil Impacts From Roads and Trails

Soil effects resulting from development and use of forest roads and trails have been relatively well documented in the scientific literature. A literature review for effects of roads and trails on soil can be found in the project file (Hackley 2002).

Soil effects from roads and trails include removal of vegetative cover, compaction, degradation of soil structure, decreased infiltration and water holding capacity, reduction in organic material, accelerated surface erosion, and exacerbation of mass failure, such as landslides or slumps. These types of soil impacts can occur on the prism of all roads and trails, whether those routes are used for motorized or non-motorized access.

The magnitude and extent of soil impacts are generally greatest on roads compared to trails, because cut and fill road construction often causes soil disturbance on areas adjacent to the road tread. On forest roads, the road tread is typically about 15 feet wide. For roads on steep slopes, the total area of soil disturbance, including cut and fill slopes, can be twice the width of the road tread itself.

The exact width of total soil disturbance associated with each road in the project area has not been measured in the field. However for the purposes of this travel planning environmental analysis, the average width of soil disturbance associated with roads is approximated as 30 feet. This is likely an overestimate for roads on flat ground, but more accurately reflects width of disturbance for roads on steep ground. This width equates to approximately 4 acres of soil disturbance per linear mile of road.

The magnitude and extent of soil impacts are generally the least on trails designed for non-motorized uses compared to roads and motorized-use trails, because construction of non-motorized trails does not require large cut and fill slopes. The trail tread for non-motorized trails is usually designed to be 2 feet wide. Non-motorized trails affect a relatively narrow corridor, typically no more than 6 feet wide for the total area of soil disturbance. With a 6-foot width of total soil disturbance, there is approximately 1 acre of soil impacts per linear mile of non-motorized trail.

Trails designed for motorized uses are typically intermediate in magnitude and extent of soil impacts, compared to roads and non-motorized-use trails. The trail tread is usually designed to be 5 feet wide. Motorized trail design generally requires moderate cut and fill construction.

The exact width of total soil disturbance associated with each motorized trail in the project area has not been measured in the field. However for the purposes of this travel planning environmental analysis, the average width of soil disturbance associated with motorized trails is approximated as 15 feet, including ground disturbance on cut and fill slopes. This is likely an overestimate for trails on flat ground, but more accurately reflects the actual width of motorized trails on steep ground. This width equates to approximately 2 acres of soil disturbance per linear mile of motorized trail.

Soil Productivity

For the purposes of this travel planning environmental analysis, lands affected by roads and trails will not be evaluated for compliance with Region 1 soil quality standards. This is because lands affected by roads and trails are not being managed for vegetation production, or soil productivity. Although roads and trails

do impact soil hydrologic function, environmental analysis of these effects will be conducted using watershed analysis techniques, discussed later in this report.

Effects to soil productivity from the presence or new construction of roads and trails will be evaluated as lands withdrawn from productive use, and dedicated to access and transportation use.

Decommissioning of roads and trails will be evaluated as soils reclaimed for productive use. In the short-term, decommissioning can compound soil impacts from roads or trails, such as accelerated erosion. Reclamation of site productivity is a long-term effect since recovery of vegetation and soil conditions requires time.

For the purposes of decommissioning, methods such as rip and seed, or recontouring are considered as soil reclamation measures. These measures have varying degrees of effectiveness in restoring soil productivity (Switalski et al. in press). However, there are no reclamation treatments that can immediately restore soil productivity to pre-disturbance conditions.

Road closure with barriers only, and without physical manipulation of the road prism, is not considered a soil reclamation measure. This is because soil impacts such as compaction and decreased infiltration capacity on road or trail prisms can persist for several decades even without continued transportation or access use.

Sensitive Soils

For the purposes of this travel planning environmental analysis, “sensitive soils” will be evaluated as indicators for addressing risk of road impacts on watershed function by alternative. “Sensitive soils” are defined as landslide-prone soils, highly erodible soils, and wet soils. Impacts to these sensitive soils can cause sedimentation to streams through accelerated erosion, and disruption of hillslope hydrologic function through decreased infiltration and increased surface water runoff.

To compare change in watershed risk by alternative, miles of roads or trails that have been decommissioned in areas of sensitive soils will be evaluated. Roads or trails decommissioned on sensitive soils will decrease watershed risk in the long-term, as vegetation and soils recover proper hydrologic function on those sites. In the short-term, road or trail decommissioning may exacerbate watershed effects, such as accelerated erosion and sedimentation.

Alternative 1 – No Action

Soil Productivity

Soils Dedicated to Transportation Use

Under the existing condition, there are approximately 1650 acres of land withdrawn from productive capacity and dedicated to transportation uses on open roads crossing National Forest lands. While approximately 340 acres are associated with roads restricted year-long.

For motorized-use trails, there are approximately 110 acres of land dedicated to transportation and access uses. For non-motorized-use trails, there are approximately 90 acres of land dedicated to transportation and access uses.

There are no new roads or trails proposed for construction with the No Action Alternative.

Soils Reclaimed for Productive Use

There are no roads or trails proposed for reclamation with the No Action Alternative.

Sensitive Soils

Landslide-prone soils would be affected by about 31 miles of roads or trails with the No Action Alternative. No road or trail decommissioning is proposed on these landslide-prone soils.

With the No Action Alternative, 12 miles of roads or trails would affect highly erodible soils. No road or trail decommissioning is proposed on these highly erodible soils.

Wet soils would be affected by about 94 miles of roads or trails with the No Action Alternative. No road or trail decommissioning is proposed on these wet soils.

Watershed Conditions

Water Quality

Best Management Practices would be applied to routine maintenance of roads and trails. There are no additional roads or trails proposed for decommissioning under this alternative. Roads that are designated closed yearlong would not be scarified, stabilized or seeded.

There is an anticipated reduction in sediment over time, but this reduction would happen only as BMPs were identified and implemented as a result of routine maintenance. Alternative 1 would reduce sediment the least of all of the alternatives.

Roads can affect the routing of water through a watershed by intercepting, concentrating, and diverting flows from their natural flowpaths. These changes in routing can result in increases in peak flows by both a volumetric increase and changes in the timing of storm runoff to streams. Because this alternative does not reduce the road density at all it is expected that there will be no change in timing and amount of flows.

The following table depicts key watershed indicators for Alternative 1:

Indicator	Alt. 1
Miles of road or trail reclaimed in landslide-prone soils	None
Miles of road or trail reclaimed in highly erodible soils	None
Miles of road or trail reclaimed in wet soil types	None
Miles of road or trail reclaimed within RHCA	None
Number of road/stream interactions reclaimed	None
Sediment yield reduction	Reduction due to BMPs as applied to routine maintenance only
Approximate acres where land is currently withdrawn from soil productivity so that it can be dedicated to transportation use on National Forest lands	1850 acres on open roads and trails, plus 340 acres on roads closed year-long
Approximate acres where land is withdrawn from soil productivity and dedicated to transportation use with new construction or relocation of roads/trails	None
Approximate acres where land is no longer dedicated to transportation use and is reclaimed for soil productivity through road or trail decommissioning	None
Overall watershed improvement rating	Low

Alternative 2

Soil Productivity

Soils Dedicated to Transportation Use

New trails are proposed for construction with Alternative 2. These will include about 27 miles of motorized-use trails and 5 miles of non-motorized-use trails. These new trails would affect about 60 acres where land will be withdrawn from soil productive use, and dedicated to transportation use.

Soils Reclaimed for Productive Use

With Alternative 2, approximately 70 miles of roads are proposed for year-long closure with reclamation, using a rip, seed and slash method. Thus, approximately 280 acres of land would be reclaimed for productive soil use over the long-term.

Sensitive Soils

There would be about 6 miles of roads or trails that would be decommissioned and reclaimed where they cross landslide-prone soils. No roads or trails would be decommissioned and reclaimed where they cross highly erodible soils. There would be about 8 miles of roads or trails decommissioned and reclaimed where they cross wet soils.

Reclaiming roads and trails on sensitive soils would decrease watershed risk of sedimentation and would improve hydrologic function over the long-term. In the short-term, reclamation may temporarily exacerbate road or trail effects to watersheds, such as accelerated erosion and sedimentation.

Watershed Conditions

Water Quality

Over time the agency objective would be to reconstruct all designated open roads and trails to Forest Service standards if they do not currently meet standards. In addition Best Management Practices (BMPs) would be applied to all new construction (33 miles), reconstruction, and maintenance of roads and trails. At a minimum all roads identified for decommissioning (closed year-long) would be scarified, stabilized, and seeded with short-lived annual species in combination with a perennial native seed mix. There would also be 10 miles of road and trail within Riparian Habitat Conservation Areas that would be decommissioned by ripping, seeding and pulling culverts to restore the drainage. There are close to 66 areas where there are road/stream interactions that would be decommissioned.

All of this should result in sediment reductions ranging from 24 to 60 tons per year. It is anticipated that with the application of BMPs and the proposed road decommissioning that beneficial uses would be protected and that state water quality laws will be met. There would be an overall reduction in the total amount of sediment coming from forest system roads over the existing condition for the analysis area as a whole. However, there are 2 watersheds (Magpie and Trout Creek) identified in the fisheries report that show a declining trend in fish habitat. Under this alternative these two drainages would not meet state water quality standards unless additional mitigation measures were applied.

Pending completion of a TMDL on a water body listed pursuant to 75-5-702 (MCA): new or expanded nonpoint source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices. It is anticipated that with the reductions in sediment and the application of BMPs or all reasonable land soil and water conservation practices, that the Forest would be in compliance with the State TMDL law.

The following table depicts key watershed indicators for Alternative 2:

Indicator	Alt. 2
Miles of road or trail reclaimed in landslide-prone soils	6
Miles of road or trail reclaimed in highly erodible soils	none
Miles of road or trail reclaimed in wet soil types	8
Miles of road or trail reclaimed within RHCA	10
Number of road/stream interactions reclaimed	66
Sediment yield reduction	24 to 60 tons + Reduction due to BMPs
Approximate acres where land is withdrawn from soil productivity and dedicated to transportation use with new construction or relocation of roads/trails	60
Approximate acres where land is no longer dedicated to transportation use and is reclaimed for soil productivity through road or trail decommissioning	280 acres of rip, seed and slash
Overall watershed rating	Moderate

Alternative 3

Soil Productivity

Soils Dedicated to Transportation Use

There are about 18 miles of new roads or trails proposed for construction with Alternative 3. Approximately 5 miles of dual use roads, and about 13 miles of motorized trails are proposed for construction. Thus, soil productive capacity would be withdrawn on about 46 acres of land dedicated to transportation and access use on new roads and trails.

Soils Reclaimed for Productive Use

With Alternative 3, approximately 88 miles of roads are proposed for year-long closure using barriers only, and no changes to the road prism are proposed. Thus, there are no roads or trails proposed for reclamation of soil productive use with Alternative 3.

Sensitive Soils

No roads or trails are proposed for decommissioning and reclamation with Alternative 3. Therefore, there would be no change in sensitive soil indicators for Alternative 3 compared to the No Action Alternative.

Watershed Conditions

Water Quality

Over time, the agency objective would be to reconstruct all designated open roads and trails to Forest Service standards if they do not currently meet standards. In addition, Best Management Practices (BMPs) would be applied to all new construction (18 miles), reconstruction and maintenance of roads and trails. At a minimum, all roads identified for decommissioning (closed year-long) would be scarified, stabilized, and seeded with short-lived annual species in combination with a perennial native seed mix. There would be no other proposed decommissioning associated with this alternative.

It is anticipated that there would be sediment reductions due to the application of BMPs and the activities associated with the roads that would be closed year long. With the application of BMPs and the proposed road decommissioning, beneficial uses would be protected and state water quality laws would be met. There would be an overall reduction in the total amount of sediment coming from forest system roads over the existing condition for the analysis area as a whole. However, in the fisheries report, Magpie Creek is identified as showing a decline in fish habitat. Under this alternative, Magpie Creek would not meet state water quality standards unless additional mitigation measures were applied.

Pending completion of a TMDL on a water body listed pursuant to [75-5-702](#) (MCA): new or expanded nonpoint source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices. It is anticipated that with the reductions in sediment and the application of BMPs or all reasonable land soil and water conservation practices, that the Forest would be in compliance with the State TMDL law.

The following table depicts key watershed indicators for Alternative 3:

Indicator	Alt. 3
Miles of road or trail reclaimed in landslide-prone soils	None
Miles of road or trail reclaimed in highly erodible soils	None
Miles of road or trail reclaimed in wet soil types	None
Miles of road or trail reclaimed within RHCA	None
Number of road/stream interactions reclaimed	None
Sediment yield reductions	Reductions due to BMPs and decommissioning of roads closed year long
Approximate acres where land is withdrawn from soil productivity and dedicated to transportation use with new construction or relocation of roads/trails	46 acres

Indicator	Alt. 3
Approximate acres where land is no longer dedicated to transportation use and is reclaimed for soil productivity through road or trail decommissioning	None – roads closed with barrier only, and no changes to road prism are proposed.
Overall watershed rating	Low

Alternative 4

Soil Productivity

Soils Dedicated to Transportation Use

There are no new roads proposed for construction with Alternative 4. However, construction of about 22 miles of new, non-motorized-use trails is proposed. Thus, soil productivity will be withdrawn on about 22 acres where land is dedicated to access use with new trail construction.

Soils Reclaimed for Productive Use

With roads closed year-long under Alternative 4, approximately 72 miles are proposed for reclamation of soil productivity through recontouring, and 191 miles are proposed for reclamation through rip and seed methods. For trails closed year-long, approximately 7 miles are proposed for reclamation of soil productivity through recontouring, and 17 miles are proposed for reclamation through rip and seed methods. Thus, approximately 1100 acres of land are proposed for reclamation of soil productive capacity through road and trail decommissioning.

Sensitive Soils

There would be about 13 miles of roads or trails decommissioned and reclaimed where they cross landslide-prone soils.

There would be less than 1 mile of roads or trails decommissioned and reclaimed where they cross highly erodible soils.

There would be about 21 miles of roads or trails decommissioned or reclaimed where they cross wet soils.

Watershed Conditions

Water Quality

Over time, the agency objective would be to reconstruct all designated open roads and trails to Forest Service standards if they do not currently meet standards. In addition, Best Management Practices (BMPs) would be applied to all new construction (22 miles), reconstruction and maintenance of roads and trails. At a minimum, all roads identified for decommissioning (closed year-long) would be scarified, stabilized, and seeded with short-lived annual species in combination with a perennial native seed mix. There would also be 30 miles of road and trail within Riparian Habitat Conservation Areas that would be

decommissioned by ripping, seeding and pulling culverts to restore the drainage and another 20 miles that would be decommissioned by recontouring. There are close to 354 areas where there are road/stream interactions that would be decommissioned.

All of this should result in sediment reductions ranging from 135 to 342 tons per year. It is anticipated that with the application of BMPs and the proposed road decommissioning that beneficial uses would be protected and that state water quality laws would be met. There will be an overall reduction in the total amount of sediment coming from forest system roads over the existing condition. This alternative goes the furthest in reducing the amount of sediment coming from forest roads.

Pending completion of a TMDL on a water body listed pursuant to [75-5-702](#) (MCA): new or expanded nonpoint source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices. It is anticipated that with the reductions in sediment and the application of BMPs or all reasonable land soil and water conservation practices, that the Forest would be in compliance with the State TMDL law.

The following table depicts key watershed indicators for Alternative 4:

Indicator	Alt. 4
Miles of road or trail reclaimed in landslide-prone soils	13
Miles of road or trail reclaimed in highly erodible soils	<1
Miles of road or trail reclaimed in wet soil types	21
Miles of road or trail reclaimed within RHCA	50
Number of road/stream interactions reclaimed	354
Sediment yield reductions	135 to 342 tons + Reductions due to BMPs and decommissioning of roads closed year long
Approximate acres where land is withdrawn from soil productivity and dedicated to transportation use with new construction or relocation of roads/trails	22 acres
Approximate acres where land is no longer dedicated to transportation use and is reclaimed for soil productivity through road or trail decommissioning	300 acres road and trail recontour plus 800 acres road and trail rip and seed
Overall watershed rating	High

Alternative 5 – Proposed Action

Soil Productivity

Soils Dedicated to Transportation Use

There are about 13 miles of new roads or trails proposed for construction with Alternative 5. Approximately 1 mile of new road for licensed vehicles, about 3 miles of motorized trails, and almost 10 miles of non-motorized trails are proposed for construction with Alternative 5. Thus, soil productive capacity would be withdrawn on about 21 acres where land is dedicated to transportation and access use with new construction of roads and trails.

Soils Reclaimed for Productive Use

With Alternative 5, approximately 9 miles of roads with year-long closure are proposed for soil reclamation through recontouring, and approximately 54 miles are proposed for reclamation using rip and seed methods. Thus, approximately 250 acres of land would be reclaimed for productive use under Alternative 5.

Sensitive Soils

There would be about 5 miles of roads or trails decommissioned and reclaimed where they cross landslide-prone soils.

There would be less than 1 mile of roads or trails decommissioned and reclaimed where they cross highly erodible soils.

There would be about 6 miles of roads or trails decommissioned or reclaimed where they cross wet soils.

Watershed Conditions

Water Quality

Over time, the agency objective would be to reconstruct all designated open roads and trails to Forest Service standards if they do not currently meet standards. In addition, Best Management Practices (BMPs) would be applied to all new construction (14 miles), reconstruction, and maintenance of roads and trails. At a minimum, all roads identified for decommissioning (closed year-long) would be scarified, stabilized, and seeded with short-lived annual species in combination with a perennial native seed mix. There would also be 5 miles of road and trail within Riparian Habitat Conservation Areas that would be decommissioned by ripping, seeding and pulling culverts to restore the drainage and an additional 6 miles that would be decommissioned by recontouring. There are close to 53 areas where there are road/stream interactions that would be decommissioned.

All of this should result in sediment reductions ranging from 20 to 51 tons per year. It is anticipated that with the application of BMPs and the proposed road decommissioning that beneficial uses would be protected and that state water quality laws would be met. There would be an overall reduction in the total amount of sediment coming from forest system roads over the existing condition.

Pending completion of a TMDL on a water body listed pursuant to [75-5-702](#) (MCA): new or expanded nonpoint source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices. It is anticipated that with the reductions in sediment and the application of BMPs or all reasonable land soil and water conservation practices, that the Forest would be in compliance with the State TMDL law.

The following table depicts key watershed indicators Alternative 5:

Indicator	Alt. 5
Miles of road or trail reclaimed in landslide-prone soils	5
Miles of road or trail reclaimed in highly erodible soils	<1
Miles of road or trail reclaimed in wet soil types	6
Miles of road or trail reclaimed within RHCA	11
Number of road/stream interactions reclaimed	53
Sediment yield reductions	20 to 51 tons + Reductions due to BMPs and decommissioning of roads closed year long
Approximate acres where land is withdrawn from soil productivity and dedicated to transportation use with new construction or relocation of roads/trails	21 acres
Approximate acres where land is no longer dedicated to transportation use and is reclaimed for soil productivity through road or trail decommissioning	35 acres road recontour plus 215 acres rip and seed roads
Overall watershed rating	Moderate

Conclusions

It is expected that all action alternatives will meet forest wide guidance and standards. Please refer to the following table.

Forest Wide Municipal Watershed Guidance Standards

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
1. Municipal watersheds will be managed under multiple-use concepts and direction. Management area guidelines will identify permissible land uses, restrictions on land uses, and special measures required to ensure a high quality and quantity municipal water supply. Presently, there are two municipal watersheds on the Forest, Tenmile and McClellan.	There are no municipal watersheds within the North Belts Travel Planning Project Area, therefore the remaining standards in the this section are not applicable
2. Design and implementation of projects within the watershed will be guided by FSM 2542.12, as well as specific management area standards and guidelines.	Not Applicable
3. An environmental analysis will be prepared in coordination with the concerned municipality and the State Water Quality Bureau for each new project proposed within the municipal watershed which could potentially result in degradation of water quality.	Not Applicable
4. Each project implemented in the municipal watersheds will have a designated Forest Service representative responsible for maintenance of water quality within appropriate state standards. Each contractor will designate a representative, who will normally be at the project site, with the authority to take whatever action necessary to remedy any situation which might result in violation of state water quality standards.	Not Applicable
5. Plans and specifications for projects proposed for municipal watersheds will be coordinated with the municipality involved and submitted to the Montana State Department of Health and Environmental Sciences for review and approval as required by Montana Laws regarding public water supply as amended by Chapter No. 556, 1979, 75-6-112.	Not Applicable

Forest Wide General Watershed Guidance

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
1. Coordination with the State of Montana, as required by the Clean Water Act (33 U.S.C. 1323), concerning stream channels and water quality protection is detailed in the Cooperative Agreement to Implement the 208 Program on National Forests in the State of Montana. The agreement is in FSM 2563.11, R.O. Supplement.	As directed in the MOU the Forest will meet State requirements respecting control and abatement of pollution. See discussion under Regulatory Framework
2. Watershed improvement projects will be identified, prioritized, and developed on a watershed basis (see Appendix T).	Watershed Improvement Projects are included with the Proposed Action
3. A project which causes excessive water pollution, undesirable water yield, soil erosion, or site deterioration will be corrected where feasible, or the project will be re-evaluated or terminated.	Alternatives have been identified that reduce water pollution and undesirable water yield
4. Projects involving significant vegetation removal will, prior to including them on implementation schedules, require a watershed cumulative effects feasibility analysis to ensure that water yield or sediment will not increase beyond acceptable limits. The analysis will also identify	Travel Planning actions have been evaluated for watershed cumulative effects in the Watershed Specialist Report

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
opportunities, if any exist, for mitigating adverse effects on water-related beneficial uses.	
5. Practices in the Soil and Water Conservation Practices Handbook (FSH 2509.22) developed cooperatively by the State Water Quality Agency and the Forest Service will be incorporated, where appropriate, into all land use and project plans as a principal mechanism for controlling non-point pollution sources and meeting soil, State water quality standards and other resource goals.	Soil and Water Conservation Practices have been incorporated into Travel Planning Actions Alternatives and are described in Chapter 2 of the EIS
6. Water rights for non-consumptive water uses (instream flows) necessary to maintain fisheries habitat, recreational uses, or other beneficial water uses will be claimed for appropriate waterbodies and streams.	Not applicable to Travel Planning Proposed Actions
7. An environmental analysis, following the process in FSMs 2526 and 2527, will be made for all management actions planned for flood plains, wetlands, riparian areas, or bodies of water prior to implementation. This analysis will determine the short- and long-term adverse impacts and mitigating measures associated with the planned management actions.	This environmental analysis has been completed in the Watershed Specialist Report using Riparian Habitat Conservation Area buffers and wet soils for evaluating floodplains, wetlands, water bodies, and riparian areas
8. Water transmission lines, dams, and hydro-meteorological data sites will be maintained by the permittee in a safe and serviceable condition. Unsafe or unserviceable facilities will be repaired to approved engineering standards or removed from service.	Not applicable to Travel Planning Proposed Actions
9. Activities that might affect the validity of data collected at hydro-meteorological data sites will be coordinated with the permittee or cooperating agency before implementation of the project.	Not applicable to Travel Planning Proposed Actions
10. Applications for hydropower, water diversion, water storage, or other water-related facilities will be evaluated on a case-by-case basis. The applicant may be required to use private consultants or other personnel to make environmental studies needed by the Forest Service and/or state agencies for evaluation of the proposal. Close coordination and cooperation with other agencies where appropriate will be sought.	Not applicable to Travel Planning Proposed Actions
11. Instream flows adequate to protect the aquatic environment will be maintained during any project which removes water from any stream.	Not applicable to Travel Planning Proposed Actions

Forest Wide Soil Guidance

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
1. In accordance with NFMA, RPA, and Multiple Use-Sustained Yield Act, all management activities will be planned to sustain site productivity. During project analysis, ground disturbing activities will be reviewed and needed mitigating actions prescribed.	Compliance with NFMA mandates to maintain site productivity is discussed in the Watershed Specialist Report
2. Areas of decomposed granite soils will be identified and erosion control measures planned prior to any ground disturbing activities.	Areas of decomposed granitic soil have been identified in the Watershed Specialist Report. Also, Soil and Water Conservation Measures to minimize erosion have been included in the action alternatives described in Chapter 2 of the EIS

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
3. To reduce sedimentation associated with management activities, the highly sensitive granitic soils, which cover about 20 percent of the Forest, will have first priority for soil erosion control.	Areas of decomposed granitic soil have been identified in the Watershed Specialist Report. Also, Soil and Water Conservation Measures to minimize erosion have been included in the action alternatives described in Chapter 2 of the EIS

Fisheries, Affected Environment

Introduction

This section presents current conditions and trends of aquatic resources within the North Belts Travel Planning area. Information is organized under two following subsections: fish populations and fish habitat. The first subsection discusses distribution and status of fish populations occurring in the planning area. This includes sections on non-native and native fish communities residing in the area. The second subsection presents overall habitat conditions including land-use activities that influence trends in stream conditions.

Analysis Area

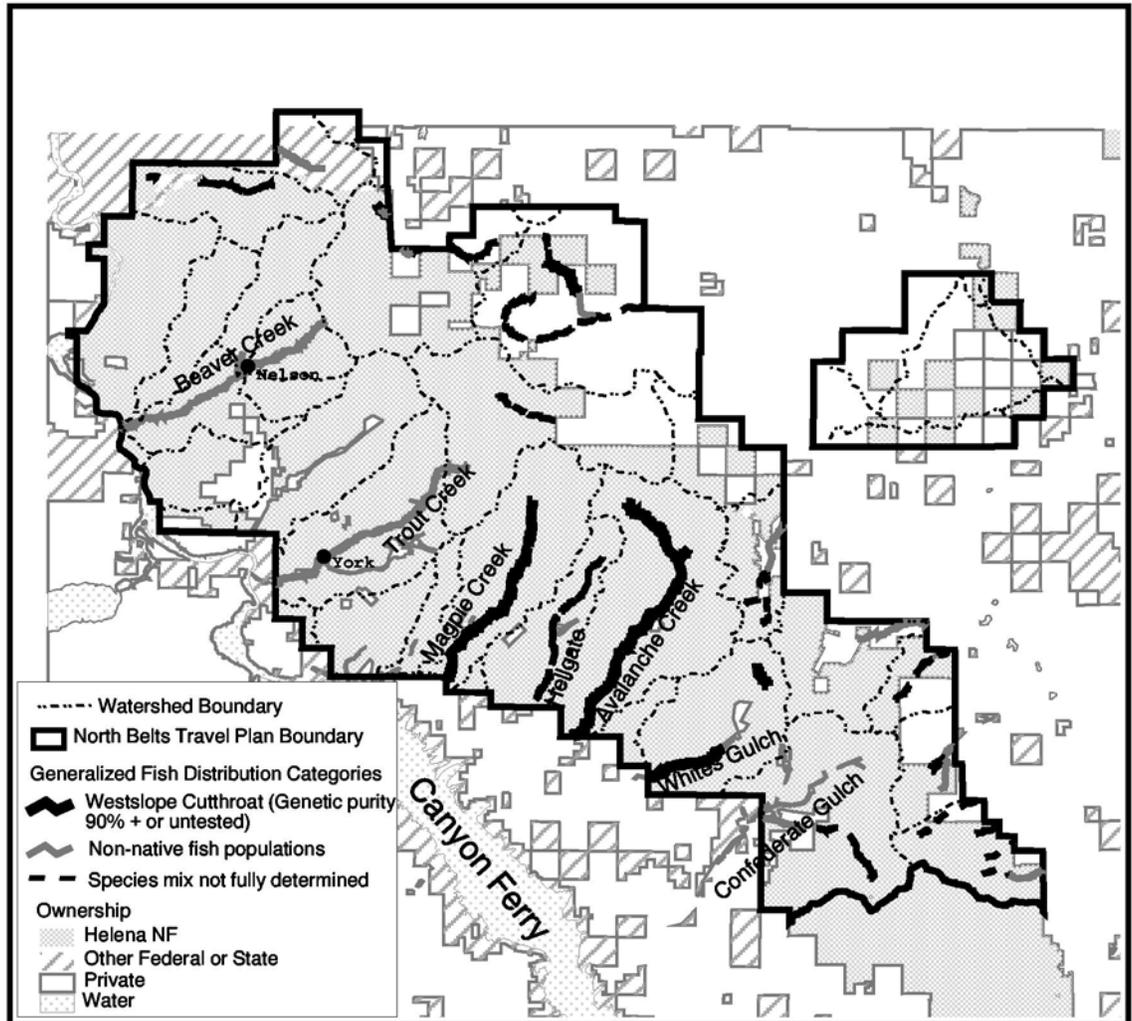
There are twelve watersheds in the North Belts travel plan area that support a fishery (see Figure 1). Four contain westslope cutthroat populations over 90% pure (see table 1). Elkhorn Creek is within wilderness and wildlife refuge areas and would not be affected by this project. Therefore, eleven fishbearing watersheds have been evaluated and effects specific to individual watersheds are found under the section, Environmental Consequences, for each respective alternative.

Fisheries Populations

Current Fish Community Description

Figure 1 shows a map of fish distribution within the planning area by watershed. By far, trout make up the majority of the fish assemblage occupying approximately **69.6** miles of stream overall in the planning area. Brook trout, rainbow trout and brown trout comprise the non-native fish component and occupy the majority of habitat in the North Belts travel planning area. Native westslope cutthroat trout (WCT) are also present. Known WCT populations at least 90% pure occupy **24.2** miles (35 percent) of currently occupied habitat. Twelve drainages in the planning area support a fishery. Table 1 displays a summary of trout population characteristics for each stream.

Fish Distribution Map



Other fish species, except for native mottled sculpin, are uncommon or not found in planning area streams. Although sculpins are common in some streams, their distribution has not been defined sufficiently for mapping purposes. Mountain whitefish, another native belonging to the same family as cutthroat trout, have not been found in this travel plan area. Suckers have been found during their spring spawning migrations in the lower ends of two Missouri River tributaries, but have been limited to less than one mile of habitat.

There are at least ten miles of barren stream habitat potentially suitable to support native westslope cutthroat trout within the planning area. These perennial stream segments are often isolated from downstream reaches by dry intermittent channels or physical barriers. They are important for achieving objectives pertinent to the *Montana Conservation Agreement and Memorandum of Understanding for WCT* because they offer opportunities to expand WCT. Candidate drainages identified for these purposes include Hellgate Gulch, Willow Creek, upper Trout Creek, and upper Boulder Creek (Confederate Gulch). On

the Smith River side of the Belts range, upper Beaver Creek and Thomas Gulch may offer future WCT habitat possibilities contingent upon stream reclamation within reaches damaged by historical mining.

Table 1. Summary of fish populations occurring in North Belts Travel Planning Area.

DRAINAGE Tributary	Fish Species¹	Abundance Rating²	Occupied Length (mi)	WCT Genetic Status	WCT Extinction Risk³
Confederate Gulch Boulder Cr	barren Wct x Yct	common	2.8	<90%	
Whites Gulch	Wct Eb	common common	3.9 1.2	100%	highest
Avalanche Creek	Wct Eb	common common	11.3 7.8	92.4%	highest
Magpie Creek	Wct	uncommon	7.5	93.3%	highest
Trout Creek	Rb LL	uncommon common	9.6 9.6		
Beaver Cr (Missouri) Porcupine Cr	Rb LL Eb Wct Wct x Rb Eb	common common common uncommon common common	16.3 14.5 13.6 0.6 0.4 0.9	100% <90%	highest
Elkhorn Creek	Wct	common	1.8	<90%	
Atlanta Creek	Wct x Yct Eb	uncommon common	1.3 1.3	<90%	
Benton/Vermont Cr	Rb Eb	common uncommon	2.7 2.7		
Elk Creek Slough Cr	Eb Wct Eb	abundant rare common	1.8 0.6 0.6	untested	highest
Beaver Cr (Smith R)	Eb	common	2.0		
Rock Cr French Cr	Eb/Rb Wct Wct Rb	common common common common	2.0 0.3 1.2 1.2	100% 98%	highest highest

¹ Species symbols: Wct = westslope cutthroat trout LL = brown trout
Eb = eastern brook trout Sc = sculpin
Rb = rainbow trout

² Abundance Ratings: A standardized system adopted by MDFWP to reflect peak abundance for a discrete species, expressed in number of fish per thousand feet for streams up to 20 feet wide.
Abundant = >99 fish per 1000 ft.
Common = 20 - 99 fish per 1000 ft.
Uncommon = 4 - 19 fish per 1000 ft.
Rare = < 4 fish per 1000 ft.

³ Extinction risk ratings for Wct based on guidance in Rieman et al. (1993).

Non-native fishes

Non-native fish introduced to area streams consist of rainbow trout, brown trout and brook trout. These trout species do not occupy all stream segments nor do they occur in equal proportions. Brook trout, however, are the most pervasive. All three species of trout were stocked into local streams or nearby waterbodies

beginning in the late 1880s and the first half of the twentieth century by fisheries agencies and local citizens.

Unknown at the time of their early introductions, these trout species pose high risks to native cutthroat populations that historically dominated area streams. Introduced rainbow trout, brown trout and brook trout interact negatively with indigenous cutthroat trout populations, and eventually can result in reducing or totally eliminating them altogether from their historic habitats (Likness 1984, Griffith 1988, Rieman and Apperson 1989).

Native Fishes

Native fishes inhabiting planning area streams include westslope cutthroat trout, mottled sculpin, and in very limited locations, white and longnose suckers. Mapping of sculpin populations has not been a priority and therefore, sculpin distribution is not well-defined except they are known to be abundant in Trout Creek and Beaver Creek on the Missouri river subbasin side of the Belts. They are most abundant in cold, rocky riffle areas. Because of their small size (2 to 3 inches), sculpin are considered an important forage fish of trout. Suckers are limited to the lower mile or so of Trout and Beaver Creek during the spring to spawn and then return to their respective reservoirs.

Westslope cutthroat trout (WCT)

Westslope cutthroat trout are the only native trout found in the planning area streams and are the focus of fisheries conservation in watersheds where they occur. The reasons for their protection are clear. The WCT are currently listed as a "Class A State of Montana Species of Concern", a BLM "Species of Special Concern", and a regionally listed "Sensitive Species" by the Forest Service. In 1997, the USFWS received a petition to list the WCT as threatened under the Endangered Species Act.

The reasons behind the current status of Montana's state fish relate directly to processes that jeopardize its continued existence. Abundance and distribution of WCT has declined dramatically during the last century. By the mid-1990s, broad scale assessments by McIntyre and Rieman (1995) and Van Eimeran (1996) indicated WCT persisted in only 27% of their historic range in Montana. Genetically unaltered stocks occurred in less than 3% of the native range. This decline is most pronounced east of the Divide. In the upper Missouri River basin WCT are estimated to occupy less than 10% of their historic range and most surviving populations are confined to headwater tributaries. The species has been seriously reduced by three primary factors: competition and predation by non-native species, hybridization (with rainbow and/or Yellowstone cutthroat), and habitat loss and degradation.

The range of WCT has been reduced to such an extent that remaining populations are considered extremely important (Rieman and Apperson 1989). For the North Belts Travel Plan area, WCT populations (greater than 90% pure) remain in five (of the twelve) fishbearing watersheds. They are Whites Gulch, Avalanche Creek, Magpie Creek, French Creek, and upper Porcupine Creek, a tributary to Beaver Creek (Missouri river). Only two populations tested pure: Whites Gulch and French Creek. The French Creek population, however, was at

extreme risk in 1997 from rainbow invasion due to the tenuous nature of physical barriers preventing upstream fish migration into WCT habitat.

Relative risk of extinction for these individual WCT populations rates “highest” from guidance in Rieman et al (1993). Isolation to the local stream or small watershed and cumulative disruption of habitat are the key factors contributing to declining trends in population size and resilience. Another major factor not covered by Rieman is the presence/absence of introduced species. Invasions by non-native trout may be hastened by habitat disruption (Hobbs and Huenneke 1992, Shepard et al. 1998) and produce further isolation and extinction pressures on distinct WCT populations through competitive displacement or hybridization. The WCT populations in Whites Gulch, Avalanche Creek, and Magpie Creek are all at risk from brook trout. In French Creek and upper Porcupine Creek, WCT are most at risk from invading rainbow trout that readily intercross with cutthroat trout.

Fish Habitat

Trout habitat basically is the product of interactions among the underlying geology and soils, topography, vegetation, climate, and hydrology of a watershed (Meehan 1991, Swanston 1991). These drainage characteristics remain fairly constant often bringing about conditions that optimize productivity of aquatic lifeforms (Meehan 1991). When major natural events reshape stream channels, the actual effects of such changes on aquatic organisms are often short-lived. In their natural context, accessory processes like fire, flood flows, and insect infestations operate on the stream system to produce improved habitat quality and productivity in the long term (Swanston 1991).

Any change in these conditions most often brings about changes in habitat detrimental to natural fish production and population viability issues. Such changes are caused by human land-use activities (Meehan 1999). The North Belts planning area traditionally has been managed for nonfishery resources. Chief amongst them are timber harvest, livestock grazing, mining, and road construction. Other activities included beaver removal, utilities corridors, buried pipeline, irrigation withdrawals, and some forms of recreation.

The cumulative effect of these activities to salmonid (trout) habitat in the Big Belts is the impairment of natural stream functions. This is brought on chiefly by increasing erosion and sedimentation, altering water quantity and vegetative cover, destabilizing streams, and causing degraded channel morphologies. These changes all lower the natural fish carrying capacity or fish producing capacity of streams.

In the North Belts travel planning area a list of past and ongoing human activities that have some bearing on shaping baseline (existing) conditions in individual fishbearing drainages was compiled. Any such activities having no overlap in time or space for a particular drainage, that is, not contributing cumulatively to stream habitat conditions was discounted in that drainage as a contributing factor. Table 2 shows a review of which activities contribute to existing stream conditions in each individual fishbearing drainage. Cumulative effects are discussed in more detail in Chapter 4.

Table 2. Summary of Watershed Conditions for Individual Fishbearing Watersheds in North Belts Travel Plan Area

Watershed	Past & Ongoing Actions	Sediment Yield Change from Natural
Confederate/Boulder Cr	Upper Whites reclamation. Statewide OHV Decision. Big Belts Fire Plan. Past timber harvest--pre-90s. Historic/recurring mining. Mag-Conf AMP watershed proj Private development.	No increase from increased traffic. Minor decrease due to restrictions. Minor short-term increase/risk. Moderate increase from acc. rds. Moderate increase. Minor decrease. Minor increase.
Whites Gulch	Upper Whites Reclamation. Statewide OHV Decision. Mid-Whites reclamation. Whites Gulch reclamation. Mag-Conf AMP watershed proj Spring Cr bridge project. Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining. Special-use road access. Private development.	Moderate decrease. Minor decrease due to restrictions. Moderate decrease. Significant decrease. Minor decrease. Minor decrease. Minor short-term increase/risk. Moderate increase from acc. rds. Moderate increase. Minor increase. Minor increase.
Avalanche Cr	Road-trails improvements. Statewide OHV Decision. Mag-Conf AMP watershed proj Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining. Special-use road access. Private development.	Moderate decrease. Minor decrease due to restrictions. Minor decrease. Minor short-term increase/risk. Moderate increase from acc. rds. Moderate increase. Minor increase. Minor increase.
Magpie Cr	Hunter's G trail improvements Statewide OHV Decision. Mag-Conf AMP watershed proj Cave Gulch Salvage. Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining. Aspen fence projects. Noxious weed control. Bar G cabin well and rental Emergency road closures. Cave G Restoration project. BAER work (2000-01). Reforestation (2002-2004). Private development. Magpie culvert/road decomm.	Minor decrease. Minor decrease due to restrictions. Minor decrease. Minor increase (short term). Minor short-term increase/risk. Moderate increase from acc. rds. Moderate increase. Minor decrease. Minor decrease. No change. Minor decrease. Minor decrease. No change. Minor increase. Minor decrease.

Watershed	Past & Ongoing Actions	Sediment Yield Change from Natural
Trout Cr	Statewide OHV Decision Big Belts Fire Plan. Past timber harvest—pre-90s. York townsite act exchange. Private development.	Minor decrease due to restrictions. Minor short-term increase/risk. Moderate increase from acc. Rds. No change. Significant increase.
Beaver Cr (Missouri R)	Statewide OHV Decision. Beaver-Soup AMP revision. Beaver-Soup veg treatment. Hogback salvage. Bull/Sweats veg treatment. Big Belts Fire Plan. Gates of Mtns Fire Plan. Yellowstone Pipeline burial. NW Energy utilities corridor. Harlan land exchange. Rehab of user created route. Private development.	Minor decrease due to restrictions. Minor decrease. No change. No change. No change. Minor short-term increase/risk. No change. Minor increase. Minor increase. No net change. No change. Moderate increase.
Atlanta Cr	Wagner-Atlanta veg treatment. Wagner-Atlanta AMP revision. Statewide OHV Decision. Big Belts Fire Plan. Historic/recurring mining.	Minor increase. Minor decrease. Minor decrease due to restrictions. Minor short-term increase/risk. Moderate increase.
Benton/Vermont Cr	Wagner-Atlanta veg treatment. Statewide OHV Decision. Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining. Private development.	Minor increase. Minor decrease due to restrictions. Minor short-term increase/risk. Moderate increase from acc. Rds. Significant increase. Significant increase.
Elk/Slough Cr	Wagner-Atlanta veg treatment. Statewide OHV Decision. Wagner-Atlanta AMP revision. Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining.	Minor increase. Minor decrease due to restrictions. Minor decrease. Minor short-term increase/risk. Minor increase. Moderate increase.
Beaver Cr (Smith R)	Wagner-Atlanta AMP revision. Statewide OHV Decision. Big Belts Fire Plan. Past timber harvest—pre-90s. Historic/recurring mining. Private development.	Minor decrease. Minor decrease due to restrictions. Minor short-term increase/risk. Minor increase. Moderate increase. Minor increase.
French Cr	Beaver-Soup AMP revision. Statewide OHV Decision. Historic/recurring mining. Big Belts Fire Plan. Private development.	Minor decrease. Minor decrease due to restrictions. Minor increase. Minor short-term increase/risk. Minor increase.

The common denominator from these various land-use activities affecting fisheries is sedimentation. In general, any ground disturbing activities have potential to increase excess sedimentation into the stream system. Roads, however, produce the most sediment amongst forest activities and management practices (Anderson 1971, Anderson et al. 1976, Cederholm et al. 1981, Furniss et al. 1991).

The road-aquatic resource relationship goes beyond the factor of chronic sedimentation, however. A second risk factor is road proximity. Road construction along streams constricts floodplains or channels often resulting in a channel segment limited in its ability to access its historic floodplain. Fewer meanders, less pools, and higher energy gradients make for less productive trout habitat in these instances. Stream crossings are another factor. Roads that cross streams most frequently rely on culverts. Culverts often disrupt natural fish migration patterns. This limits a species' access to habitat types needed to fulfill its life stage requirements for spawning, rearing, feeding, over-wintering, security and escapement.

By integrating sedimentation, road proximity, and stream crossing factors, cumulatively known as *stream-route interactions*, with fish species present in a watershed Helena National Forest fisheries biologists in conjunction with the forest hydrologist produced a guide to help rate risk of each road on aquatic resources. These integrated risk ratings were determined within the context of 6th code hydrologic units (HUCs). For purposes of roads analysis, road risk ratings fell under three separate categories of "high", "moderate" and "low" risk. More information about the rationale used at deriving these risk ratings for roads can be found in the project file (Helena Forest Roads Analysis, Draft Oct. 2002).

In general, high risk roads were those associated with high value fisheries or sensitive WCT drainages where the trend is toward a high incidence of *stream-route interactions*. Stream-route interactions encompass crossings, route segments in close proximity to the stream, and/or hydrologically connected route segments that deliver sediment to the stream. High risk roads commonly include stretches of over 0.5 mile located in the stream corridor and have one or more road crossings (culverts, fords, bridges). These roads become most disruptive to the natural drainage characteristics for optimum fish production.

Moderate risk roads are those that pose the same problems to streams as do high risk roads except on a smaller scale. They generally include stretches with less than 0.5 mile in the stream corridor with one or no crossings in high risk watersheds. They also include roads that exhibit qualities similar to high risk roads only they occur in watersheds lacking WCT or other high fishery values.

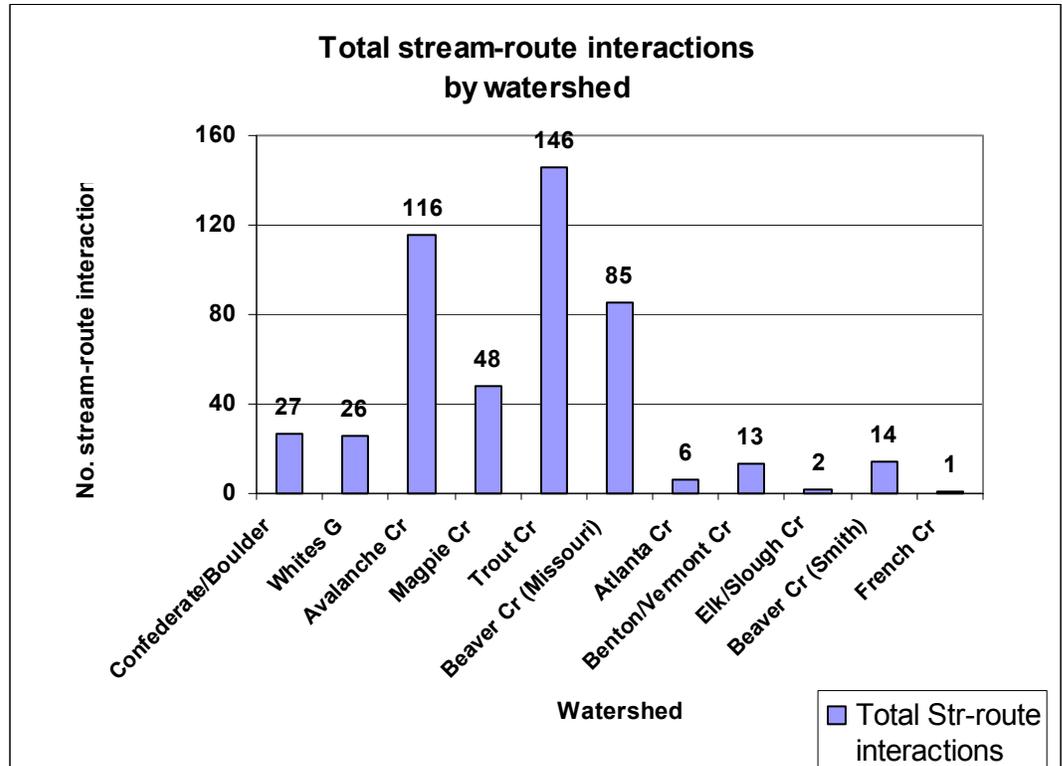
Low risk roads present little or none of the problems related to the stream-route interactions associated with high and moderate risk roads. They often occur outside stream corridors or along ridge lines where there is no connection to perennial or intermittent streams and, therefore are not included under this analysis.

Indicators chosen most useful to measure and compare watersheds as a function of travel planning therefore rely on:

1. Number of stream-route interactions and,
2. Miles of “high” and “moderate” risk roads per watershed.

Figure A below shows the current number of stream-route interactions by watershed.

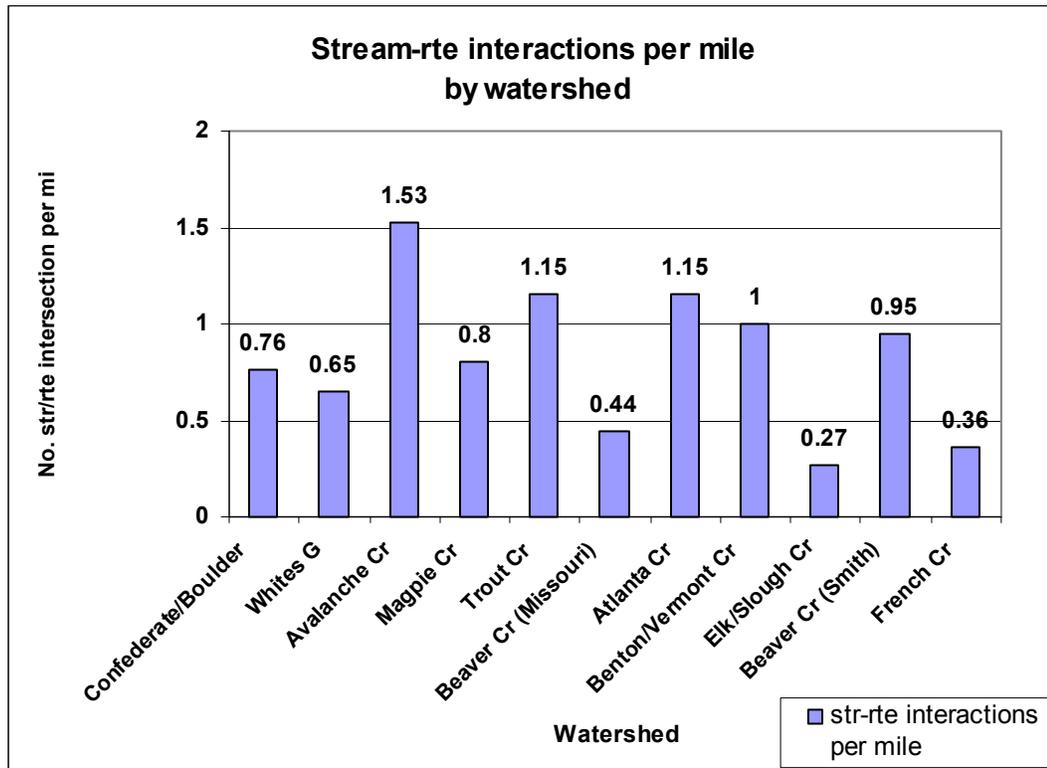
Figure A. Total Number of Stream-Route Interactions by Watershed in North Belts Travel Planning Area.



The chart in Figure A depicts Trout Creek and Avalanche Creek as the two fishbearing watersheds most impacted by existing motorized routes. Conversely, French Creek and Elk/Slough Creek appear least influenced by motorized routes.

Drainages vary widely by area size. They also vary by the amount of stream at risk in a given drainage. For instance, due to their size and amount of stream network at risk from roads, larger drainages (Trout Creek, Avalanche Creek) would appear substantially more impacted than much smaller drainages. To get at a more accurate depiction of road effects in separate watersheds, Figure B reflects the number of stream-route interactions per mile by watershed versus merely the number of stream-route interactions by watershed alone. This way it becomes clearer which drainages may deserve more attention regarding the issue of stream-route interactions.

Figure B. Number of Stream-Route Interactions Per Mile Per Watershed in North Belts Travel Planning Area.

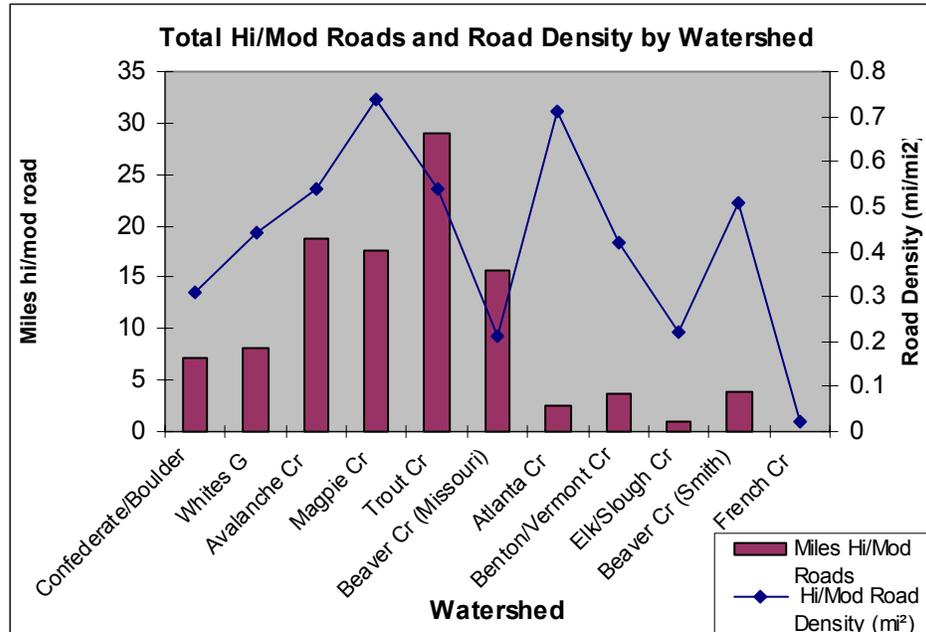


The chart in Figure B now shows streams such as Atlanta Creek, Benton/Vermont Creek, and Beaver Creek (Smith R.) exceeding some larger streams (Magpie, Boulder, Whites G.) in road related problems based on the concept of unit distance. By unit length, Avalanche Creek appears as the drainage of greatest concern.

The next indicator relies on the concept of “high” and “moderate” risk routes in fishbearing watersheds. These routes, recall, impose risks to fisheries by their locations in stream corridors or flood zones including associated crossings, particularly culverts. By modifying the natural drainage of waterways, they in turn limit fish production and population viability.

A query of all roads in the Riparian Habitat Conservation Area (RHCA) in conjunction with a GIS map showing high/moderate risk roads was used to determine the miles and density of these roads present in each fishbearing watershed. RHCA buffers are stream corridor areas that vary from 150 to 300 feet wide either side of streams. They are adopted from INFISH standards (USDA 1995) west of the Continental Divide to maintain consistency across the forest for travel planning purposes. Since significant lengths of roads are located within RHCAs, they often rated “high risk” or “moderate” risk to fisheries. Figure C depicts existing conditions for the eleven fishbearing watersheds based on the miles and densities of “high” and “moderate” risk routes per drainage.

Figure C. Miles and densities of high/moderate risk routes per watershed.



The chart in Figure C correlates with information in Figure B. Although Trout Creek prevails as the drainage with the most high and moderate risk routes, road density data suggest that Magpie and Atlanta Creeks are the most impacted by motorized routes on a unit area basis.

Based on an overview of the data, the order for westslope cutthroat trout (>90% pure) watersheds from most to least impacted by motorized routes is Avalanche Creek, Magpie Creek, Whites Gulch, Porcupine Cr (Beaver Creek), and French Creek. French Creek had only one road crossing in the extreme headwaters with less than 0.05 miles of road in the RHCA.

Fisheries, Environmental Consequences

Introduction

The direct, indirect and cumulative effects of the proposed action and its alternatives on fish habitat are presented in this section. A background summary of how fisheries habitat is affected by motorized routes is given along with a discussion on how effects were analyzed and measured. To minimize the chance of bias, this report gives preference to a quantitative approach for determining results of individual alternatives.

Fisheries Background Summary and Effects Common to All Alternatives

The effects of roads on streams and fish habitat are distilled from Furniss et al (1991) and various other authors. The scientific consensus is that forest roads have substantial adverse effects on salmonid habitats. If fish habitat protection is

integrated into the planning and design of roads, however, these effects can be greatly reduced (Furniss et al. 1991).

The primary negative effects of roads on fish habitat can be organized under three main categories: 1) accelerated erosion and sedimentation, 2) alterations of channel morphology, and 3) fragmentation of stream habitat. Other ways roads impact streams include changes in hillslope drainage (Hauge et al 1979), changes in organic debris in channels, potential chemical contamination, and human access to streams facilitating fish harvest.

Sediment entering streams reduces the egg-to-fry survival rates of trout. In addition, other life history elements such as cover for juvenile fish, food availability, growth rates, and adult survival are also impacted (Stowell et al. 1983, Everest et al. 1987). The filling of interstitial spaces of riffles reduces or eliminates critical rearing and food production areas for trout. Filling of pools by sediment further decreases carrying capacity for sub-adult and adult fish during summer growth periods (Waters 1995). Chronic sedimentation from roads is considered as damaging as that from catastrophic sediment inputs (e.g. wildfire) because the particles are finer and delivered over longer periods than burned drainages (Furniss et al. 1991). Everest et al. (1987) concluded trout species can cope with natural variability in sediments, but populations can be reduced by persistent sedimentation that exceeds the natural background levels they evolved in.

Channels artificially changed due to road crossings and roads next to streams often results in adjustments detrimental to fish habitat. Streams constrained by roads and crossings self adjust resulting in less pool structure, fewer spawning beds, less bank cover, and higher energy gradients.

Stream crossings pose the greatest risk to fish habitats of any road feature (Furniss et al. 1991). They do so by providing opportunities for road sediment to enter streams directly and when culverts plug and fail to pass flood flows. The result is often severe sedimentation and long-term channel damage. In addition to habitat damage, culverts often present artificial migration barriers to trout populations inhibiting access to critical spawning and rearing habitat or escapement from downstream hazards such as wildfire, pollution or other hazards.

These effects are common in all alternatives where there is a road system overlapping the stream network. To get some indication of the relative magnitude of these road effects by alternative, two key indicators were identified under the Affected Environment section and are highlighted here. The concept of *high and moderate risk roads* integrates the problems associated with sedimentation, road proximity and stream crossings. This gives the manager a good basis for identifying problematic roads and which planning alternatives go the farthest in alleviating the deleterious effects from motorized routes. It follows that a good spatial indicator like *stream-route interactions* is useful for zeroing in on how many and where specific road-related problems occur.

These concepts serve as the analytical tools of choice to help evaluate the effects of travel planning alternatives in the North Belts Travel Planning area.

Effects Common to All Action Alternatives

Effects vary amongst all action alternatives when considering each individual watershed. However, Elk/Slough Creek is the only fishbearing drainage where effects are common amongst all action alternatives. This drainage would have 0.93 miles of *high/moderate risk roads* and two *stream-route interactions* in common with all the action alternatives.

Alternative 1 – No Action

Direct and Indirect Effects

Table 3 gives a quantitative summary of the individual drainages showing 107.26 miles of high/moderate risk routes and 484 stream-route interactions for Alternative 1 (no action). This alternative represents baseline conditions of the road-fisheries relationship. Figures A, B and C under the Affected Environment section fully display the effects of this alternative based on the concept of high/moderate risk road density and stream-route interactions by mile present in each watershed.

Alternative 1 (No Action) continues to inhibit fisheries resource goals of reducing sediment and stream-route interactions from the current transportation system. It therefore is not consistent with Forest Plan direction for achieving fish habitat goals and objects.

Table 3. Key Indicator Values For Alternative 1 – No Action.

Watershed	Miles of Hi/Mod Risk Roads	No. Stream-route Interactions
Confederate/Boulder	7.13	27
Whites G	8.18	26
Avalanche Cr	18.69	116
Magpie Cr	17.66	48
Trout Cr	28.92	146
Beaver Cr (Missouri)	15.75	85
French Cr	0.04	1
Beaver Cr (Smith)	3.8	14
Benton/Vermont Cr	3.69	13
Elk/Slough Cr	0.93	2
Atlanta Cr	2.47	6
TOTAL:	107.26	484

Alternative 2

Direct and Indirect Effects

Table 4 gives a quantitative summary of indicator values for fisheries in each individual drainage, including a total for the entire planning area. In all there are

104.6 miles of high/moderate risk routes and 516 stream route interactions for Alternative 2.

Table 4. Key Indicator Values For Alternative 2

Watershed	Miles of Hi/Mod Risk Roads	No. Stream-route Interactions
Confederate/Boulder	6.89	25
Whites G	6.86	33
Avalanche Cr	18.17	116
Magpie Cr	18.36	49
Trout Cr	30.05	174
Beaver Cr (Missouri)	15.64	83
French Cr	0.04	1
Beaver Cr (Smith)	3.63	14
Benton/Vermont Cr	2.68	15
Elk/Slough Cr	0.93	2
Atlanta Cr	1.35	4
TOTAL:	104.6	516

This alternative would result in a net reduction of 2.66 miles of high/moderate risk routes in riparian areas across the planning area. However, there would be a net increase of 32 stream-route interactions over existing conditions. This would likely be a result of 27 miles of new motorized trail and one mile of dual use road proposed. Trout Creek accounts for the majority of these gains with 1.13 miles of new high/moderate risk routes and 28 stream-route interactions over existing.

Watersheds that stand to benefit most under this alternative would Atlanta and Benton/Vermont Creeks. High/moderate risk roads decline in both drainages 1.12 miles and 1.01 miles respectively with no substantial change in stream-route interactions.

All westslope cutthroat watersheds, except Magpie Creek, would generally undergo minor improvements under this alternative. Magpie Creek would experience a net increase of 0.7 miles in high/moderate risk routes with one additional stream-route interaction over existing. For Magpie Creek, this would be inconsistent with the WCT Conservation Agreement/MOU.

Alternative 2 appears favorable in terms of *less miles of high/moderate risk roads*. However, an increase in *stream-route interactions* indicates it does not meet the resource standards and policy outlined under the regulatory framework for fish resources. Close examination of individual watershed results shows two watersheds would not meet forest standards under this alternative because of increasing *high/moderate risk roads* and *stream-route interactions*.

Under Alternative 2, Magpie Creek and Trout Creek would experience six percent and four percent increases respectively in the amount of *high/moderate risk routes* over baseline. Moreover, Trout Creek would undergo a 19% increase

in *stream-route interactions*. This would have serious implications for higher sedimentation rates. Tables 8a and 8b below show the results extracted from the individual alternative effects sections. These are used to compare the results of Alternative 2 with the baseline conditions and to help target which drainage(s) this alternative falls short of in regards to forest and other regulatory guidelines for aquatic resources.

Table 8a. Indicator values for Magpie Creek for Alternative 2 versus baseline.

Indicator	Baseline – Alt. 1	Alt. 2	% change
Hi/mod risk rds (mi.)	17.66	18.36	+ 6%
No. stm-rte interactions	48	49	+ 2%

Table 8b. Indicator values for Trout Creek for Alternative 2 versus baseline.

Indicator	Baseline – Alt. 1	Alt. 2	% change
Hi/mod risk rds (mi.)	28.92	30.05	+ 4%
No. stm-rte interactions	146	174	+ 19%

Alternative 3

Direct and Indirect Effects

Table 5 gives a quantitative summary of indicator values for fisheries in each individual drainage including a total for the entire planning area. In all there would be 108.34 miles of high/moderate risk routes and 487 stream-route interactions for Alternative 3.

Table 5. Key Indicator Values For Alternative 3

Watershed	Miles of Hi/Mod Risk Roads	No. Stream-route Interactions
Confederate/Boulder	7.13	27
Whites G	8.17	26
Avalanche Cr	18.69	116
Magpie Cr	20.01	50
Trout Cr	28.64	144
Beaver Cr (Missouri)	15.75	85
French Cr	0.04	1
Beaver Cr (Smith)	3.77	4
Benton/Vermont Cr	2.74	16
Elk/Slough Cr	0.93	2
Atlanta Cr	2.47	6
TOTAL:	108.34	487

This alternative results in a net increase of 1.08 miles of high/moderate risk routes in riparian areas across the planning area. In addition, there would be a net increase of three stream-route interactions over existing conditions. Magpie Creek would experience the mass majority of these gains with 2.35 miles of added high/moderate risk routes and two stream-route interactions over existing. All other watersheds remain virtually unchanged from existing conditions.

All westslope cutthroat watersheds, except Magpie Creek, would virtually go unchanged from current condition. Magpie Creek would experience a net increase of 0.7 miles in high/moderate risk routes with one additional stream-route interaction over existing. This is not consistent with the WCT Conservation Agreement/MOU.

Alternative 3 results in no substantial change in the *miles of high/moderate risk routes* and *stream-route interactions* from current conditions across most fishbearing drainages. Benton Gulch would experience some positive downward trend in the amount of *high/moderate risk routes*. Conversely, Magpie Creek would experience a net increase in *high/moderate risk roads* by some 13%.

Table 9 provides data extracted from effects sections for Alternatives 1 and 3 to show how the numbers of *stream-route interactions* and *high/moderate risk roads* increase. Again, the numbers have implications for increasing sedimentation to Magpie Creek. Hence, Magpie Creek under Alternative 3 would not meet resource standards and policy outlined under the regulatory framework for fisheries.

Table 9. Indicator values for Magpie Creek for Alternative 3 versus baseline.

Indicator	Baseline – alt 1	Alternative 3	% change
Hi/mod risk rds (mi.)	17.66	20.01	+ 13%
No. stm-rte interactions	48	50	+ 4%

Alternative 4

Direct and Indirect Effects

Table 6 gives a quantitative summary of indicator values for fisheries in each individual drainage including a total for the entire planning area. In all, there are 71.73 miles of high/moderate risk routes and 266 stream-route interactions for Alternative 4.

Table 6. Key Indicator Values For Alternative 4

Watershed	Miles of Hi/Mod Risk Roads	No. Stream-route Interactions
Confederate/Boulder	5.67	17
Whites G	4.11	11
Avalanche Cr	11.42	38
Magpie Cr	11.38	28
Trout Cr	19.33	93
Beaver Cr (Missouri)	14.78	71
French Cr	0	0
Beaver Cr (Smith)	2.18	0
Benton/Vermont Cr	1.92	6
Elk/Slough Cr	0.93	2
Atlanta Cr	0.01	0
TOTAL:	71.73	266

This alternative results in a net decrease of 35.53 miles of high/moderate risk routes in riparian areas across the planning area. There is also a net decrease of 218 stream-route interactions from existing conditions. All watersheds, except Elk/Slough Creek, would improve from existing conditions by net declines in high/moderate risk routes ranging from 0.4 miles to 9.59 miles. Similarly, all watersheds would experience net declines in stream-route interactions ranging from 1 to 78 except for Elk Creek. The road in Elk Creek is privately owned and outside agency management.

Trout Creek would benefit most in terms of miles of high/moderate risk routes removed with 9.69 miles. Avalanche Creek, however, would benefit most in stream-route interactions removed, with 78.

All westslope cutthroat watersheds would experience a net improving trend ranging from one stream-route interaction removed in French Creek to 78 stream-route interactions removed in Avalanche Creek. Similarly, high/moderate route segments would decline from 0.04 miles (French Creek) to 7.27 miles (Avalanche Creek). This is consistent with the WCT Conservation Agreement/MOU in Montana for implementing measures to protect and improve WCT populations greater than 90% pure.

Alternative 5 – Proposed Action

Direct and Indirect Effects

Table 7 gives a quantitative summary of indicator values for fisheries in each individual drainage including a total for the entire planning area. In all there are 94.49 miles of high/moderate risk routes and 383 stream-route interactions for Alternative 5.

Table 7. Key Indicator Values For Alternative 5 – Proposed Action.

Watershed	Miles of Hi/Mod Risk Roads	No. Stream-route Interactions
Confederate/Boulder	5.22	19
Whites G	8.11	22
Avalanche Cr	13.93	55
Magpie Cr	15.55	42
Trout Cr	26.12	126
Beaver Cr (Missouri)	15.59	82
French Cr	0.04	1
Beaver Cr (Smith)	3.66	13
Benton/Vermont Cr	2.87	15
Elk/Slough Cr	0.93	2
Atlanta Cr	2.47	6
TOTAL:	94.49	383

This alternative would result in a net decline of 12.77 miles in high/moderate risk routes across the planning area and a net decrease of 101 stream-route interactions from existing conditions. All watersheds but three would improve from existing conditions by net declines in high/moderate risk routes ranging from 0.7 miles in Whites Gulch to 4.76 miles in Avalanche Creek. All but four watersheds would experience net declines in stream-route interactions from 1 to 61. French, Elk and Atlanta Creeks remain unchanged from existing conditions.

Avalanche Creek would benefit most in terms of miles of high/moderate risk routes removed with 4.76. It would also experience a decline of 61 stream-route interactions.

All westslope cutthroat watersheds, except French Creek, would experience a net improving trend ranging from three stream-route interactions removed in Beaver/Porcupine Creek to 61 removed in Avalanche Creek. Similarly, high/moderate route segments would decline 0.07 miles (Whites Gulch) to 4.76 miles (Avalanche Creek). This would be consistent with the WCT Conservation Agreement/MOU in Montana for implementing measures to protect and improve WCT populations greater than 90% pure. French Creek would remain unchanged from its existing conditions.

Conclusions

In summary, there are 11 fishbearing drainages potentially affected by this travel planning effort. Alternative 1 (No Action) does not achieve fisheries goals and standards in reducing or eliminating *high/moderate risk routes* and chronic sedimentation from roads. Alternative 2 is consistent with Forest standards in 9 of the 11 drainages by showing some improvement in the effects indicators – except in Magpie Creek and Trout Creek (see tables 8a and b). Alternative 3 is not much different than Alternative 1 in that most drainages (except Benton/Vermont Creek) do not experience reductions in *high/moderate risk*

routes and sediment sources from the transportation system. Magpie Creek is the drainage common to Alternatives 2 and 3. It is at risk of not meeting standards for improving habitat by reducing sediment risks attributable to roads. Therefore, it would not meet the WCT Conservation Agreement/MOU. However, the reasonably foreseeable action of the Magpie Creek restoration project has the potential to recover up to 2 miles of Magpie Creek. Cumulatively, this would contribute to a net improvement to fisheries in Magpie Creek. All in all, adding new sources of sediment into WCT habitat from increases in *high/moderate risk routes* would not be consistent with the WCT Conservation Agreement/MOU.

In terms of the forests westslope cutthroat trout management responsibilities, Alternatives 4 and 5 are the most beneficial and consistent with WCT Conservation Agreement/MOU objectives and standards for drainages supporting WCT. They fulfill the NFMA viability requirement by limiting or decreasing the net amount of sediment that potentially reduces the rate of natural WCT recruitment. Project planning for these alternatives demonstrates a positive trend towards achieving improving conditions in habitat for WCT.

Wildlife, Affected Environment

Introduction

The Big Belts Mountain Range provides a large range of habitats for wildlife species during the full range of seasons. Wildlife in the Big Belts include the smallest shrews and insects up to the more commonly known big game species. The information presented in this analysis comes directly from professional experience and/or survey and observation in the field as well as through the use of scientific literature, GIS modeling analyses, and conservation strategies or recovery plans.

While all the following wildlife parameters were considered, not all of them were carried forward into this document. Those brought forward were: dispersal, migration, and travel corridors, elk, lynx, and wolverine. The following table identifies the parameter, where information regarding the parameter can be found, and the rationale for why the parameter was or was not brought forward into this document. Please see the following table for more information.

Key to Documentation of Wildlife Analyses

Wildlife Parameter	Location of Documentation	Rationale
General Habitat	Wildlife Specialist Report	The analysis indicates that effects to general habitat, including fragmentation, habitat loss, and edge effects are minimal.

Wildlife Parameter	Location of Documentation	Rationale
Old Growth	Wildlife Specialist Report	Old growth habitats are analyzed as a subset of general habitats; effects to old growth are minimal.
Riparian Habitats	Wildlife Specialist Report	Effects to riparian habitats are minimal.
Dispersal, Migration, and Travel Corridors	Draft Environmental Impact Statement	Connectivity, as an overall parameter, has been identified as an issue by various user groups. Connectivity has been described based on the Region One Protocol.
Snags and Down Logs	Wildlife Specialist Report	Snags and down logs are analyzed as a component of the management indicator species analysis. There are measurable effects by alternative; however, effects to snags and down logs have not been identified as an issue.
Big Game Species		
Elk	Draft Environmental Impact Statement	Elk is a management indicator species and of interest to several user groups. There are measurable effects by alternative.
Mule Deer	Wildlife Analysis Approach Table	The elk analysis is serving as a surrogate for effects to mule deer.
Moose	Wildlife Analysis Approach Table	Anticipated effects to moose are assumed to be addressed via effects to riparian habitats.
Big Horn Sheep	Wildlife Analysis Approach Table	Bighorn sheep are currently only found in the Gates of the Mountain Wilderness and therefore not subject to effects from any alternatives.
Mt. Goat	Wildlife Analysis Approach Table	There are no anticipated effects to mountain goats due to any of the alternatives.
Threatened, Endangered, Proposed Species		
Grizzly	Wildlife Analysis Approach Table	Grizzly bears are not considered present in the project area per the Species List from the U.S. Fish and Wildlife Service.

Wildlife Parameter	Location of Documentation	Rationale
Wolf	Wildlife Specialist Report	Effects to wolves in the project area are expected to be minimal.
Canada Lynx	Draft Environmental Impact Statement	Snowmobile use and its effects on lynx are of interest to several user groups.
Bald Eagle	Wildlife Specialist Report	Effects to bald eagles in the project area are expected to be minimal.
Mt. Plover	Wildlife Analysis Approach Table	Mt. plovers are not considered present in the project area per the Species List from the U.S. Fish and Wildlife Service.
Sensitive Species		
Wolverine	Draft Environmental Impact Statement	Wolverine have recently been petitioned for listing under the Endangered Species Act and have become a focal point of interest for several user groups.
Fisher	Wildlife Specialist Report	Effects to fisher in the project area are expected to be minimal.
Townsend's Big-eared Bat	Wildlife Analysis Approach Table	There are no anticipated effects to Townsend's big-eared bats.
Bog Lemming	Wildlife Analysis Approach Table	There are no anticipated effects to bog lemmings.
Black-backed Woodpecker	Wildlife Specialist Report	Effects to black-backed woodpeckers are expected to be minimal.
Northern Goshawk	Wildlife Specialist Report	Effects to northern goshawks are expected to be minimal.
Peregrine Falcons	Wildlife Analysis Approach Table	There are no anticipated effects to peregrine falcons.
Flammulated Owl	Wildlife Analysis Approach Table	There are no anticipated effects to flammulated owls.
Sharp-tailed Grouse	Wildlife Analysis Approach Table	There are no anticipated effects to sharp-tailed grouse as they are not expected to occur in the project area.
Harlequin Duck	Wildlife Analysis Approach Table	There are no anticipated effects to harlequin ducks as they are not expected to occur in the project area.

Wildlife Parameter	Location of Documentation	Rationale
Boreal Toad	Wildlife Specialist Report	Effects to boreal toads are expected to be minimal.
Leopard Frog	Wildlife Analysis Approach Table	There are no anticipated effects to leopard frogs.
Management Indicator Species		
<i>Old Growth Dependent Group</i>		
Pileated Woodpecker	Wildlife Specialist Report	Effects to pileated woodpeckers are expected to be minimal.
Northern Goshawk	See above	See above
<i>Snag Dependent Group</i>		
Hairy Woodpecker	Wildlife Specialist Report	Effects to boreal toads are expected to be minimal.
<i>Mature Forest Dependent Group</i>		
Marten	Wildlife Specialist Report	Effects to boreal toads are expected to be minimal.
<i>Hunted Species Group</i>		
Elk	See Above	See above
Mule Deer	See Above	See above
Bighorn Sheep	See Above	See above
Other Road Analysis Issues		
Recreation	Wildlife Analysis Approach Table	Effects of recreation associated with roads are described for each respective species/parameter.
Disruption/ Displacement	Wildlife Analysis Approach Table	Effects of disruption/displacement associated with roads are described for each respective species/parameter.
Noxious Weeds	Wildlife Analysis Approach Table	Noxious weeds and roads are discussed under Noxious Weeds.
Direct Mortality	Wildlife Analysis Approach Table	Effects of direct mortality associated with roads are described for each respective species/parameter.

Wildlife Habitats in the Project Area

Habitats in the Northern Big Belts range from high alpine meadows and subalpine fir/whitebark pine forests to lower elevation Douglas-fir, ponderosa pine forests with sagebrush parklands. At the coarse filter scale these habitats have been lumped into more broad categories of general habitats; old growth, riparian habitat; dispersal, migration, and travel corridors; and snags and down logs. At the mountain range scale, the majorities of the habitats comprise warm/dry forests (69%), grass/shrublands comprise about 15%, cool moist forests comprise about 14% and riparian habitats comprise about 2% of the landscape (Big Belts Landscape Analysis, 1994).

For this analysis, the effect of travel management as it relates to function (vs. structure) will be evaluated. Human activities can impact wildlife and their habitat through 4 primary means: exploitation, disturbance, habitat modification, and pollution. Wildlife behavior may take the form of avoidance, habituation, or attraction (Knight and Cole 1995). Specific effects of recreational activities on wildlife presented by Knight and Cole (1995) and Joslin and Youmans (1999) include: hunting, viewing, backpacking/hiking/cross-country skiing/horseback riding, rock climbing, spelunking, pets, boating/personal watercraft, OHVs, snowmobiles and aircraft.

Dispersal, Migration, and Travel Corridors

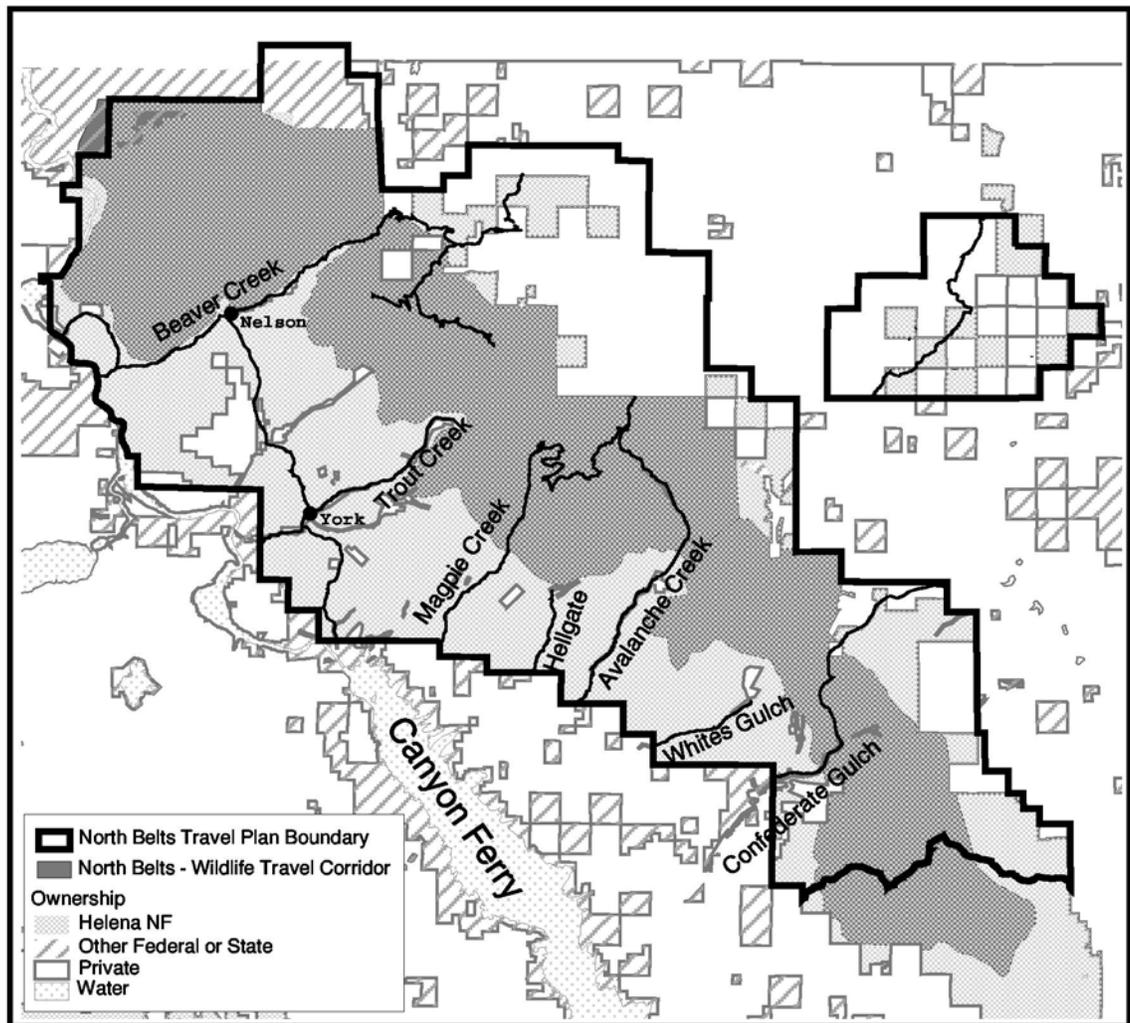
The effects of fragmentation, patch size, and effectiveness of corridors depend upon the type of organism, type of movement, and the type of corridor (Hunter, 1990). Roads and trails have increased fragmentation, as well as aided in the spread of non-native vegetation and noxious weeds. Within the Big Belts there is an inherently fragmented landscape of alternating grasslands and forest with riparian areas serving as primary migration corridors.

There is no doubt that the Big Belts have served as a biological corridor between northern and southern portions of the Continental Divide in the past. The Big Belts and surrounding areas historically acted as a migration corridor for many different species (ex. buffalo, grizzly, and wolf) along the Rocky Mountain Front. Prior to development by European man, areas surrounding the Big Belts provided more of a linkage than the mountains themselves. As indicated in the Journals of Lewis and Clark and documented archeologically, large herds of bison moved through the Smith River and Missouri River valleys. Large predators that preyed upon the ungulates also moved through the valleys. Today options for movement in these valleys have been eliminated through human development, which has placed an emphasis on the surrounding mountain ranges. The Big Belt Mountains likely operated on a cyclic source/sink system (Puliam, 1988) for the more alpine species with individuals expanding into areas to later perish due to changes in forage/prey bases or habitats due to natural processes (fire, insects, or drought for example).

Field knowledge and known migration barriers (roads, reservoirs, and human developments) would suggest that function as a corridor is largely impaired if not non-functional for most species due to a paucity of water sources in the northern half and human development within and surrounding the range. Elk and

mountain lion generally move at will within their ranges in the Big Belts but rarely, if ever, cross the Canyon Ferry, Hauser, and Holter Reservoirs of Missouri River to the west and north even if pushed during hunting season. The Big Belts still operate as a linkage for some of the continental migrant birds and potentially for wolves and grizzly bears. Roads and early mining in riparian areas have also disrupted corridors within the mountain range. Roads and trails act as a funneling mechanism that allows for greater densities of disturbance within areas that would normally have little. The suppression of fire has resulted in a loss of grasslands as conifers and shrubs have encroached, but likely has provided for some linkage of the forested habitats locally due to the increase of hiding cover. Some wildlife species are sensitive to disturbance during particular seasons and some are sensitive to disturbance year round.

Wildlife Travel Corridor in the North Belts



Walker and Craighead (1996) modeled the potential for current use of the Big Belts as a corridor between the Greater Yellowstone and Northern Continental Divide Ecosystems and concluded that the Big Belts, in conjunction with other ranges offered the best chance for successful transit based upon physiological

least-cost for grizzly bears, mountain lions, and elk. In addition, the Forest Service Northern Region Overview (USDA Forest Service 1999) Terrestrial Subgroup recommends 10 linkage zones in the Northern Rocky Mountains to be established to facilitate movement to ensure populations are well distributed across the area. The Upper Missouri River valley and the Big Belt Mountains were identified as one such linkage zone. However, there is not much evidence for the concept and the identification is precautionary potential versus a strong recommendation (Samson, 2000).

Connectivity refers to the abundance and spatial patterning of habitat to the ability of members of a population to use these habitats. While there is no empirical evidence to support the concept of corridors (Rosenberg et. al. 1997), many others have built conceptual models to project connectivity across landscapes (Walker and Craighead, 1996, Noss, 1991). Regional Planning Protocols (USDA Forest Service, 1998) give direction to consider measures to restore historic animal movement when the issue is raised in the project planning process, as it was for this project. Five corridor types are outlined in the protocol, which are to be reviewed and recommendations provided to apply the concepts of these corridor types.

Of the five types of corridors outlined in the protocol, one has been dismissed from this analysis. Biogeographic corridors exist at a continental spatial scale and are appropriate in the discussion of evolution and species distribution. This scale is not appropriate for this analysis. Another corridor type that may be applicable is the invasive type. This type of corridor allows exotic or alien species to extend their ranges in non-historical distributions and usually to the detriment of resident species. A faunal example of this may include the raccoon; a floral example may include noxious weeds. The effect of noxious weed spread by roads and travel systems will be analyzed under the noxious weed specialist report.

The season migration or cyclic corridor includes local and elevational spatial scales for groups of or single species whose function is ecological survival. This type of movement is not the primary issue of linkages across the landscape in the Big Belts but does relate to this analysis for big game movement. The other two corridor types that apply to this analysis include the dispersal and emigration and travel corridors.

The dispersal and emigration corridor type affects populations with a variety of spatial requirements and functions to maintain current habitat, provide for optimal fitness, and disperse into unoccupied habitats. Dispersal behavior is most common when population density is too high within an area to support the population. This results in the natural colonization of suitable but unoccupied habitat. This type of corridor can only include habitats consistently capable of supporting and/or contributing to a stable population. This assumption emphasizes the importance of linkages between suitable habitats that would sustain dispersing individuals from a population between areas of colonization.

The amount of existing development in the form of highways, subdivisions, towns, and natural barriers makes the effectiveness of dispersal and emigration corridors questionable. However, local transportation systems on the National

Forest do play a role in the overall potential of wildlife species to utilize these potential corridors. As further development on adjacent private lands continues at this dispersal and emigration scale, barriers will continue to expand and become more rigid for those species that avoid human presence at some time of the year. There may be more pristine, less-developed corridors available, particularly along the Continental divide as discussed above but the Big Belt Mountain range is analyzed with the assumption that it does provide linkages between ecosystems and metapopulations as well as serve as local refugia at the landscape-wide and local scale.

The travel corridor type provides individuals within a home range the daily life history requirements for optimum reproduction and growth. Travel corridors are loosely defined in the Regional Protocols as travel within a home range required to meet annual life history requirements. These corridor types may also include local refugia for smaller species or species with smaller home range size. In this analysis, riparian areas and dry gulches may be considered travel corridors.

Potential local barriers to movement within the analysis area include Confederate to Benton Gulch road, which bisects the mountain range and is a major travel route maintained by Broadwater County. Beaver Creek is also a major travel route that provides access to private lands. Magpie road is a major travel route that provides access to loop type recreational opportunities year around. The open road density within the roaded portions of the project area is relatively high and may act as a barrier. The Cave Gulch wildfire removed much of the hiding cover that species may have targeted through which to travel. Depending on the wildlife species, time of year, habitat, climatic conditions, and/or levels of human disturbance, these barriers may or may not deter the area from serving as a travel, dispersal and emigration, or seasonal migration or cyclic corridor.

Big Game Species

Elk occur throughout the project area on Forest, State, Private, and other land management agencies. There are currently eleven identified analysis units within the northern Big Belt Mountains. The extent to which elk use different portions of the analysis unit depends on factors such as forage quality and quantity, hunter behavior, density of open roads, available thermal and hiding cover, among others.

Elk

Introduction

Elk serves as a management indicator species for hunted species. There are many methodologies to measure the effects of timber harvest, road management, prescribed fire, or other management activities on elk. These methodologies focus on the effect of an action on elk susceptibility to being killed during the hunting season and the probability that elk are displaced from preferred habitats (i.e. elk vulnerability and habitat effectiveness). The Forest Plan directs the analysis of hiding cover (summer range), thermal cover (winter range), and open road density to determine effects of management actions. The Forest Plan defines elk hiding cover as cover that hides 90 percent of an elk at

200 feet or a stand of coniferous trees having a crown closure of greater than 40 percent (a minimum standard of 35% of each analysis unit should be maintained as hiding cover). This analysis uses the 40 percent crown closure measurement. The Forest Plan also recommends limits on open roads depending on the level of hiding cover within each analysis unit. While this is an important element, it does not take into account the spatial arrangement and size of the hiding cover patches, hunter access, or forage condition during any given autumn and does not necessarily provide security during the hunting season. Conversely, stands that may not meet the definition of hiding cover may well be secure areas given local conditions of topography, location, and size. Therefore, hiding cover is not synonymous with security.

Management of habitat to provide security is important to meet our Forest Plan objective of a first week hunting season bull harvest not exceeding 40%. An alternative methodology to describe elk vulnerability is security area analysis. Security areas are large blocks of predominately-forested country to which hunter access is limited by distance from open roads, rugged terrain, or dense vegetation. While this method is not part of the Forest Plan (1986), the Hillis et al. (1991) method of determining elk security is the best available means of accurately assessing elk security and will be used in this analysis. Hiding cover values are displayed to indicate which alternatives are inconsistent with the Forest Plan, however, the Hillis et al. (1991) security areas is the preferred methodology used to analyze the alternatives for elk vulnerability.

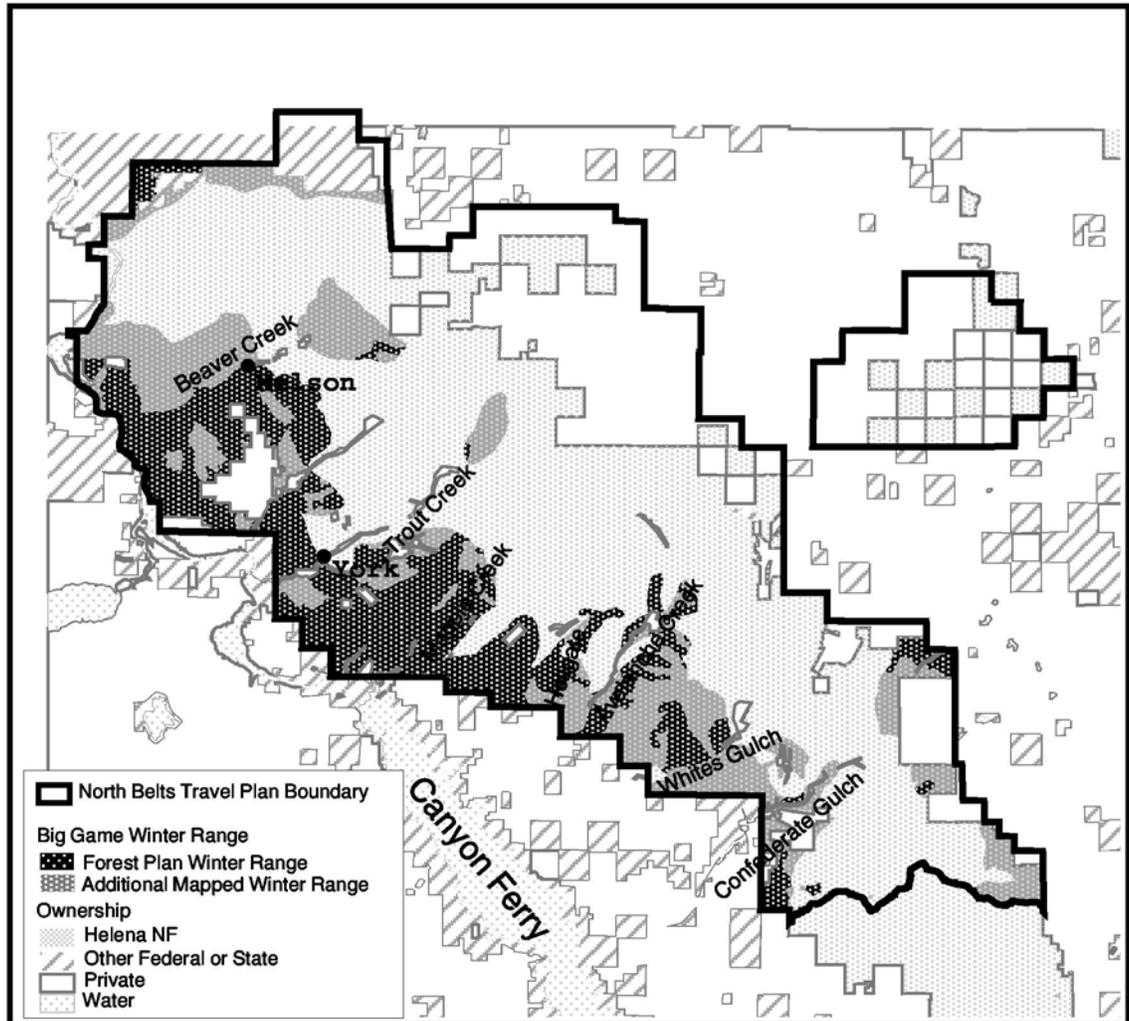
The guidelines proposed by Hillis et al. (1991) suggest that for an area of hiding cover to be considered secure, an area must be ≥ 250 acres and be \geq one half mile from an open road during general hunting season. Security has been calculated using this method for eleven analysis units within the project area. Motorized trails used during the hunting season by OHV and full sized vehicles were treated as open roads for this analysis.

In addition to elk security, habitat effectiveness (HE) (Christensen et al. 1993) is a recommended methodology of analyzing how well summer and transitional ranges meet the needs of elk for growth and for welfare unrelated to hunting (particularly if elk security is marginal for a analysis unit). Habitat effectiveness includes an assessment of cover, forage, water, seclusion, and special features, but is primarily related to open road density.

Winter range, consisting of both areas for foraging and sheltered bedding sites, is also an important element of elk habitat. The Forest Plan suggests that 25% of the area within an analysis unit provide thermal cover (conifer stands more than 40 ft high with at least 70% canopy closure) that may benefit elk by enhancing their control of body temperature. Recent research suggests, however, that there is no positive effect of thermal cover on elk and dense cover may actually result in greater over winter mass loss due to the (dense cover) costly energetic environment (Cook et al., 1998).

Elk calving generally follows the snow-line as it melts in the spring due to the fact that the Big Belts are a long, narrow, and isolated mountain range. Therefore, calving occurs along an elevational gradient.

Elk Winter Range



Habitat effectiveness on summer range and elk vulnerability during the hunting season as measured by elk security and hiding cover/open road density are summarized in the Environmental Consequences section. These analyses are calculated for National Forest administered lands only. Security is expressed as a percent of the analysis unit that is providing elk security (using Hillis et al. guidelines). In general, it is recommended that at least 30% of an analysis unit (elk analysis unit in this analysis) qualify as security. Hiding cover/open road densities are based on Forest Plan standards. As mentioned previously, this methodology provides a less meaningful analysis than the either habitat effectiveness or the Hillis et. al. security area analysis.

Habitat effectiveness is expressed as a percent of the analysis unit that is providing cover, forage, and wet sites as they relate to human disturbance (i.e. open roads). In general, habitat effectiveness levels of at least 50% on elk summer range as a whole and 70% in areas of key summer range are desirable. No areas of key summer range have been mapped for the North Belts project

area due to the current placement of roads and general variability of elk use in the area. Therefore, this analysis was done for elk summer range as a whole.

Elk Analysis Area Discussion

1. Atlanta Elk Analysis Unit

General Nature of the Analysis Unit

The Atlanta analysis unit includes the area from Slough Creek south through Camas Ridge on the eastern side of the Big Belt Mountains. The total analysis unit size is approximately 10,108 acres.

Elk Vulnerability During Hunting Season

Approximately 62% of the Atlanta analysis unit provides security during the hunting season. This above recommended amount of security per analysis unit (>30%) is beneficial due to the tendency of elk to move to private land early in the hunting season. The higher amount of security offers some local refugia such that elk population levels may still be met. This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Elk summer in the higher elevations along the crest of the Big Belt Mountains and is shared with the Wagner/Thomas, Confederate, Hellgate, and Whites Analysis Units. HE is 61%. Patterns of Atlanta elk use have changed in the last 10-15 years due mainly to timber harvest and increased road access in the Atlanta/Mule Creek, Slough Creek, Camas/Little Camas Creek areas, and the increased numbers and changing hunter use patterns.

Winter Range

Elk generally do not winter in this analysis unit. The elk either move north to the Thomas Creek area, or south to the Birch Creek-Needles area, which is outside the scope of this analysis. Elk are scattered throughout the eastern side of the Big Belts during the hunting season but significant numbers of elk may move onto private lands during the archery or early part of the rifle hunting season. This is due to limited hunter access and the resulting relative lack of hunting pressure on private lands as compared to national forest land. In recent years, a large number of animals have remained on their private land winter ranges throughout the summer as well.

2. Beaver Creek Elk Analysis Unit

General Nature of the Analysis Unit

The Beaver Creek analysis unit extends across the Big Belt Range from the Missouri River on the west to the Smith River divide on the east and from Trout Creek on the south to the Gates of the Mountains Wilderness on the north. It covers approximately 63,717 acres. Elk range throughout all parts of the Beaver Creek unit from late spring to early fall. Small pockets of summer range lie close to the Missouri River in the vicinity of Big Log, Spring, and Fields Gulches--an area that also serves as winter range. Elk winter range is located in the western

end of the analysis unit toward the Missouri River. Unlike most winter ranges in the Big Belts, the Beaver Creek winter range lies predominantly on public land (about 60,217 acres on the National Forest and about 3,500 acres on private land).

Elk Vulnerability During Hunting Season

Approximately 35% of the Beaver Creek analysis unit provides security during the hunting season. This is due to the amount of motorized trails or access within the analysis unit. This analysis unit currently does not meet Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (60% HE). The largest block of summer habitat is on the Grouse Ridge, Indian Flats, and Jim Ball areas at the eastern end of the Beaver Creek analysis unit and extending into the Elk Ridge analysis unit. This is an area of relatively high road density when compared to the adjacent Middleman-Hedges roadless area but is also an area of diverse and productive summer elk habitat. Elk appear willing to tolerate this degree of human presence in order to exploit high quality habitat. The Middleman-Hedges roadless area, while relatively free of human disruption, is rugged, densely forested, and largely unproductive in terms of forage. The only other block of key elk summer range is in the upper Porcupine Creek drainage.

Winter Range

Potential elk winter range occupies the western end of the Beaver Creek analysis unit. Within this broad area, several pockets of high quality habitat at low elevation and on south-facing slopes serve as critical range during severe winters. These areas include portions of lower Spring Gulch, Big Log Gulch, and Hunters Gulch around the Gates of the Mountains Wilderness and Favorite Gulch, Devils Tower, and Beaver Creek bottom. Most winter range in the Beaver Creek analysis unit is on public land.

Forest patterns in most of this area were significantly altered by the North Hills Fire of 1984. Loss of forest canopy has greatly reduced potential thermal cover. Much of the thermal cover that remains is highly fragmented; forest patches are often widely separated and sometimes small. On the other hand, the fire has generated a bounty of high-quality winter forage. Forage for elk consists of palatable native bunch grasses (fescues, wheatgrass, oatgrass, june grass) on south and west slopes. Conifer regeneration has been negligible over much of the burned area and forage supplies will probably remain good for many decades.

3. Beaver Creek Gates Elk Analysis Unit

General Nature of the Analysis Unit

The Beaver Creek Analysis Unit covers approximately 16,577 acres between the Meriwether Canyon to Moors Mountain and down to Beaver Creek drainage to Cochran Gulch on the southeast side of Upper Holter Lake.

Elk Vulnerability During Hunting Season

Approximately 99% of the Beaver Creek Gates analysis unit provides security during the hunting season. This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (100% HE).

Winter Range

Winter use primarily occurs to the north on the Beartooth Wildlife Management Area, where human disturbance is not allowed during the winter.

4. Boulder-Baldy Analysis Unit

General Nature of the Analysis Unit

The Boulder-Baldy Analysis Unit covers approximately 17,189 acres between the Confederate Gulch watershed to Boulder Baldy Mountain and down to Horse Creek on the west side of the Big Belt Range.

Elk Vulnerability During Hunting Season

Approximately 45% of the Boulder-Baldy analysis unit provides security during the hunting season. This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (60% HE). A large part of the forested area within the Boulder-Baldy analysis unit has an understory that is producing palatable elk forage.

Winter Range

Approximately 3,500 acres of public land is available for winter range in the Boulder-Baldy analysis unit. Because winter range is limited, many elk are forced down to private land during the winter months.

5. Confederate Gulch Analysis Unit

General Nature of the Analysis Unit

The Confederate Gulch Analysis Unit covers approximately 7,112 acres between Whites Gulch and Confederate Gulch watersheds on the west side of the Big Belt Range. Roughly half of this Analysis Unit extends west and south on to BLM, State, and private lands. Elk range throughout the analysis unit from late spring to early fall, but generally concentrate in the higher elevations during the heat of the summer. Generally, security is not well distributed in the area and is

concentrated in areas of rugged topography and the Jimmy's Gulch area closure. The bulk of the winter range for this analysis unit occurs off of public lands.

Elk Vulnerability During Hunting Season

Approximately 45% of the Confederate analysis unit provides security during the hunting season. This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (60% HE). Nearly all of the National Forest lands within this analysis unit serve as summer range, though the more key areas are found within the Greenhorn Gulch, southern White's Gulch, and Johnnies Gulch areas. Livestock use is low to moderate on much of the secondary rangeland and forests in the area due to the extreme terrain of the area. Dual use in the area primarily occurs in the bottoms and on winter range. Some portions of the Big Belt crest is shared with parts of the Whites and Thomas-Benton analysis units. This analysis unit, because of its small size and the amount of historic development (primarily mining) has a moderately high road density.

Winter Range

Primary winter range on public lands may be found on BLM lands and along the forest boundary (approximately 4,500 acres on National Forest). However, many elk are driven down onto the breaklands along the forest boundary or private land by OHV use by late summer and remain there to escape hunters on the Forest. Once on private land, many elk prefer to remain there through the winter. Forage in private hayfields, pasturelands, and crop fields is more to their liking. This preference is probably a function of species composition, vegetation texture, and productivity. On private land, the elk may compete directly with cattle for the winter food supply. The tolerance of adjacent landowners for the presence of these elk varies, but some in this area would like to see the herd reduced in size or activities that displace elk from the Forest modified.

6. Dry Range Elk Analysis Unit

General Nature of the Analysis Unit

This analysis unit is comprised of the National Forest portion of a herd unit that is interspersed with "checker boarded" private lands. The Dry Range Analysis Unit covers approximately 24,635 acres. The elk utilize both ownership patterns and do not discriminate between habitats except where human disturbance affects its effectiveness.

Elk Vulnerability During Hunting Season

Approximately 35% of the Dry Range analysis unit provides security during the hunting season. This analysis unit currently does not meet Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (68% HE). The Dry range is not accessible to the public and therefore allows elk to use the area at their leisure depending on human disturbance

Winter Range

The majority of elk use occurs on both private and federal lands in a non-discriminatory fashion where human disturbance is not a factor.

7. Elk Ridge Elk Analysis Unit

General Nature of the Analysis Unit

This analysis unit is comprised of the National Forest portion of a herd unit that is interspersed with private lands. The Elk Ridge Analysis Unit covers approximately 23,805 acres. The elk utilize both ownership patterns and do not discriminate between habitats except where human disturbance affects its effectiveness.

Elk Vulnerability During Hunting Season

Approximately 6% of the Elk Ridge analysis unit provides security during the hunting season. These elk are in a different hunting district than those in Beaver Creek, and while some mixing of animals may occur throughout the year, they form a somewhat discrete unit that utilizes not only this analysis unit but thousands of acres to the north and east which is predominately privately owned. This analysis unit currently does not meet Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness is good on summer range (80% HE). The largest block of summer habitat is in the Grouse Ridge, Indian Flats, and Jim Ball areas where the Elk Ridge analysis unit connects with the eastern end of the Beaver Creek analysis unit. This is an area of relatively high private road densities when compared to the adjacent Middleman-Hedges roadless area, but it is also an area of diverse and productive summer elk habitat. Elk appear willing to tolerate this degree of human presence in order to exploit high quality habitat.

Winter Range

The majority of elk in this analysis unit winter in the Smith River drainage on private lands to the north and east of the Elk Ridge area.

8. Hedges Elk Analysis Unit

General Nature of the Analysis Unit

The Hedges Mountain elk analysis unit covers about 45,297 acres between Trout and Magpie Creeks on the west side of the Big Belt Range. In general, the northeast half of the analysis unit (between Hedges Mountain and Snedaker

Divide) is summer range; the southwest half (between Hedges Mountain and Canyon Ferry and Hauser Lakes) is winter range.

Elk Vulnerability During Hunting Season

Approximately 17% of the Hedges Mountain analysis unit provides security during the hunting season. This is due mostly to the extensive road system and amount of motorized trails or access within the analysis unit. A portion of this unit burned in the Cave Gulch fire in 2000. This analysis unit currently does not meet Forest Plan Standards for hiding cover and open road density.

Summer Range

About 39,340 acres of the analysis unit function primarily as summer range. This is the region northeast of Hedges Mountain. Most of it is rugged country at higher elevations. The habitat effectiveness is 54%. While this is above the 50% recommended HE, it may be marginal considering the low amount of security available during the hunting season. Because the security is low, elk may choose to stay in the high elevation summer range through hunting season as snow depths allow. Due to the relatively moderately high open road density of 1.7 mi/mi², this may create a situation that increases elk vulnerability.

Winter Range

In the Hedges unit, forage on public land is usually sufficient to carry elk through the entire winter. About 28,000 acres of the analysis unit functions as winter range to one degree or another, depending on the snowfall in any given year. In light-snow years, elk may range as high as the top of Hedges Mountain in mid winter. The steep open slopes often blow free of snow, exposing extensive areas of cured bunchgrass that have not been grazed by livestock to any extent since the late 1980s.

However, many elk are driven down onto private land in the Hauser Lake area by ATV and OHV use by late summer and remain there to escape hunters on the Forest. Once on private land, many elk prefer to remain there through the winter. Forage in private hayfields, pasturelands, and crop fields is more to their liking. This preference is probably a function of species composition, vegetation texture, and productivity. On private land, the elk compete directly with cattle for the winter food supply. They may also damage fences and haystacks. The tolerance of adjacent landowners for the presence of these elk varies, but most in this area would like to see the herd reduced in size or activities that displace elk from the Forest modified.

9. Hellgate Gulch Analysis Unit

General Nature of the Analysis Unit

The Hellgate Analysis Unit occupies approximately 27,331 acres of federal lands and extends from the Canyon Ferry Road (Highway 284) to the crest of the Big Belts between Magpie Gulch and Avalanche Gulch. Within this area exists a smaller Avalanche Analysis Unit which largely remains within the larger area but

moves in a smaller pattern within the larger analysis unit and winters in the Avalanche area. A large portion of the Hellgate analysis unit is composed of non-National Forest lands. These areas include early fall, winter, and early spring ranges as there is good forage on private cropland and rangeland. Hunting pressure on the higher summer ranges in early fall tend to pressure these elk into the area along the forest boundary where extreme topography provides a more secure situation. Water is fairly limited in the southwestern portion of the analysis unit and generally the arrival of snow to the area will speed movement to this area during hunting season.

Elk Vulnerability During Hunting Season

Approximately 17% of the Hellgate analysis unit provides security during the hunting season. This is due mostly to the extensive road system and amount of motorized trails or access within the analysis unit. A portion of this analysis unit burned in the Cave Gulch fire in 2000. This analysis unit currently does not meet Forest Plan Standards for hiding cover and open road density.

Summer Range

These elk tend to summer in the upper portions of the Magpie, Hellgate, and Avalanche watersheds such as Culp and Shannon, and Cooney Gulches where water and forage are not limiting. In areas where water is easily accessible by both livestock and elk, there is evidence of dual use. Areas of more extreme topography provide more of an exclusive use situation for elk and deer. The HE is 54% with a moderately high open road density of 1.7 mi/mi². Because the security is low, elk may choose to stay in the high elevation summer range through hunting season as snow depths allow. With OHV use by late summer, this may create a situation that increases elk vulnerability. The summer range offers forage, cover, and interspersed wet areas but is fragmented by motorized roads and/or trails.

Winter Range

In the Hellgate unit, forage on public land (about 17,000 acres) is usually sufficient to carry elk through the entire winter. In light-snow years, elk may range as high as the top of Hunter and Shannon Gulches in mid winter. The steep open west and south facing slopes often blow free of snow, exposing extensive areas of cured bunchgrass that have not been grazed by livestock to any extent.

However, many elk are driven down onto the breaklands along the forest boundary or private land by ATV and OHV use by late summer and remain there to escape hunters on the Forest. Once on private land, many elk prefer to remain there through the winter. Forage in private hayfields, pasturelands, and crop fields is more to their liking. This preference is probably a function of species composition, vegetation texture, and productivity. On private land, the elk may compete directly with cattle for the winter food supply. The tolerance of adjacent landowners for the presence of these elk varies, but most in this area would like to see the herd reduced in size or activities that displace elk from the Forest modified.

10. Wagner/Thomas Analysis Unit

General Nature of the Analysis Unit

The Wagner/Thomas analysis unit spans the eastern side of the Big Belt Mountains from Wagner Gulch to Thomas Creek. The total analysis unit size is approximately 27,723 acres. The implementation of road closures included in the Wagner/Atlanta Vegetation Treatment project (USFS 1995) would move the security levels from 28% to 59% upon completion and generally increasing HE levels and reducing open road densities.

Elk Vulnerability During Hunting Season

Approximately 28% of the Wagner/Thomas analysis unit provides security during the hunting season. This above recommended amount of security per analysis unit (>30%) is beneficial due to the tendency of elk to move to private land early in the hunting season. The higher amount of security offers some local refugia such that elk population levels may still be met. This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Elk summer in the upper elevations of the western portion of the analysis unit and winter on the fringes of public and private lands, concentrating in the Thomas Creek drainage. Higher elevations along the crest of the Big Belt Mountains are shared summer range for elk from the Wagner/Thomas, Atlanta, Confederate, Hellgate, and Whites Analysis Units. HE is 61%. Patterns of Wagner/Thomas elk use have changed in the last 10-15 years due mainly to timber harvest, increased road access, and increased numbers and changing hunter use patterns.

Winter Range

Winter range is limited on public lands, but the Thomas Creek area is used generally every year. Migration occurs north, south and west to spring, summer and fall ranges and then back again for winter. Elk are scattered throughout the eastern side of the Big Belts during the hunting season, but significant numbers of elk may move onto private lands during the archery or early part of the rifle hunting season. This is due to limited hunter access and the resulting relative lack of hunting pressure on private lands as compared to national forest land. In recent years, a large number of animals have remained on their private land winter ranges throughout the summer as well.

11. White's Gulch Analysis Unit

General Nature of the Analysis Unit

The Whites Gulch Analysis Unit occupies approximately 19,125 acres of National Forest Land and extends from the Canyon Ferry Road (Highway 284) to the crest of the Big Belts between Whites Gulch and Avalanche Gulch. A large portion of the Whites Gulch Analysis Unit is composed of non-National Forest lands. These areas include early fall, winter, and early spring ranges as there is good forage on private cropland and rangeland. Elk range throughout all parts of the Whites

Gulch unit from late spring to early fall. Hunting pressure on the higher summer ranges in early fall tend to pressure these elk into the area on the north side of Bilk Mountain and Bilk Gulch. This area, barring the Spring Gulch Road is largely non-motorized with mature timber which provides ample opportunity for escape during the hunting season. Water is well distributed across the analysis unit but becomes more limited in the southwestern portion of the analysis unit. Generally the arrival of snow to the area will speed movement to this area during hunting season.

Elk Vulnerability During Hunting Season

Approximately 62% of the White's Gulch analysis unit provides security during the hunting season. This is due to the large area closure in place and lack of roads north of the White's Gulch road (with the exception of Spring Gulch). This analysis unit currently meets Forest Plan Standards for hiding cover and open road density.

Summer Range

Habitat effectiveness for this analysis unit is 70% HE. The largest block of summer habitat is in and around the Bilk, Cayuse, and Needham Mountain areas. This is an area of relatively highly diverse and productive summer elk habitat. The majority of trails and roads in the Cayuse/Bilk Mountain region are non-motorized or primitive routes that carry little vehicle traffic from April through September. Elk appear willing to tolerate this degree of human presence in order to exploit high quality habitat. This summer range is also used by elk coming up from winter range in the Wagner/Thomas Analysis Unit. The Cayuse Mountain roadless area, while relatively free of human disruption, is rugged, intermittently forested, and largely productive in terms of forage. Most of the key elk summer range is unavailable to livestock, but the Bilk Gulch area provides the greatest potential for dual use.

Winter Range

Potential elk winter range occupies about 10,500 acres in the Whites Gulch analysis unit. Within this broad area, several pockets of high quality habitat at low elevation and on south-facing slopes serve as critical range during severe winters. These areas include portions of lower Spring Gulch, Number Sixteen Gulch, Bilk Gulch, Upper Number Two Gulch, Park Gulch and Whites Gulch bottom. Roughly half of the winter range in the Whites Gulch analysis unit is on public land. On most years, livestock grazing on public land does not remove enough forage to cause problems for elk or mule deer.

Elk Population per Montana Elk Plan

The state-wide Montana Elk Plan (MFWP 1992) defines an area for the Big Belt Elk Management Unit (EMU) to include the entire project area. Within the Big Belt EMU are two Hunting Districts (392 and 446). One of the population objectives for the combined hunting districts is to maintain a late winter population goal of 1600-1800 elk. Other objectives pertain to bull:cow ratios (10 per 100), annual harvest (250-300 antlered and 300-350 antlerless), bull harvest statistics, and providing hunter recreation days.

Under the Montana Fish Wildlife and Parks 2002 draft elk management plan, populations would exceed their objectives of approximately 2,000 elk for the Big Belt Mountains in Hunting Districts 392 and 446. Currently the elk population estimates for the Big Belts are 1,403 elk in hunting district (HD) 446, 1,076 elk in HD 390, 822 elk in HD 392, and 551 elk in HD 391. The Draft Elk Management plan is only a draft and changes may occur when the final is released later this year 2003. The draft elk management objective for observed number of elk in the Big Belt Mountains allows for plus or minus 20%. Currently, hunting district 392 is slightly below the population objective of 1,100 elk with a count of approximately 822 while hunting district 446 is approximately 38% over the population objective according to MT FW&P data provided by area biologists Tom Carlson and Adam Grove.

HD 392

Hunting District 392 includes the Beaver Creek, Beaver Creek-Gates, Boulder-Baldy all analysis units in this analysis except for the Atlanta, Elk Ridge, Dry Range, and Wagner/Thomas analysis units (all in HD 446). It covers the west side of the Big Belt Range from Duck Creek Pass to the center of the Gates of the Mountains Wilderness. The Montana Department of Fish, Wildlife and Parks estimates the elk population for Hunting District 392 to be slowly increasing over the past 10 years. Sex ratios are typically 10-12 bulls per 100 cows with no obvious trend up or down. Large branch-antlered bulls are uncommon. Late winter calf/cow ratios are in the 30-40/100 range, indicating a productive population with good overall calf survival. 2003 data suggests that calf/cow ratios are slightly down and may be attributed to drought but are still within the acceptable range.

These figures suggest that the habitat effectiveness is adequate. However, security is poor on a few of the elk analysis units during the hunting season and hunting pressure on these low elevation ranges can be extreme. Conversely, there is an abundance of fall security habitat within some herd units that is not reflected in high bull survival.

HD 446

The remaining analysis units fall within HD 446. This District supports a larger number of elk than HD 392--generally more than 1200 animals. The 1992 DFWP Montana Elk Plan would like to see this number reduced by a minimum of 50% in order to reduce chronic damage on available winter range (mostly private land). However, security is poor in some of the elk analysis units during the hunting season on National Forest lands (T. Carlsen, personal comm.) Consequently, elk retreat to large insulated private land holdings early in the fall, they are less vulnerable to hunting mortality than many elk herds (a limited number of non-resident hunters are allowed access). This has kept bull ratios relatively high; approximately 20/100. Calf/cow ratios are excellent (about 45/100) and the population is increasing slightly. Private landowners have requested extended and/or late damage hunts to accomplish herd reductions, with emphasis on reducing the antlerless population. These hunts have been relatively unsuccessful.

Threatened, Endangered, and Proposed Species

Canada Lynx

Description of Population and Habitat Status

Lynx occur in mesic coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare. In North America, the distribution of lynx is nearly coincident with that of snowshoe hares. Lynx are uncommon or absent from the wet coastal forests of Canada and Alaska (Ruediger et al., 2000).

Both snow conditions and vegetation type are important factors to consider in defining lynx habitat. Across the northern boreal forests of Canada, snow depths are relatively uniform and only moderately deep (total annual snowfall of 39-50 inches). Snow conditions are very cold and dry. In contrast, in the southern portion of the range of the lynx, snow depths generally increase, with deepest snows in the mountains of southern Colorado. Snow in southern lynx habitats may be subjected to more freezing and thawing than in the taiga, although this varies depending on elevation, aspect, and local weather conditions. Crusting or compaction of snow may reduce the competitive advantage that lynx have in soft snow, with their long legs and low foot loadings.

Most lynx occurrences in the western United States are associated with Rocky Mountain Conifer Forest and most are within the 4920-6560 foot elevation zone. There is a gradient in the elevational distribution of lynx habitat from the northern to the southern Rocky Mountains, with lynx habitat occurring at 8000-11500 feet in the southern Rockies. Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce. In extreme northern Idaho, northeastern Washington, and northwestern Montana, cedar-hemlock habitat types may also be considered primary vegetation. In central Idaho, Douglas-fir on moist sites at higher elevations may also be considered primary vegetation. Secondary vegetation that, when interspersed within subalpine forests may also contribute to lynx habitat, include cool, moist Douglas-fir, grand fir, western larch, and aspen forests. Dry forest types (e.g. ponderosa pine, climax lodgepole pine) do not provide lynx habitat.

Snowshoe hares are the primary prey of lynx, comprising 35-97% of the diet. Koehler (1988) reports that snowshoe hare densities are significantly correlated with the densities of trees and shrubs less than 1.0-inch dbh. Therefore, preferred lynx foraging habitat consists of dense conifer seedling and sapling stands that provide snowshoe hare cover and available browse, i.e., lodgepole pine (Koehler 1990). Koehler and Brittell (1990) recommend that seedling/sapling stands within the lodgepole/subalpine fir zone should be well dispersed among across lynx habitat. Higher elevation montane habitats with abundant snowshoe hares are optimal habitats.

During the cycle when hares become scarce, the proportion and importance of other prey species, especially red squirrel, increases in the diet. However, Koehler (1990) suggested that a diet of red squirrels alone might not be adequate to ensure lynx reproduction and survival of kittens. Most research has focused on the winter diet, and diets in the summer are poorly understood

throughout the range. Indications are that the summer diet may include a greater diversity of prey species.

There has been little research on lynx diet specific to the southern portion of its range except in Washington. Southern populations of lynx may prey on a wider diversity of species than northern populations because of lower average hare densities and differences in small mammal communities. In areas characterized by patchy distribution of lynx habitat, lynx may prey opportunistically on other species that occur in adjacent habitats, potentially including white-tailed jackrabbit, black-tailed jackrabbit, sage grouse, and Columbian sharp-tailed grouse.

As a solitary, wide-ranging predator, lynx maintain low population densities, and are vulnerable to cyclic prey densities. Home range size varies with dispersion pattern of suitable habitat and with the abundance of prey. Males generally maintain larger home ranges than females. In Montana, Brainerd (1985) reports home range sizes of about 17 and 122 mi² for females and males respectively. Nellis (1989) indicates that most home ranges fell between 5-20 mi². Ruediger et al. (2000) found annual home range size for female's averaged 44mi².

Lynx have been documented, historically and currently, throughout the Rocky Mountains of Montana, from the Canadian border through the Yellowstone area. Lynx presence has also been verified in the Big Belt, Little Belt and Crazy Mountains. Trapping records indicate past lynx occupancy in the Big Snowy and Little Snowy Mountains and the Highwood Mountains. There were restricted trapping seasons for lynx in Montana from 1991-1998 (quota of 1 on each side of the Continental Divide annually). Lynx trapping was closed in Montana after the 1998-1999 seasons; however, up to 5 animals may be live-captured for translocation (Ruediger et al., 2000).

Species Occurrence

Lynx have been trapped from the Big Belts as recently as the 1980s. Verified sightings have been reported in and around the project area at the mouth of Magpie Creek and the head of Coxy Gulch (Giddings, pers. comm). Due to the patchiness and marginal values of lynx habitat within the project area, these sightings most likely could be contributed to a young dispersing male. Individuals are able to move into this area from the Continental Divide complex to the west and may be present, though rare. Lynx hair snare surveys were initiated by the Helena National Forest in 2002. None of the collected hair samples have been identified as lynx. These surveys are continuing in 2003 and 2004.

Lynx Analysis Units (LAU) in the Project Area

Primary lynx habitat in Montana east of the Continental Divide consists of subalpine fir forests as the primary vegetation, intermixed with Engelmann spruce and lodgepole pine. Moist Douglas-fir habitat types where lodgepole pine is a major seral species also contribute to lynx habitat. On the east side of the Continental Divide, subalpine fir forests occur between 5,500-8,000 feet (Ruediger et al., 2000). While areas within the Big Belts may meet the criteria of lynx habitat and be mapped accordingly, high-quality habitat is restricted to the core of the mountain range. Areas containing primary lynx habitat are small and

isolated from other primary lynx habitat areas in other mountain ranges. The portion of the Big Belts under analysis for this project does not contain high-quality habitat, but may provide habitat for small endemic or dispersing lynx populations.

As part of the requirements of the Lynx Conservation Assessment and Strategy (LCAS), LAUs were mapped for the Big Belt Mountains. The North Belts project area lies within three LAUs. One LAU includes the entire Gates of the Mountains Wilderness and extends to the ridge between Magpie and Beaver Creek drainages. Another LAU extends to the east as far as the Confederate Gulch drainage. The third LAU includes the area from this point to approximately Duck Creek pass. LAUs should generally be 16,000 to 25,000 acres in contiguous habitat and likely should be larger in less contiguous, poorer quality, or naturally fragmented habitat. LAUs should approximate the size of a female's home range and encompass all seasonal habitats (Ruediger et al. 2000). LAUs in the project area are very large due to the area's overall lack of primary lynx vegetation.

Sensitive Species

The following species are listed as sensitive on the Regional Forester's Sensitive Species List and are either known or suspected to occur in the planning area. The harlequin duck, northern bog lemming, and Columbian sharp-tailed grouse are not included here due to a lack of available habitat in the project area or because the Big Belts are outside of known ranges. In addition, the peregrine falcon, flammulated owl, Townsend's big-eared bat, leopard frog are not analyzed in detail as explained in the wildlife analysis approach table in the project file.

Wolverine

Biological Requirements

Wolverines range widely from subalpine talus slopes to big game winter ranges. They are generally solitary animals and exhibit some fidelity to particular areas for months or years. However, the species is thought to have a flexible behavioral system when environmental conditions change (e.g. food supply) which supersedes boundary considerations (Hatler 1989).

Wolverine habitat is best defined in terms of adequate year-round food supplies in large sparsely inhabited areas, rather than in terms of particular types of topography or plant associations (Kelsall 1981). However, studies indicate that wolverines select alpine fir forests over other forest types with some preference for lodgepole pine and western larch (Hornocker and Hash 1981). Copeland (1996) indicates that wolverines prefer Douglas-fir forests in the summer and lodgepole pine forests in the winter. Generally, habitat use follows distinct seasonal shifts with higher elevational talus/rock cover types preferred during the summer, montane coniferous forests during the winter, and riparian habitats during the spring (Warren et al. 1995, Copeland 1996).

Preferred habitat appears to be large, isolated tracts of land supporting a diverse prey base. Wilderness or remote country appears essential to wolverine viability (Hornocker and Hash 1981). Wolverines will occur in nonwilderness areas with

human activity; however this use primarily occurs during the winter when these areas become, because of winter conditions, remote. During summer, wolverines will move to higher elevations. These behaviors effectively separate wolverine and humans. Human encroachment into existing refugia may threaten the wolverine's ability to maintain basic life history requirements (Copeland and Hudak 1995). Human activity – road building, developed campgrounds – near subalpine boulder talus sites may eliminate historic foraging or denning habitat. It has been hypothesized that persistence of wolverines in Montana, despite unlimited historic trapping and hunting, may be attributed to the presence of designated wilderness and remote, inaccessible habitat (Hornocker and Hash, 1981).

Wolverines occur in low densities in all places they have been studied (Ruggiero et. al., 1994). This is generally attributed to naturally low reproductive rates and delayed sexual maturity of the species as well the fact that wolverines are primarily scavengers and ineffective hunters (Marshall 1988). Food availability seems to be the primary factor determining movement and specific habitat use (Hornocker and Hash, 1981).

The wolverine is primarily a scavenger, although it will procure most of its own food during the summer months. The eggs and young of ground nesting birds, burrowing rodents, snowshoe hares and berries are favorite summer foods. Wolverines rely on carrion in the winter months; therefore, they rely heavily on the presence of other predators. Wolverines will also search for caches made by itself, other wolverines or other carnivores during the winter. Ungulate carrion is a primary winter food item (Banci 1994).

Denning habitat may consist of a series of den types ranging from natal dens (those associated with the birth of kits) to maternal dens (post-birth, pre-weaning) and post weaning dens (rendezvous sites) (Copeland 1996). Natal dens occur at high elevations typically in talus or cirque basins while maternal dens occur in both talus and among fallen trees (Copeland 1996). Rendezvous sites may occur in talus or coniferous riparian zones. However protection of natal denning habitat appears to be critical for wolverine persistence.

Data collected in northwestern Montana indicate that males and females have an average yearly range of 422 and 388 km², respectively. However, lactating females tend to have smaller home ranges (100 km²) (Hornocker and Hash 1981). Although wolverines can utilize almost any habitat and have a large home range they are sensitive to human disturbance and are especially susceptible to trapping because of their eating habits. Trapping accounts for a high proportion of wolverine mortality, affecting even populations that are locally protected (Ruggiero et.al., 1994). Wolverine are easy to trap and can locate bait from a considerable distance due to their keen olfactory senses (Hornocker and Hash 1981).

Several components of wolverine ecology have emerged based on existing knowledge: 1) wolverines need adequate space for population maintenance; 2) population fragmentation must be avoided to maintain genetic, social, and spatial continuity of subpopulations; 3) the environment must be capable of providing a

varied seasonal diet; 4) security areas must be available to provide undisturbed seclusion for reproducing females (Copeland and Hudak 1995).

Area Use

The Big Belt Mountains offer the variety of habitats needed in conjunction with large expanses of continuous coniferous cover. The high road density associated with the influx in humans has reduced the habitat potential. No recent wolverine sightings have occurred in or around the project area. It is unlikely wolverine use the project area to a large extent due to the moderate to high level of human activity, high open road densities, recent wildland fire, and potentially due to disruption during the winter months by snow machines (Copeland 1996). If wolverines do frequent the area, blocks of land left unmanaged, reduction in roads, reforestation to replace cover, and maintenance of big game winter range conditions are all features of the project that will result in the wolverine being unaffected or benefited. Habitat is available outside the project area to the north, and potentially in the project area long-term as vegetative succession occurs to support a food supply base for wolverine.

Natal denning wolverine habitat has been modeled (See Assumptions and Methodologies, above) across the Forest. There are approximately 15,800 acres of natal denning habitat in the project area of which 13,500 acres are on the Helena National Forest. The remaining acres are on private or non-federal land but are within the project area boundary. Of the 13,500 acres on the National Forest, about 9,500 acres are considered protected from snowmobile use due to its land allocation status (i.e. wilderness or roadless). This is about 70% of the habitat in the project area. The remaining acres, 4,000, are considered unprotected from snowmobile use.

Large blocks of potential wolverine refugia exist in the project area as either wilderness or roadless areas. Refer to Appendix B for a specific discussion of each roadless area and its size. The Gates of the Mountains comprise 28,600 acres in the planning area. Other roadless areas provide approximately 133,000 acres of potential refugia. Table X. summarizes acres of roadless areas and miles of roads within each area. The presence of roads in these areas is either due to existing conditions at the time of roadless 'designation' or through provisions in the Helena Forest Plan that provided for roads. Despite the presence of roads in these areas, road densities remain relatively low compared to the rest of the project area.

Existing conditions and management for other wildlife species may also benefit wolverines. As indicated above, ungulates are a major food source for wolverines. Management for elk, therefore, benefits wolverines by providing a forage base; however, management for elk also provides large blocks of undisturbed habitat (i.e. security areas) that may provide incidental refugia for wolverines. The Elk section above provides a description of the existing condition, year round, for elk.

The ability of wolverines to move within the Big Belt Mountain Range is determined by the availability of connectivity. See discussion above on Dispersal, Migration, and Travel Corridors.

Wildlife, Environmental Consequences

Introduction

This chapter discloses the environmental consequences of implementing the Proposed Action and its alternatives on dispersal, migration, and travel corridors, elk, lynx, and wolverine. As stated previously in the Affected Environment introduction, not all species were brought forward into this document. The environmental effects of implementing the Proposed Action and the alternatives are presented below. These form the scientific and analytical basis for comparing the Proposed Action and the alternatives described in Chapter II.

Dispersal, Migration, and Travel Corridors

Introduction

American Wildlands, in an attempt to help focus conservation efforts related to the Big Belt Mountains, delineated what they consider to be the vital core wildlife habitat and the best wildlife corridor within the central and northern portion of the range in their Corridors of Life analysis. Their delineation was based upon several factors, including: presence of high quality wildlife habitat, observations of wildlife and wildlife sign, presence of terrain features that may limit wildlife movements (steep rock cliffs that exist in several drainages on the west side of the Big Belt Range and along the banks of the Missouri River), and concentrations of human presence and activity (residential development), recreational activities, and consumptive uses such as mining and grazing).

A map of the Greater Yellowstone Ecosystem to Northern Continental Divide Ecosystem showing the Madison Range, Gallatin Range, Absaroka Range, Bridger Range, Tobacco Root Mountains, Elkhorn Mountains, Crazy Mountains, Little Belt Mountains and finally the Big Belt Mountains and their associated quality corridor potential and non-connectivity analysis. Two polygons show the Big Belt Mountains just southeast of the Northern Continental Divide to a few miles north of Highway 12 on the south end of the Big Belts represent high quality habitat that is relatively undisturbed by human activity and offers the most likely path for large-scale animal movements throughout the Big Belt Range. Areas outside of those lines may also contain pockets of good wildlife habitat, but are less likely to represent critical core habitat or to be used as a major wildlife corridor route, because of restricting terrain or highly impactful human activities. In their analysis the Big Belt Mountains show up as core habitat with minimal potential to act as a corridor according to their delineation.

According to their map the corridor potential between the Elkhorn Mountains and Big Belts is shown as being on the lower quality end. From the Bridger Range and Crazy Mountains to the Big Belts show up primarily as lower quality with a small stringer of next to lower quality corridor potential. The corridor potential between the Little Belt Mountains and the Big Belt Mountains show up as moderate, low, and lower quality. The corridor potential between the Northern Continental Divide Ecosystem and the Big Belts show up as moderate, low, and lower quality. Addressed in their report are the numerous types of human uses

that occur throughout the study area, creating potential for varying degrees of wildlife disturbance and reductions in habitat security, and possibly influencing the degree of effective connectivity through the Big Belt Mountains.

The Big Belt Mountains contain high densities of roads in some regions; however, numerous, small roadless areas exist throughout the range, and a relatively balanced travel plan provides for a degree of wildlife and habitat security (Gehman et al., 2002). This representation by American Wildlands is fairly accurate and the analysis and assumptions are correct in that the Big Belt Mountains do offer potential habitat corridors for several types of wildlife such as wolf, grizzly bear, and migratory birds. The Big Belt Range contains high quality wildlife habitat and is used by a wide range of wildlife species.

Alternative 1 – No Action

Alternative 1 proposes no activities, however under this existing condition the allowance of wheeled motorized vehicles is restricted to existing roads and trails. This also allows for motorized travel up to 300 feet off designated routes to reach dispersed campsites

Alternative 2

Alternative 2 allows for some motorized roads and trails to be built, converts some roads to motorized trails that include narrowing the tread to about ½ of the existing prism recontoured on side slopes and ripped/seeded on flat ground. Some vegetation removal on currently revegetated roads will occur, motorized dispersed travel up to 300 feet of designated routes, both roads and trails would be allowed for retrieval, woodcutting, and to reach dispersed campsites as long as it does not result in resource damage. Several miles of existing road and trails would be decommissioned in this action alternative. This alternative is considered to have the second greatest potential motorized use and dispersal of the action alternatives. Compared to alternative 3, alternative 2 proposes to decommission several miles of road and trail which would minimize the footprint on the landscape and reduce the amount of road and trail in the project area. This difference is what separates potential connectivity impacts between alternatives 2 and 3.

Alternative 3

Alternative 3 allows for new motorized trails along with dual use roads, a number of currently closed roads to be re-opened. Several miles of road would be converted to motorized trails, same specifications as alternative 2. Some removal of vegetation on currently revegetated roads will occur and motorized dispersed travel would be the same as in alternative 2. No roads will be decommissioned under this alternative. This alternative has the greatest potential in disrupting possible connectivity within the project area for some species of wildlife and habitat.

Alternative 4

Alternative 4 is the most restrictive proposed action and would benefit connectivity within the project area for some species of wildlife and habitat as

motorized use disturbance is greatly reduced over alternatives 2 and 3. Several miles of non-motorized trails are proposed in alternative 4 and impacts by non-motorized users also have impacts in displacing or disrupting possible connectivity for certain species of wildlife and habitat. Effects such as close encounters may alter behavior, cause unnecessary energy expenditure, alter nest placement, and reduce survivorship of young via abandonment or predation. Flight and/or elevated heart rates, and displacement all have the potential to be physiological or behavioral responses.

Alternative 5 – Proposed Action

Alternative 5 proposes seasonal restrictions, no game retrieval routes, decommissioning of roads/trails, and motorized use within 300 feet of an open designated road to access dispersed campsites but also other uses as long as it does not result in resource damage. Such use within 300 feet of an open designated trail would not be permitted under alternative 5. A reduction of existing condition road miles, motorized trail miles, and road and trail decommissioning are proposed under this alternative. This alternative proposes road/trail relocations and watershed improvement projects that may actually have a beneficial effect in areas where trails or roads are located away from riparian areas and overall watershed health is improved. Alternative 5 has the second best potential in decreasing potential effects of motorized use and benefiting connectivity within the project area for some species of wildlife and habitat. Alternative 5 effects are only slightly different from the alternatives with regard to potential affected connectivity. Given the restrictions and designations of this alternative it makes the second best attempt in reducing impacts due to motorized use and dispersal.

Big Game, Elk

Introduction

Effects to elk are discussed in consideration of three analysis parameters: elk vulnerability which includes security analysis and hiding cover/open road density, winter range, and habitat effectiveness on summer range.

Elk Vulnerability During Hunting Season

Hiding Cover and Open Road Density

Elk vulnerability during hunting season is based on standards described in the Helena National Forest Plan (1986) and is a measure of hiding cover and open road density. See page II-18 of the Forest Plan for discussion of standards.

The Forest Plan hiding cover analysis is based on the following standard: tree crown closure of 40% or greater. Overall, hiding cover will not change by alternative from the existing condition since the amount of vegetation removal associated with new route construction in any of the alternatives is negligible at the scale of the elk analysis unit. Therefore, the determination as to whether the Forest Plan standard is met is based on changes in road density by alternative.

Open road densities on National Forest lands have been determined for each of the elk analysis units. The table below shows hiding cover, open road density and Forest Plan consistency for each of the elk analysis units by Alternative. Overall, Forest Plan consistency for hiding cover/open road density is met for all the alternatives in the Atlanta Creek, Boulder-Baldy, Confederate, Whites Gulch and Beaver Creek-Gates elk analysis units. Forest Plan consistency for hiding cover/open road density is not met in any of the alternatives in the Beaver Creek, Dry Range, Hedges, and Hellgate elk analysis units. Forest Plan consistency is not met for Alternative 1 in the Elk Ridge unit and Forest Plan consistency is not met for Alternative 2 in the Wagner/Thomas unit.

Security

Elk security is determined using the guidelines proposed by Hillis et al. (1991) which identify secure areas as greater than or equal to 250 acres and be greater than or equal to one half mile from an open road during general hunting season. In general, it is recommended that at least 30% of an analysis unit (elk analysis unit in this analysis) qualify as security. Elk security on fall ranges improves as motorized hunter access decreases. Hunter opportunity is also impacted by travel management. Hunter opportunity can be decreased when factors lead to shorter seasons, more regulations, and restricted age structures in populations and increased with longer seasons, fewer regulations, and maintained desired age structures. Travel management, while sometimes restrictive, is necessary to provide adequate security within herd units to meet objectives for sex and age structure and to contribute to providing an array of options for hunters.

Not all elk analysis units provide adequate security as defined above. The Elk Ridge, Hedges, Hellgate and Wagner/Thomas analysis units have existing security levels below the general guideline of 30% due to open motorized routes during the general hunting season (Temporary emergency area closure in the Cave Gulch fire area is not included herein due to its temporary nature). Only Alternative 4 moves the Hedges, Hellgate and Wagner/Thomas units to within guidelines. There is little change in the low level of security in the Elk Ridge unit with any of the alternatives. Elk security is met with all of the alternatives for the Beaver Creek, Beaver Creek-Gates, Boulder Baldy, Dry Range, and Whites Gulch elk analysis units. Elk security by alternative, by analysis unit is displayed on Table X.

Summer Range Habitat Effectiveness

Elk habitat effectiveness, measured during the summer months, would improve due to the reduced open roads and motorized trail density in some elk analysis areas in each of the action alternatives (see Table X for comparison). This would benefit not only elk but also other species vulnerable to displacement by vehicle traffic. Energetic demands of ungulate species are high during the summer months as elk are simultaneously recovering from weight lost during the previous winter, supporting young of the year through lactation, and building fat reserves for the coming winter. Recreationists impact this effort through direct disturbance to animals, displacement or reduction of high quality selected habitats resulting in lowered reproductive performance, and indirect impacts from noxious weed establishment. The potential for negative impacts on summering elk increases

with expanded recreational access as options for acquiring low cost, high quality nutrition is limited.

Habitat effectiveness is based on open road densities during early spring through early fall. A measure of 50% or greater is considered a good indicator overall for elk habitat. Currently, all elk analysis units for all alternatives meet the guideline. Habitat effectiveness is also displayed on Table X by unit and by alternative.

Winter range

Snowmobile traffic is one form of disturbance that has a detrimental effect on wintering big game from damage to vegetation to forcing animals to use less preferred habitats. The energetic disadvantage from human disturbance is manifested through overt expressions such as an increase in general alertness to a slow retreating movement to outright flight, depending on the ungulate species and the type of disturbance (Canfield et. al. 1999). Winter range travel restrictions are intended to prevent disturbance and harassment of game animals during a period when physical stress is already relatively high. Potential for disturbance on winter ranges, particularly for big game, would decline under all action alternatives to some extent as a result of travel management actions and snowmobile restrictions except in areas where retrieval routes are proposed (Alternatives 2 and 3).

Travel management alternatives that close winter ranges to snowmobile use could also be referred to skiers and other recreational activities. Responses to cross-country skiers or other persons afoot may involve higher energy costs than snowmobile traffic. The latter is not proposed in any of the alternatives but is identified as a *monitoring* item to identify and mitigate any potential conflicts of this nature. Also identified as potential mitigation is to inform winter recreation users of the importance of ungulate winter range with a recommendation to not approach wildlife closer than 150 meters (300 yards) during this period (Canfield et. al. 1999). This mitigation would also provide for decreased stress injury on any ungulate when on spring range. At this time, recovery from winter weight loss is critical as animals are at the lowest physical condition of the year.

Thermal cover, or winter range, is an important element of elk habitat. The Forest Plan suggests a minimum of 25% of an elk analysis unit for thermal cover. Thermal cover will not change by alternative. Due to the inherent terrain limitations for winter range in the analysis area, the 6,000 foot elevation was *generally* used to determine where winter ranges occur. Based on the location of this general boundary, snowmobile use areas were identified for the alternatives. Overall, the potential for disturbance on winter ranges, particularly for big game, would decline under all action alternatives to some extent because all of the action alternatives include far less snowmobile acres than Alternative 1. The decline would be the smallest under Alternative 3 due to the extensive amount of retrieval routes proposed open during the winter. The decline would be the greatest under Alternative 4 due to the lowest amount of snowmobile use area identified in that alternative. The following table summarizes hiding cover, road density, and Forest Plan consistency by Alternative for each Elk analysis area.

Elk Analysis Areas and Effects by Alternative

Elk Analysis Area	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Percent Hiding Cover
Atlanta Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	0.1 Yes 62% 61%	1.3 Yes 28% 60%	1.2 Yes 28% 60%	0.0 Yes 65% 92%	0.1 Yes 62% 70%	77%
Beaver Creek Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	1.1 No 35% 60%	1.2 No 31% 60%	1.2 No 31% 59%	0.5 No 53% 70%	0.7 No 47% 63%	36%
BeaverCreek-Gates Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	0.0 Yes 99% 100%	0.0 Yes 99% 100%	0.0 Yes 99% 100%	0.0 Yes 99% 100%	0.0 Yes 99% 100%	40%
Boulder Baldy Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	1.1 Yes 45% 60%	1.2 Yes 38% 59%	1.3 Yes 37% 58%	0.3 Yes 60% 80%	0.9 Yes 43% 63%	78%

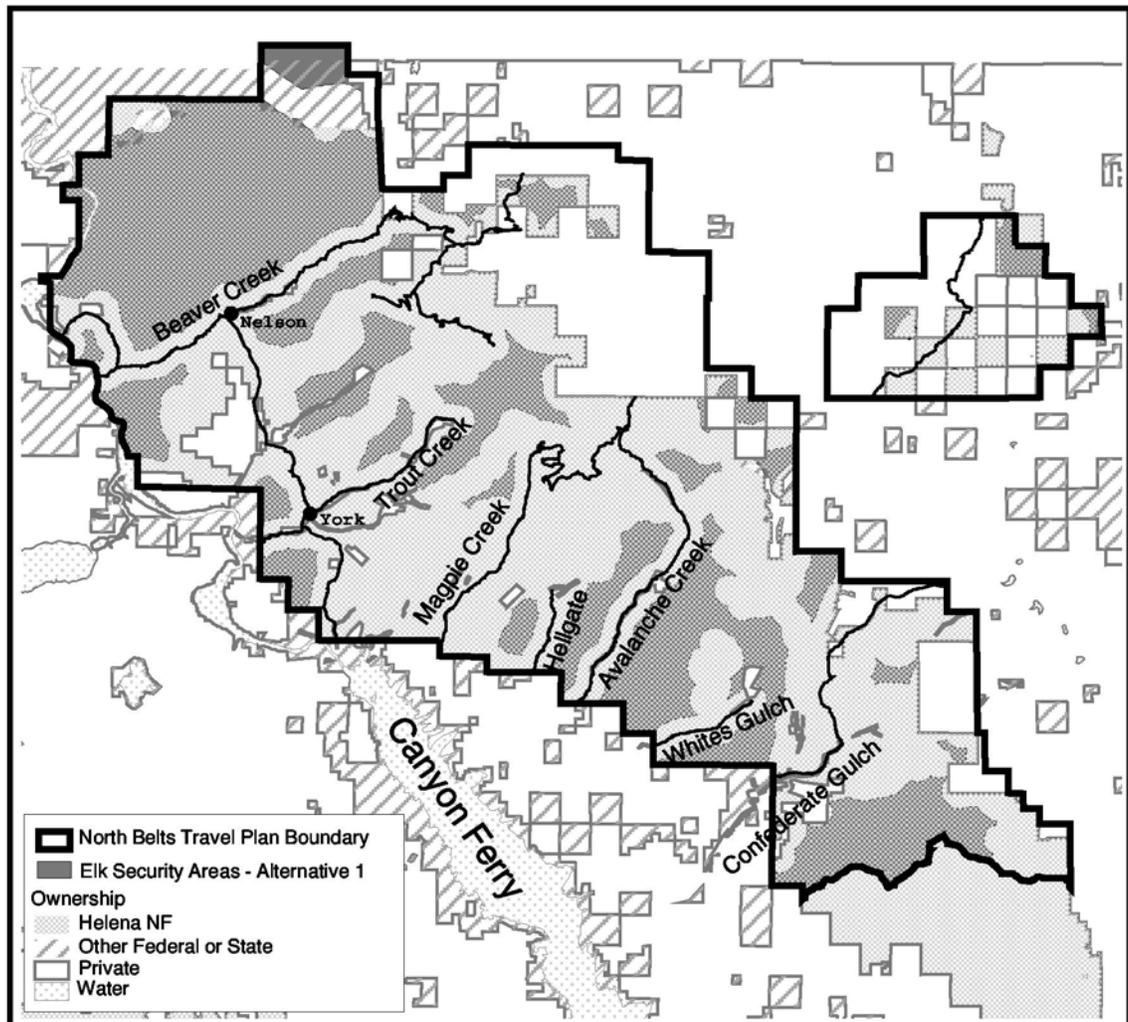
Elk Analysis Area	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Percent Hiding Cover
Confederate Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	0.7 Yes 45% 60%	0.7 Yes 41% 63%	1.4 Yes 19% 56%	0.3 Yes 74% 80%	0.5 Yes 48% 68%	68%
Dry Range Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	2.2 No 35% 68%	2.2 No 35% 68%	2.2 No 35% 68%	1.0 No 36% 80%	1.0 No 36% 80%	49%
Elk Ridge Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	1.6 No 6% 80%	0.8 Yes 10% 80%	0.7 Yes 10% 80%	0.7 Yes 10% 92%	0.9 Yes 9% 83%	58%
Hedges Open road density in (mi/mi ²) Hiding Cover/Open Road Density Forest Plan Consistency Security area Habitat effectiveness	1.6 No 17% 54%	1.4 No 16% 58%	1.5 No 14% 55%	0.5 No 46% 70%	1.0 No 26% 59%	48%
Hellgate Open road density in (mi/mi ²)	1.7 No	1.5 No	1.6 No	0.3 No	0.5 No	41

Elk Analysis Area	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Percent Hiding Cover
Hiding Cover/Open Road Density Forest Plan Consistency						
Security area	17%	21%	19%	61%	56%	
Habitat effectiveness	54%	55%	55%	80%	60%	
Wagner/Thomas						61
Open road density in (mi/mi ²)	0.9	1.4	1.3	0.2	0.4	
Hiding Cover/Open Road Density Forest Plan Consistency	Yes	No	Yes	Yes	Yes	
Security area	28%	16%	17%	49%	42%	
Habitat effectiveness	61%	61%	92%	92%	68%	
White's Gulch						55
Open road density in (mi/mi ²)	0.4	0.5	0.7	0.2	0.3	
Hiding Cover/Open Road Density Forest Plan Consistency	Yes	Yes	Yes	Yes	Yes	
Security area	62%	54%	48%	81%	68%	
Habitat effectiveness	70%	70%	83%	83%	75%	

Alternative 1 – No Action

Under the no action existing condition alternative, no new actions stated in the proposed action would take place. The no action alternative currently meets the elk security guideline of 30% in 7 of the 11 elk analysis units. The Wagner/Thomas elk analysis unit is just below the 30% figure at 28% and the Elk Ridge, Hedges, and Hellgate units are below the measure due to moderately high road densities. This alternative will continue to have little to no negligible impacts due to sufficient habitat and adequate population numbers. See Table above for Forest Plan consistency relative to hiding cover/open road density, elk security, and habitat effectiveness. Please see the following map.

Elk Security Areas, Alternative 1

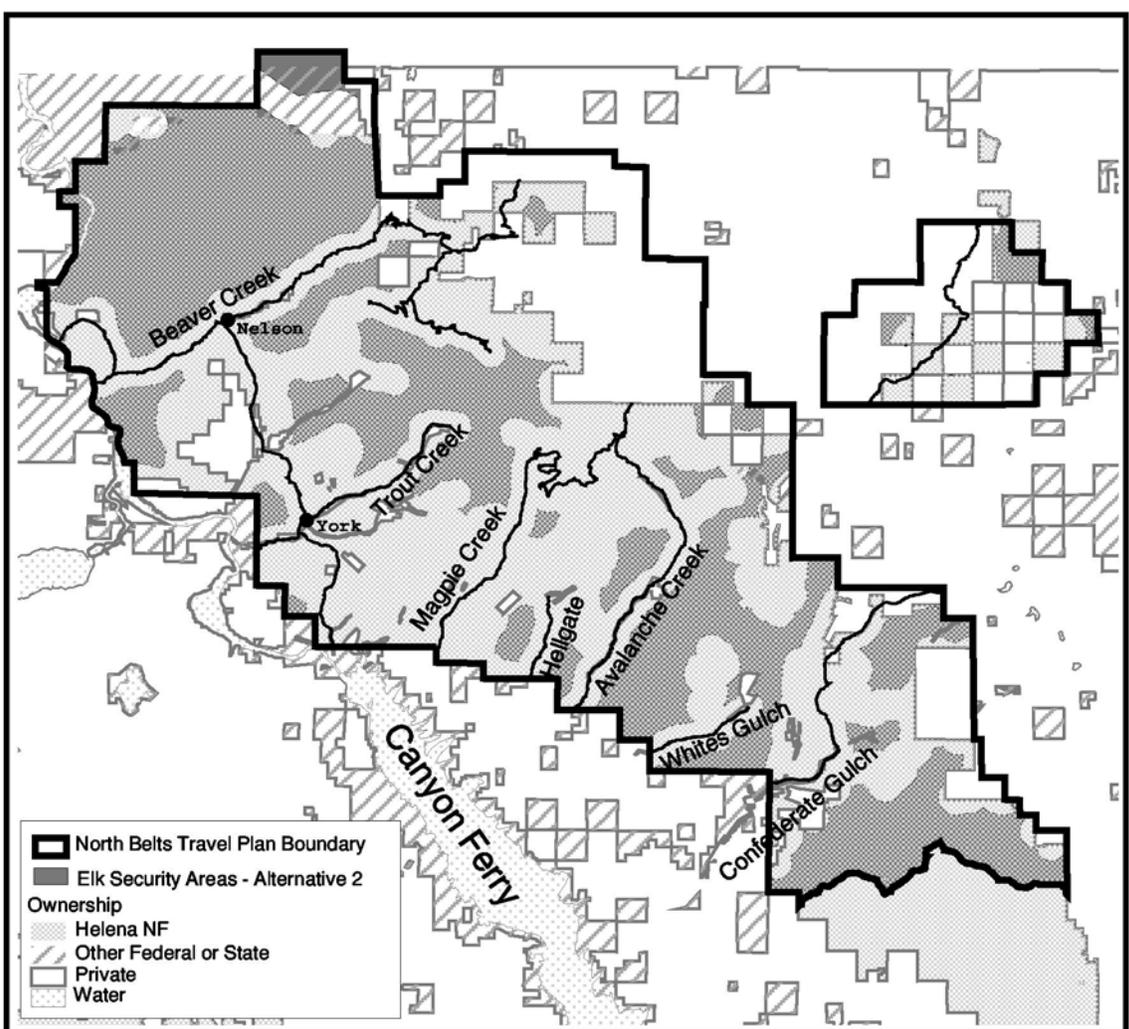


Alternative 2

Alternative 2 meets the elk security measure in 6 of the 11 elk analysis units. The Wagner/Thomas and Atlanta proposals would reduce elk security below the 30% standard. This proposal would bring security up in the elk ridge analysis area from 6% to 10%, which is a start at achieving elk security. Elk ridge is an area where numerous private roads are considered open during the hunting season. Therefore, security in this analysis area would not be met with further forest road restrictions. Elk Ridge is a part of hunting district 446 where elk numbers are on the increase in the last few years and are slightly above objective. This proposed alternative would decrease elk security in some analysis areas while others would remain about the same as the no-action alternative. This alternative lends itself to some potential displacement in areas where new roads and trails are to be built but also decreases this same potential in areas where road and trails would be decommissioned. This alternative also allows for longer motorized user periods and retrieval routes that have the potential to displace elk. This alternative would have some impact in areas

where security is lowered by the proposed actions but would have little to no negligible impacts in most of the analysis areas due to sufficient habitat and adequate population numbers. This alternative has the second greatest potential for elk displacement due to the above-mentioned proposed activities. The potential is primarily due to longer motorized user periods and retrieval routes. See Table above for Forest Plan consistency relative to hiding cover/open road density, elk security, and habitat effectiveness.

Elk Security Areas, Alternative 2

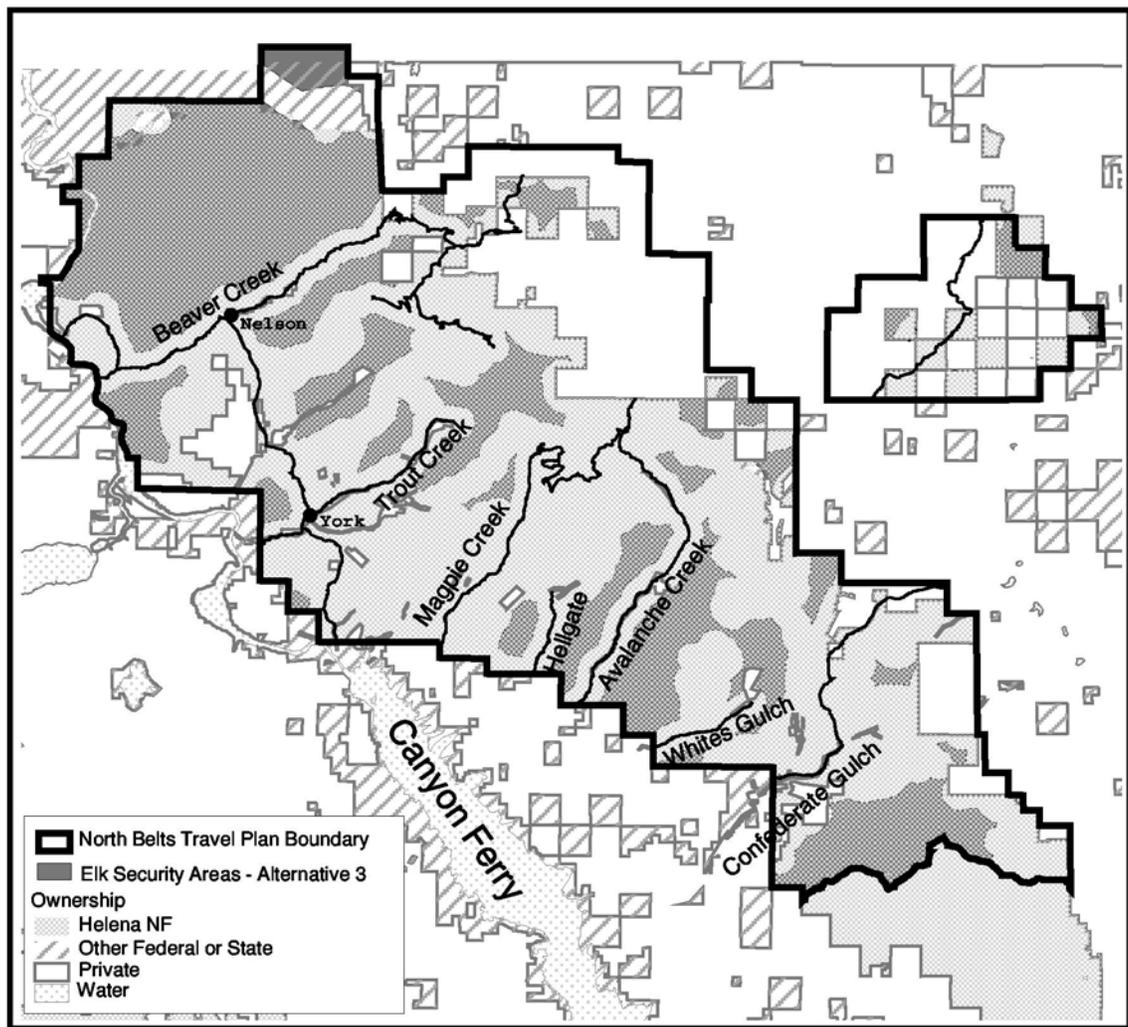


Alternative 3

Alternative 3 meets the elk security measure in 5 of the 11 elk analysis units. The Atlanta and Confederate proposals would reduce elk security below the 30% standard. This proposal would bring security up in the elk ridge analysis area from 6% to 10%, which is a start at achieving elk security. Wagner Thomas would also reduce elk security under this alternative from 28% existing condition to 17.4% elk security. This proposed alternative would decrease elk security in some analysis areas while others would remain about the same as the no-action

alternative. This alternative lends itself to some potential of elk displacement in areas where new roads and trails are to be built. This alternative also allows for longer motorized user periods and retrieval routes that also have the potential to displace elk. There is no road or trail decommissioning associated with this alternative. This alternative would have some impact in areas where security is lowered by the proposed actions but would have little to no negligible impacts in most of the analysis areas due to sufficient habitat and adequate population numbers. This alternative has the greatest potential for elk displacement due to the above-mentioned proposed activities. See Table above for Forest Plan consistency relative to hiding cover/open road density, elk security, and habitat effectiveness.

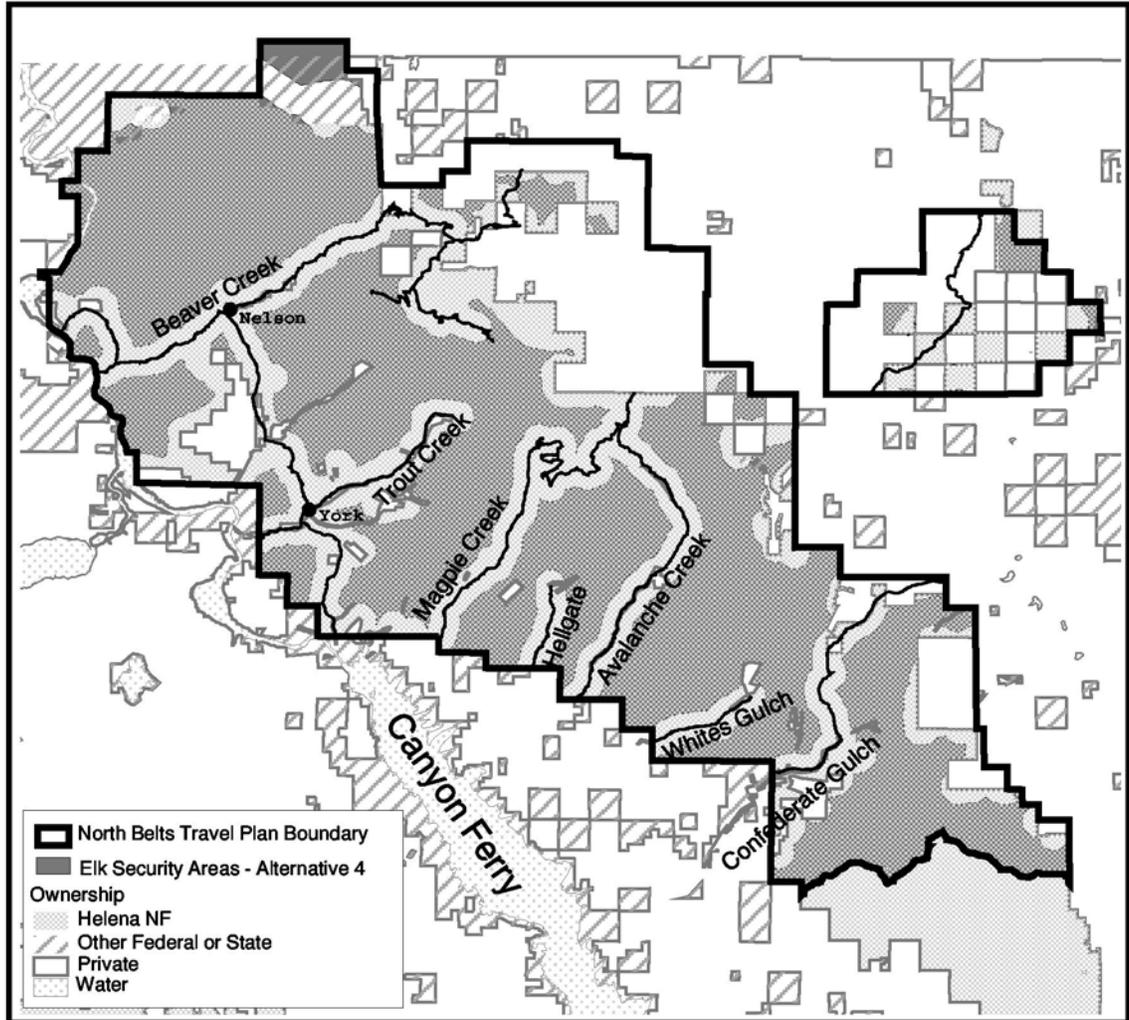
Elk Security Areas, Alternative 3



Alternative 4

Alternative 4 meets the elk security measure in 10 of the 11 elk analysis units. Under this alternative 10 of the 11 elk analysis areas are well over the 30% elk security measure. This alternative would allow elk populations to continue increasing as road access is greatly reduced. This reduction in road access would not allow for proper management of wildlife habitats. Under the Montana Fish Wildlife and Parks 2002 draft elk management plan, populations would exceed their objectives of approximately 2,000 elk for the Big Belt Mountains in Hunting Districts 392 and 446. Currently the elk population estimates for the Big Belts are 1,403 elk in hunting district (HD) 446, 1,076 elk in HD 390, 822 elk in HD 392, and 551 elk in HD 391. The Draft Elk Management plan is only a draft and changes may occur when the final is released later this year 2003. The draft elk management objective for observed number of elk in the Big Belt Mountains allows for plus or minus 20%. Currently, hunting district 392 is slightly below the population objective of 1,100 elk with a count of approximately 822 while hunting district 446 is approximately 38% over the population objective according to MT FW&P data provided by area biologists Tom Carlson and Adam Grove. This alternative has the greatest potential to meet and greatly exceed elk security. This could actually lead to adverse effects on wildlife habitat as elk populations would continue to increase and potential overall access would decrease. When access is greatly decreased hunter harvest has the potential to decrease as well. In some cases where traditional hunting methods such as off-road (hiking, horseback riding, packing) could increase the overall enjoyment and success of the hunt. As a management partner with Montana Fish Wildlife and Parks we cooperate in meeting wildlife management objectives. Under this alternative those objectives would be greatly exceeded and potential effects would be felt on all lands private or otherwise. This alternative does not allow for game retrieval routes, eliminates travel altogether within the 300 foot corridors of designated routes and will decommission several miles of roads and trails. See Table above for Forest Plan consistency relative to hiding cover/open road density, elk security, and habitat effectiveness.

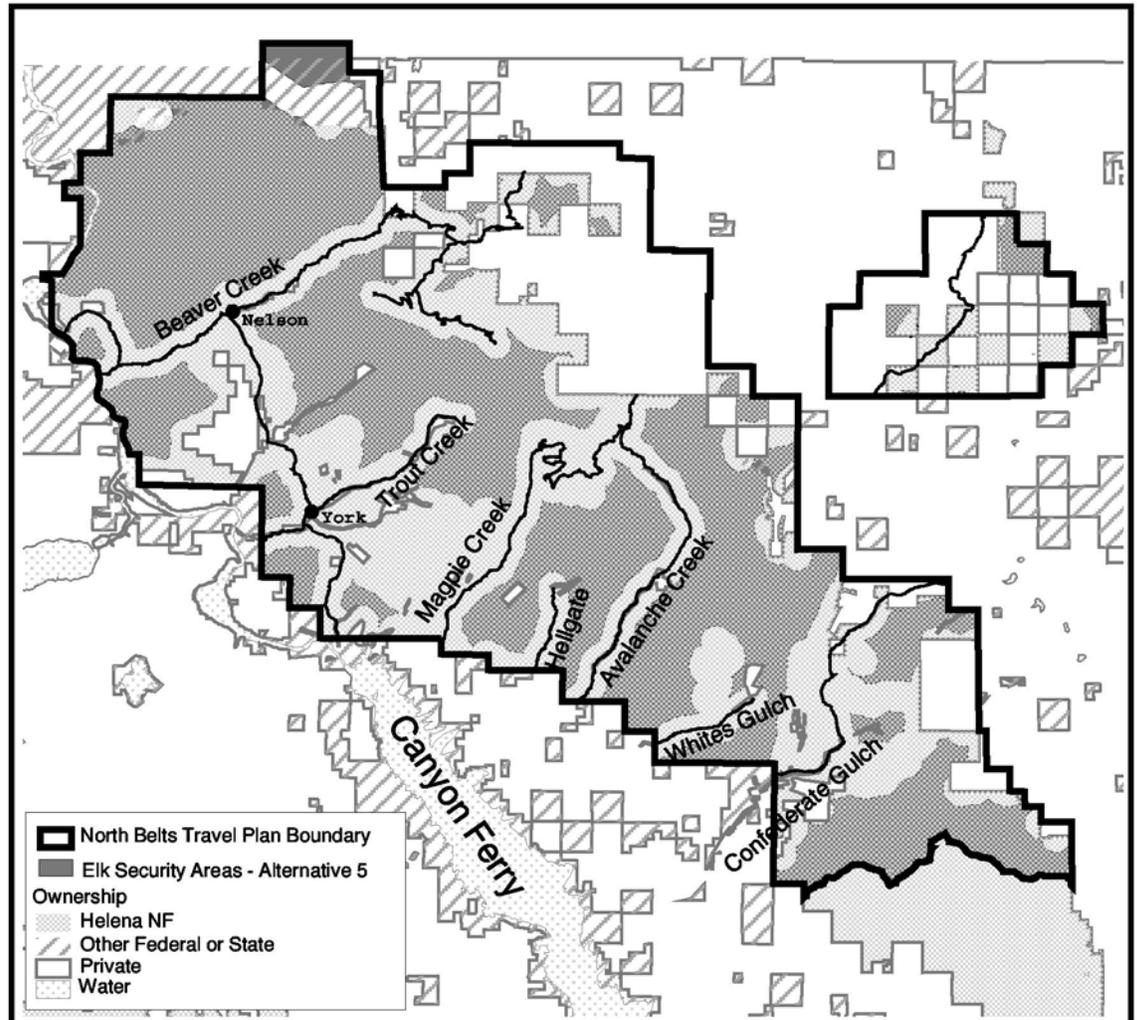
Elk Security Areas, Alternative 4



Alternative 5 – Proposed Action

Alternative 5 meets the elk security measure in 9 of the 11 elk analysis units. In all of the alternatives the Elk Ridge analysis area does not meet the elk security measure due to private roads. The Hellgate and Wagner/Thomas proposals would increase security over the existing condition where security is currently not met. Under this alternative the Hedges elk analysis area is only deficient by 4 % in meeting elk security. This alternative allows for better management of wildlife habitats. Alternative 5 does not allow game retrieval routes but will allow motorized vehicle use within 300 feet of an open designated road and not on open designated trails. Several miles of roads and trails will be decommissioned under alternative 5. This alternative proposes several watershed improvement projects that would have little to no negligible effect on elk or their habitat. This alternative is the best management proposal in allowing for access increasing security and maintaining habitat for healthy viable populations of elk and other wildlife. See Table above for Forest Plan consistency relative to hiding cover/open road density, elk security, and habitat effectiveness.

Elk Security Areas, Alternative 5



Threatened, Endangered, and Proposed Species, Canada Lynx

Introduction

There is little information on the effects of roads and trails on lynx or their prey (Apps 2000, McKelvey et al. 2000). Construction of roads may remove lynx habitat; conversely lynx may use less-traveled roads for travel and foraging if vegetation conditions provide good snowshoe hare habitat. Roads and trails may facilitate snowmobile and other winter uses that create snow compaction possible resulting in increased access by competitors into lynx habitat. Preliminary information indicates the lynx do not avoid roads except those with high traffic volume (Ruggerio et al. 2000a). Summer use of roads and trails

through denning habitat may affect lynx if kittens are moved due to disturbance (Ruggerio et al. 2000b).

Lynx avoid open areas and use mature forest or forest with dense cover, tall shrubs, and well-vegetated riparian areas as travel corridors. Roads may disrupt lynx travel and hunting patterns, but they will travel down old roads less than 50 feet wide with good cover along both edges (Koehler and Brittell 1990).

However, there is no recommended road density or project level planning standards regarding road management for the conservation of the lynx. The LCAS does outline guidelines and standards at the programmatic level of planning. These incorporate recommendations on location and use of public roads and motorized trails.

Lynx are particularly vulnerable to exploitation by trapping (Bailey et al. 1986). Incidental take through trapping would continue to occur and is a direct correlation with the number of open roads in an area during the trapping season.

While it is not conclusively known what effect roads and motorized trails may have on lynx, research suggests that local refugia is critical for their successful reproduction and fitness. The corridor analysis discusses how the Big Belt Mountains may provide a regional linkage between two large intact ecosystems. The corridor was defined by elk non-winter range, lynx habitat, and roadless areas. See the corridor analysis for a further discussion of effects on local refugia for lynx.

The only standard in the LCAS applicable to this project is: On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

The table below summarizes the miles of new road and motorized trail construction that would result in a direct loss of lynx habitat.

New Road and Trail Construction in Lynx Habitat in the N. Belts Project Area

	Alt. 1 – No Action	Alt. 2	Alt. 3	Alt. 4	Alt. 5 – Proposed Action
New Road/Dual Use road Construction (Mi./Acres)	0/0	0.6/2.7	0.4/1.5	0/0	0.6/3.2
New Trail Construction/ Motorized (Mi./Acres)	0/0	2.7/8	0.4/1.2	0/0	0.3/1
New Trail Construction/ Non-Motorized (Mi./Acres)	0/0	0.5/0.6	0/0	3.3/3.0	2.5/2.2

The next table summarizes snowmobile activity in lynx habitat. The miles of open road and trails during the winter are summarized because they provide access for snowmobiles and other winter use activities that might result in snow

compaction. Miles of groomed routes are summarized to determine consistency with the LCAS standard identified above. Acres open and closed to snowmobile use in lynx habitat are also summarized, again due to the need to identify areas of potential snow compaction. Acres open to use simply means that there is not an area closure; these areas are not considered 'designated' snowplay areas. There is no net increase in designated or groomed routes or designated play areas for any Alternative.

Snowmobile Acres/Activity in Lynx Habitat

	Miles of Open Roads and Trails in Winter	Miles of Groomed Snowmobile Routes	Acres Open to Snowmobile Use	Acres Closed to Snowmobile Use	Total Acres Lynx Habitat
Alternative 1	58.1	7	21,707	40,588	62,295
Alternative 2	53.8	7	17,793	44,502	62,295
Alternative 3	53.3	7	17,793	44,502	62,295
Alternative 4	9.2	7	3,255	59,040	62,295
Alternative 5	39.4	7	17,793	44,502	62,295

All of the action alternatives provide for some level of reduction in off-route travel or play areas.

Alternative 1 – No Action

Direct Effects

There is no habitat removal associated with this Alternative since there is no new road or trail construction.

Indirect Effects

Alternative 1 has 58.1 miles of roads and trails open during the winter that may experience snowmobile and other snow compaction activities. However, only 7 miles are groomed. While snowmobile use is likely to occur on the remaining open roads, compaction associated with this use is expected to be minimal.

Of the 62,294.8 acres of lynx habitat in the project area, 21,706.9 of these are open to snowmobile use and 40,587.9 are closed to snowmobile use. The closed acres represent 65% of the total lynx habitat.

Alternative 2

Direct Effects

Approximately 11.16 acres of lynx habitat will be removed through new road, motorized, and non-motorized trail construction.

Indirect Effects

Alternative 2 has 53.8 miles of roads and trails open during the winter that may experience snowmobile and other snow compaction activities. However, only 7 miles are groomed. While snowmobile use is likely to occur on the remaining open roads, compaction associated with this use is expected to be minimal.

Of the 62,294.8 acres of lynx habitat in the project area, 17,793.1 of these are open to snowmobile use and 44,507.1 are closed to snowmobile use. The closed acres represent 71% of the total lynx habitat.

Alternative 3

Direct Effects

Approximately 2.69 acres of lynx habitat will be removed through new road and motorized trail construction.

Indirect Effects

Alternative 3 has the same effects as Alternative 2; 53.8 miles of roads and trails are open during the winter that may experience snowmobile and other snow compaction activities. However, only 7 miles are groomed. While snowmobile use is likely to occur on the remaining open roads, compaction associated with this use is expected to be minimal.

Of the 62,294.8 acres of lynx habitat in the project area, 17,793.1 of these are open to snowmobile use and 44,507.1 are closed to snowmobile use. The closed acres represent 71% of the total lynx habitat.

Alternative 4

Direct Effects

Approximately 3.01 acres of lynx habitat will be removed through new trail construction.

Indirect Effects

Alternative 4 has the least effects on lynx habitat relative to the other Alternatives. Approximately 9.2 miles of roads and trails are open during the winter that may experience snowmobile and other snow compaction activities. However, only 7 miles are groomed. While snowmobile use is likely to occur on the remaining open roads, compaction associated with this use is expected to be minimal.

Of the 62,294.8 acres of lynx habitat in the project area, 3,255.3 of these are open to snowmobile use and 59,039.5 are closed to snowmobile use. The closed acres represent 95% of the total lynx habitat.

Alternative 5 – Proposed Action

Direct Effects

Approximately 6.35 acres of lynx habitat will be removed through new road and motorized and non-motorized trail construction.

Indirect Effects

Alternative 5 has the same effects as Alternative 2; 53.8 miles of roads and trails are open during the winter that may experience snowmobile and other snow compaction activities. However, only 7 miles are groomed. While snowmobile use is likely to occur on the remaining open roads, compaction associated with this use is expected to be minimal.

Of the 62,294.8 acres of lynx habitat in the project area, 17,793.1 of these are open to snowmobile use and 44,507.1 are closed to snowmobile use. The closed acres represent 71% of the total lynx habitat.

Watershed and Trailhead Improvement Projects

The watershed and trailhead improvement projects associated with this Alternative are not expected to benefit lynx since they do not occur in lynx habitat.

Sensitive Species, Wolverine

Introduction

Wilderness or remote country appears essential to wolverine viability (Hornocker and Hash 1981). Human encroachment into existing refugia may threaten the wolverine's ability to maintain basic life history requirements (Copeland and Hudak 1995) and may cause habitat fragmentation that could preclude subpopulation interspersions and lead to population isolation (Copeland 1996). It has been hypothesized that persistence of wolverines in Montana, despite unlimited historic trapping and hunting, may be attributed to the presence of designated wilderness and remote, inaccessible habitat (Hornocker and Hash, 1981).

High road densities and the associated human activity and access could disturb wolverines. Historic foraging and denning habitat may be eliminated and winter foraging and kit rearing opportunities may be reduced increasing the likelihood of mortality (Copeland 1996). Roads allow access to hunters and trappers and increase the possibility of poaching. In winter and early spring, snowmobile use or all-terrain vehicles could bring about disturbance and conflict and increase ease of trapping (Hornocker and Hash 1981). Wolverines are renowned for their vulnerability to trapping and susceptibility to overharvest (Joslin and Youmans, 1999).

Technological advances in snowmobiles and increases in winter recreation have likely displaced wolverines from potential denning habitat (Copeland 1996). Post-partus females tend to be very sensitive to disturbance especially during the

pre-weaning kit rearing period. Winter recreation activities such as backcountry skiing and snowmobiling may disrupt and displace wolverines causing females to abandon den sites (Copeland and Hudak 1995). Risk of litter loss is potentially high if den relocation occurs. Because wolverine's have low fecundity, any losses could be substantial. However, wolverine's sensitivity to human disturbance may be variable. For example Squires and others (2002) trapped wolverines in areas of high snowmobile activity indicating that wolverine may not necessarily avoid these areas. However, they didn't investigate reproductive success. In general, refugia may be the most important habitat component for availability and protection of natal denning habitat (Copeland 1996).

Because ungulate carrion is a primary winter food item for wolverines, activities that affect large mammal populations will affect wolverines (Banci 1994, Copeland 1996).

Refugia

Natal Denning Habitat

The table below summarizes natal denning habitat in the project area according to those acres considered 'protected' (i.e. not open to snowmobile use) and those that allow snowmobile use. These figures reflect only those lands administered by the National Forest. Note that Alternatives 2, 3, and 5 all have the same data; this is due to the fact that the snowmobile routes are the same across those Alternatives.

Protected and unprotected wolverine natal denning habitat in the North Belts Project Area

Alternative	Total Wolverine Natal Denning Habitat/Acres	Total Protected Acres/Percent	Total Unprotected/ Percent
Alternative 1	13,544	9,463/70%	4,081/30%
Alternative 2	13,544	9,959/74%	3585/26%
Alternative 3	13,544	9,959/74%	3585/26%
Alternative 4	13,544	12,919/95%	625/5%
Alternative 5	13,544	9,959/74%	3585/26%

Non-Denning Refugia

Non-denning refugia is best described in terms of availability of secure, undisturbed blocks of habitat. The Gates of the Mountain Wilderness provides 28,600 acres of habitat relatively undisturbed by human activity. There are also several areas that are considered roadless in the North Belts Project Area as identified in the Helena National Forest Plan (EIS 1986). While many of these roadless areas actually do have roads, they still represent large blocks less roaded areas that should provide refugia for wolverines. The roadless areas are

well distributed across the mountain range and they provide approximately 133,000 acres of large remote areas. (See Appendix B for additional discussion of roadless areas.).

Elk security habitat may also provide a measure of available refugia for wolverines. While the effectiveness of elk security as a surrogate for wolverine security has not been tested, the assumption is that these blocks of habitat provide some level of secure habitat for wolverine since these areas are more than a ½ mile from an open road, and are greater than 250 acres in size. The Elk analysis, above, discusses availability of elk security areas by Elk Analysis Area and alternative. See the Elk Section, above, for additional information.

Connectivity can also be used as a measure of non-winter refugia as well as an indicator of how well wolverine might move across the landscape. Connectivity is described above under Dispersal, Migration, and Travel Corridors.

Ungulate Populations

Ungulate carrion comprises a large component of the wolverine diet. Maintenance of ungulate populations is important to wolverine survival. Ungulate populations are mainly discussed in terms of elk, which are considered a management indicator species and are assumed to incorporate the needs of mule deer. Elk habitat is measured and analyzed seasonally – summer, fall, and winter. These analyses are described in detail in the Elk section, above.

Alternative 1 – No Action

Refugia

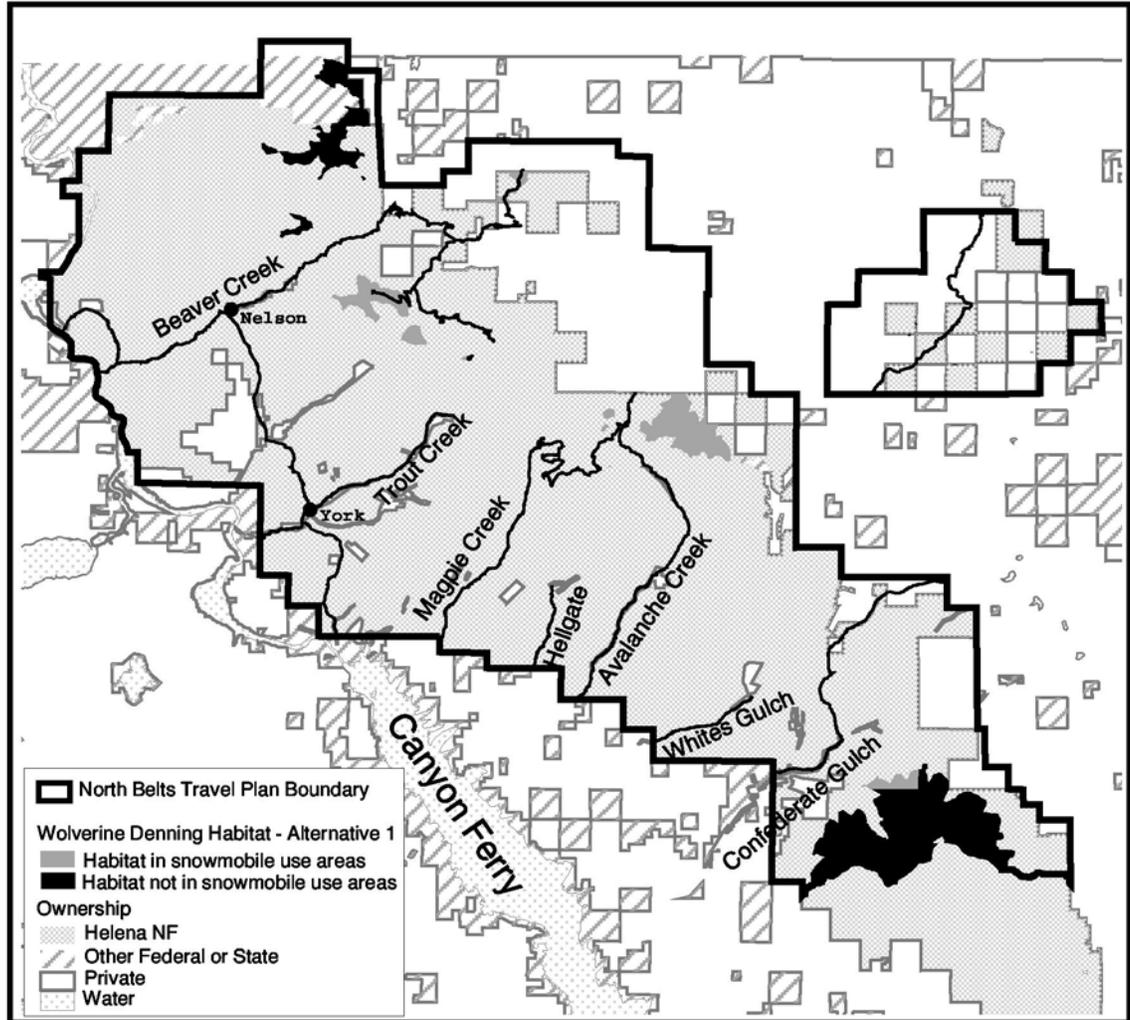
Natal Denning Habitat

Approximately 70% of the natal denning habitat is protected from snowmobiling.

Non-Denning Refugia

Under the existing condition, there are approximately 109 miles of existing roads through the approximate 133,000 acres of potential refugia.

Wolverine Denning Habitat, Alternative 1



Alternative 2

Refugia

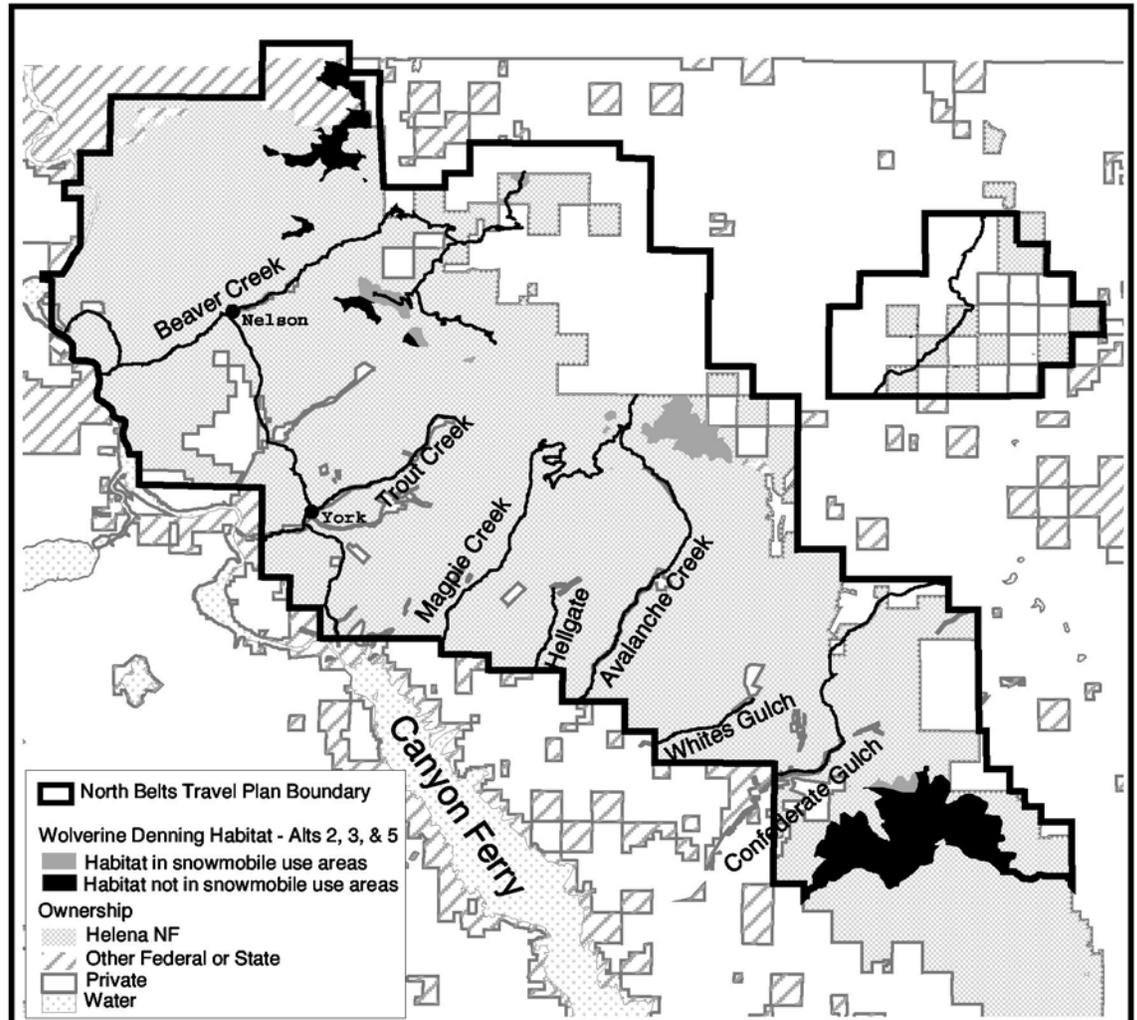
Natal Denning Habitat

Approximately 74% of the natal denning habitat is protected from snowmobiling.

Non-Denning Refugia

Under the existing condition, there are approximately 136 miles of existing roads through the approximate 133,000 acres of potential refugia.

Wolverine Denning Habitat, Alternatives 2, 3, and 5



Alternative 3

Refugia

Natal Denning Habitat

Approximately 74% of the natal denning habitat is protected from snowmobiling.

Non-Denning Refugia

Under the existing condition, there are approximately 132 miles of existing roads through the approximate 133,000 acres of potential refugia.

Please see the above map, under Alternative2.

Alternative 4

Refugia

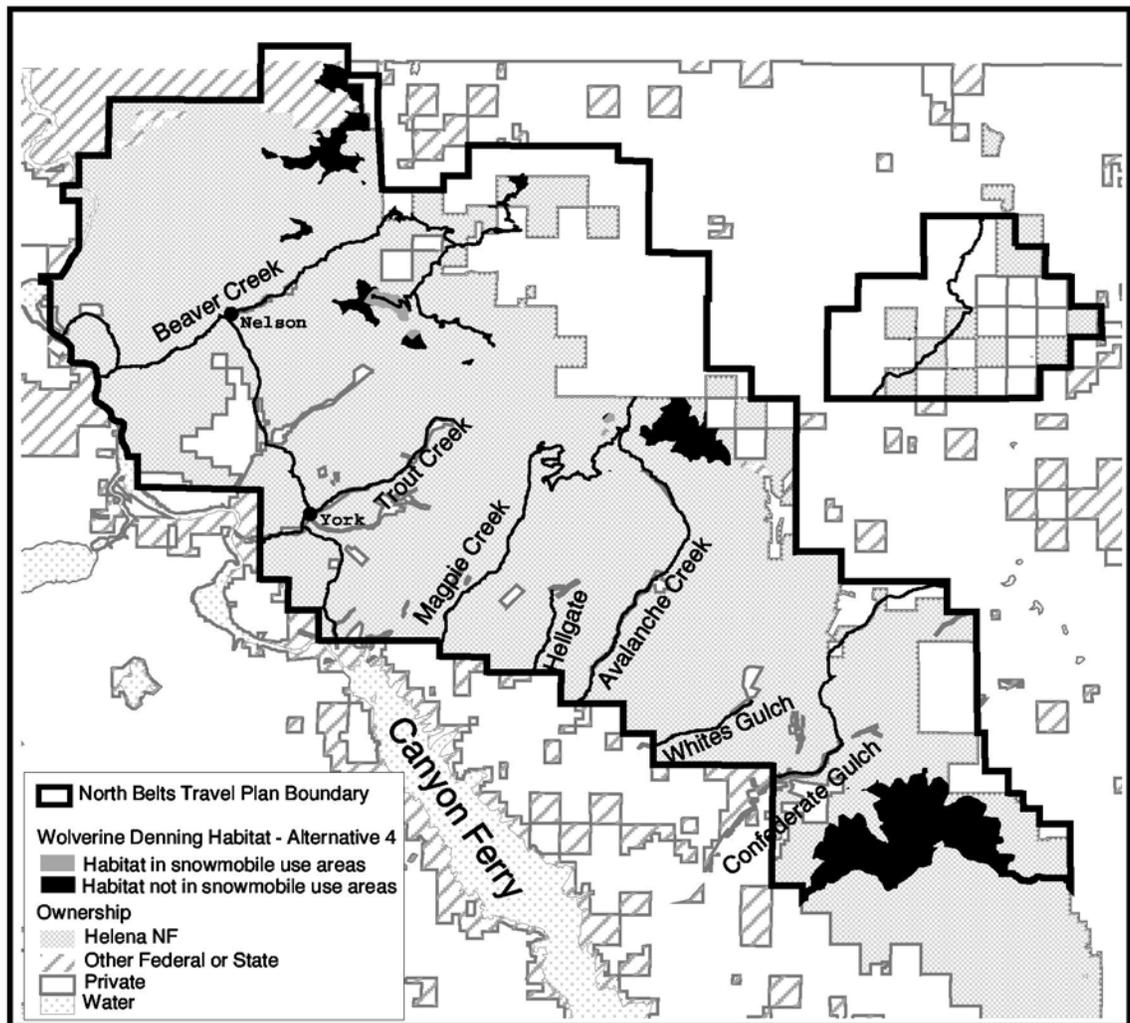
Natal Denning Habitat

Approximately 95% of the natal denning habitat is protected from snowmobiling.

Non-Denning Refugia

Under the existing condition, there are approximately 13 miles of existing roads through the approximate 133,000 acres of potential refugia.

Wolverine Denning Habitat, Alternative 4



Alternative 5- Proposed Action

Refugia

Natal Denning Habitat

Approximately 74% of the natal denning habitat is protected from snowmobiling.

Non-Denning Refugia

Under the existing condition, there are approximately 63 miles of existing roads through the approximate 133,000 acres of potential refugia.

Watershed and Trailhead Improvement Projects

Watershed and trailhead improvement projects are only applicable to this Alternative. Generally, these projects do not reduce road densities nor do they lead to increases in large blocks of remote habitat.

Please see the above map under Alternative 2.

Conclusions

Overall, roads may impact wildlife species in a variety of ways as cited above under each respective wildlife parameter. The range of alternatives has different effects depending on the scope of the remaining roads and motorized trails, new proposed roads and trails, as well as those proposed for decommissioning. Generally, Alternative 4 has the fewest miles of roads relative to the other Alternatives and therefore is the most beneficial to wildlife. The following tables summarize consistency of the Alternatives with Forest Plan standards.

Forest Wide Management Indicator Species Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
Populations of wildlife "indicator species" will be monitored to measure the effect of management activities on representative wildlife habitats with the objective of ensuring that viable populations of existing native and desirable non-native plant and animal species are maintained. See Chapter IV, part D Monitoring and Evaluation for specific monitoring requirements. Indicator species have been identified for those species groups whose habitat is most likely to be changed by Forest management activities. The mature tree dependent group indicator species is the marten; the old growth dependent group is represented by the pileated woodpecker and the goshawks; the snag dependent species group is represented by the hairy woodpecker; the threatened and	The only habitat removal associated with the project is the result of new proposed road, motorized, and non-motorized trail construction. Habitat has been modeled for many of the MIS for which there are potential effects; the documentation is in the project file.

Forest Wide Management Indicator Species Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
endangered species include grizzly bear, gray wolf, bald eagle and peregrine falcon; commonly hunted indicator species are elk, mule deer and bighorn sheep; fish indicator species is the cutthroat trout.	

Forest Wide Big Game Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
1. On important summer (see Glossary) and winter range, adequate thermal and hiding cover will be maintained to support the habitat potential.	N/A
2. An environmental analysis for project work will include a cover analysis. The cover analysis should be done on a drainage or elk herd unit basis. (See Montana Cooperative Elk-Logging Study in Appendix C for recommendations and research findings on how to maintain adequate cover during project work.)	N/A
3. Subject to hydrologic and other resource constraints, elk summer range will be maintained at 35 percent or greater hiding cover and areas of winter range will be maintained at 25 percent or greater thermal cover in drainages or elk herd units.	N/A
<p>4. Implement an aggressive road management program to maintain or improve big game security. To decide which roads, trails, and areas should be restricted and opened, the Forest will use the following guidelines developed with the Montana Department of Fish, Wildlife, and Parks (MDFWP). The Forest visitor map will document the road management program.</p> <p>4a. Road management will be implemented to at least maintain big game habitat capability and hunting opportunity. To provide for a first week bull elk harvest that does not exceed 40 percent of the total bull harvest, roads will be managed during the general big game hunting season to maintain open road densities with the following limits.</p>	4a. See Table in Elk Analysis Section. Some Elk Analysis Areas meet Forest Plan standards; others don't.

Forest Wide Big Game Standards			If Standard applies, how is standard being met, and where in the project file is the documentation?
<u>Existing Percent Hiding cover (according to FS definition of hiding cover) (1)</u>	<u>Existing Percent Hiding Cover (according to MDFWP definition of hiding cover) (2)</u>	<u>Max Open Road Density</u>	
56	80	2.4 mi/mi (2)	
49	70	1.9 mi/mi (2)	
42	60	1.2 mi/mi (2)	
35	50	0.1 mi/mi (2)	
(1) A timber stand which conceals 90 percent or more of a standing elk at 200 feet.	(2) A stand of coniferous trees having a crown closure of greater than 40 percent.		
<p>The existing hiding cover to open road density ratio should be determined over a large geographic area, such as a timber sale analysis area, a third order drainage, or an elk herd unit.</p>			
<p>4b. Elk calving grounds and nursery areas will be closed to motorized vehicles during peak use by elk. Calving is usually in late May through mid-June and nursery areas are used in late June through July.</p>			<p>No specific closures relative to elk calving areas. Discussions with FWP indicated that general calving area closures would not be necessary. Site-specific ones may be necessary upon further analyses.</p>
<p>4c. All winter range areas will be closed to vehicles between December 1 and May 15. Exceptions (i.e., access through the winter range to facilitate land management or public use activities on other lands) may be granted.</p>			<p>All alternatives meet this standard. Some routes are designated for snowmobile use through winter range to facilitate access to areas outside winter range.</p>
<p>4d. At restricted roads, trails, and areas, signs will be posted which tell:</p> <ol style="list-style-type: none"> 1. Type of restriction. 2. Reason for restriction. 3. Time period of restriction. 4. Cooperating agencies. 			<p>Implementation phase</p>
<p>4e. Roads that will be closed will be signed during construction or reconstruction telling the closure date and the reason for closure.</p>			<p>Implementation phase</p>

Forest Wide Big Game Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
4f. Enforcement is a shared responsibility. Enforcement needs will be coordinated with the MDFWP.	Travel planning meetings with FWP resulted in coordination discussions between both agencies.
4g. Opened Forest roads will normally have a designed speed of less than 15 miles per hour. Exact design speeds will be determined through project planning. Loop roads are not recommended and will be avoided in most cases.	Implementation; See Recreation writeup on loop routes. Forest Plan amendment may be needed.
4h. The Forest Road Management Program will be developed in conjunction with MDFWP and interested groups or individuals. The Road Management Program will contain the specific seasonal and yearlong road, trail, and area restrictions and will be based on the goals and objectives of the management areas in Chapter III of the Forest Plan.	Forest-wide and ID Team meetings were held in conjunction with FWP.
4i. Representatives from the Helena Forest and MDFWP will meet annually to review the existing Travel Plan.	N/A at this point
5. On elk summer range the minimum size area for hiding cover will be 40 acres and the minimum size area on winter range for thermal cover will be 15 acres.	N/A
6. Montana Cooperative Elk-Logging Study Recommendations, in Appendix C, will be followed during timber sale and road construction projects.	Implementation phase
7. Inventorying and mapping important big game summer/fall and winter ranges will continue.	Ongoing
8. Any proposed sagebrush reduction programs will be analyzed on a case-by-case basis for the possible impact on big game winter range.	N/A
9. Occupied bighorn sheep and mountain goat range will be protected during resource activities. Project plans for livestock, timber, or other resource development will include stipulations to avoid or mitigate impacts on their range. Conflicts between livestock and these wildlife species will be resolved in favor of the big game.	N/A
10. Moose habitat will be managed to provide adequate browse species diversity and quantity to support current moose populations.	N/A

Forest Wide Threatened and Endangered Species Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
<p>1. A biological evaluation will be written for all projects that have potential to impact any T&E species or its habitat. All evaluations will address each projects potential to adversely modify a listed species habitat or behavior. If an adverse impact is determined, mitigation measures will be developed to avoid any adverse modification of a listed species habitat or behavior. If all possible mitigation measures do not result in a no affect determination, then informal and/or formal consultation with the U.S. Fish and Wildlife Service will be initiated.</p>	<p>A biological evaluation will be written between draft and final.</p>
<p>2. Grizzly bear -- Apply the guidelines in Appendix D to the Management Situation 1 and 2 (referred to essential and occupied prior to 1984) grizzly bear habitat on the Forest (see map in Appendix D). Initiate field studies in undesignated areas known to be used by grizzlies, to determine if the areas should be designated as grizzly habitat. Until sufficient evidence is available to determine the status of these areas, manage them according to Appendix E, Grizzly Management Guidelines Outside of Recovery Areas.</p>	<p>N/A</p>
<p>3. In occupied grizzly habitat, to minimize man-caused mortality the open road density will not exceed the 1980 density of 0.55 miles per square mile, which was determined to have little effect on habitat capability.</p>	<p>N/A</p>
<p>4. Research activity on grizzly bears or their habitat will be reviewed by the Research Subcommittee of the Interagency Grizzly Bear Committee.</p>	<p>N/A</p>
<p>5. Bald Eagle and Peregrine Falcon -- Continue working with the MDFWP, the USFWS, and the BLM to identify nesting and wintering areas. Identify nesting territories and roosting sites, and protect both from adverse habitat alteration. (Guidelines for how to identify bald eagle habitat are in the Wildlife Planning Records.) Powerlines constructed within bald eagle or peregrine falcon habitat will be designed to protect raptors from electrocution. See Appendix D for bald eagle and peregrine falcon habitat maps.</p>	<p>Ongoing and N/A</p>
<p>6. Gray Wolf -- With the USFWS and MDFWP, investigate reported gray wolf observations to confirm or deny gray wolf presence. If presence of gray wolf is confirmed, determine if the habitat is necessary for the wolves recovery. If the habitat is necessary, coordinate with the MDFWP and the USFWS to implement the Wolf Recovery Plan. See Appendix D for gray wolf habitat map.</p>	<p>Effects to wolves and personal communications with U.S. Fish and Wildlife Service were analyzed and conducted as part of the process.</p>

Forest Wide Old Growth Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
<p>An old growth stand is generally characterized by a high level of standing and down, dead and rotting woody material; two or more levels of tree canopies and a high degree of decadence indicated by heart rot, mistletoe, dead or broken tree tops, and moss.</p> <p>Five percent of each third order drainage should be managed for old growth. The priority for old growth acres within each drainage is: first, land below 6000 feet in elevation; second, riparian zones and mesic drainage heads; and third, management areas emphasizing wildlife habitat. These areas will normally be managed on a 240 year rotation and will range from 10 acres to several hundred acres.</p> <p>Management areas other than T-1 through T-5 will be the primary source for old growth. However, if adequate old growth area cannot be achieved then the T management areas will be considered to meet old growth objectives.</p>	N/A

Forest Wide Snag Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
<p>1. To keep an adequate snag resource (standing dead trees) through the planning horizon, snags should be managed at 70 percent of optimum (average of 2 snags/acre) within each third order drainage.</p>	Snags were analyzed as a part of the process; numbers of snags were not determined but percentages.
<p>2. Snag management guidelines need not be applied within a quarter mile of riparian areas, because riparian standards should provide for adequate snags.</p>	N/A
<p>3. Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).</p>	N/A
<p>4. Management areas other than T-1 should be the primary source for snag management. However, if adequate snags cannot be found outside of T-1, then the following numbers and sizes of snags should be retained in cutting units, if available.</p> <p>A. In units with snags, keep a minimum of 20 snags and 10 replacement trees per 10 acres, if available. If 20 snags are not available, then any combination totaling 30 should be left, by the following dbh classes:</p>	N/A

Forest Wide Snag Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
<p>13 snags and 6 replacement trees from 7-11 inches 5 snags and 3 replacement trees from 12-19 inches 2 snags and 1 replacement trees 20+ inches</p> <p>B. In units--except those of pure lodgepole--without snags keep a minimum of 30 wind firm trees per 10 acres, if available, by the following dbh classes:</p> <p>21 trees from 7-11 inches 7 trees from 12-19 inches 2 trees from 20+ inches</p> <p>If wildlife funds are available, a third of the replacement trees should be girdled or otherwise killed to provide snags, by the following dbh classes:</p> <p>7 trees from 7-11 inches dbh 2 trees form 12-19 inches dbh 1 tree form 20+ inches dbh</p>	

Range, Affected Environment

Introduction

Grazing is an integral part of managing the multiple resources on the Helena National Forest. The North Belts Travel Plan impacts allotments on both the Helena and Townsend Ranger Districts.

Analysis Area

Townsend Ranger District

The Townsend Ranger District has fifteen active livestock allotments within the North Belts Travel Plan Analysis area. Of the 15, 11 are operating under recent allotment management plan (AMP) decisions. Three of these allotments fall into the 2001 Magpie/Confederate Environmental Assessment. The other eight are managed under the 1997 Wagner/Atlanta Allotment Management Plan Environmental Assessment. Each plan has grazing standards that are consistent with the 1986 Forest Plan. The remaining four allotments are operating under approved allotment management plans that were written in the late 1960's. None of these older plans have Forest Plan Standards in them since the Forest Plan was written in 1986. Forest Plan Standards have been applied in annual grazing plans each year since 1991 and put into any grazing permits that have been renewed. This will be done until allotment management plans are revised and implemented.

Each allotment has had some kind of structural development program. There are 12 miles of pipeline, 79 spring developments and 52 miles of fences within the

project area. Conditions of these improvements are generally good to fair on allotments with current allotment management plans and fair to poor on allotments with approved allotment management plans. Current AMPs are AMPs that have been through the NFMA and NEPA process within the last ten years. Approved AMPs are out dated AMPs that are consistent with the Forest Plan but have not been through the NFMA and NEPA process. The District has received an increasing number of complaints from the livestock permittees regarding vandalism to the water developments and fences, particularly gates being left open during the weekends in the summer months. This allows livestock into areas they don't want them to be and the permittee incurs extra costs in gathering and moving cattle back into authorized areas. The areas most impacted by this are the Mule Creek and Camas Creek allotments but this seems to be a chronic problem throughout the travel plan area.

Many existing roads and trails assist in allotment management by providing access to structural improvements for maintenance and reconstruction. They also provide stock driveways to move and supplement (salt) livestock. This kind of use is limited to a need only basis and may occur once or twice a year. Travel variances have been issued on a case-by-case basis for high maintenance improvements or reconstruction projects. There is some limited road access to some allotments through permittee private land and permission is required. Therefore, motorized travel is limited on these roads. This is the case for many of the allotments. Some of the permittees that are adjacent private landowners report Forest users cutting fences and gates to access private land.

Helena Ranger District

The Helena Ranger District has 6 active allotments and 1 vacant allotment. The 6 active allotments include East-West French, Jim Ball, Grouse Ridge, Indian Flats, Moors Mountain and Nelson-Favorite-York Hills. The vacant allotment is Jim Town. All of these provide summer range except Nelson/Favorite, which provides spring and fall range. The Moors Mountain allotment is in the Gates of the Mountains wilderness area. In the case of the Jim Ball, Nelson Favorite and Moors Mountain allotments there are on-off and/or private land provisions included in the grazing permits. In addition to the term permits, there are two pastures on lower Beaver Creek, which provide winter pasture for the district's horses. All of these fall under the Beaver Soup Environmental Assessment that was implemented in the 1999 grazing season. In addition to the term grazing permits, there are several small special use pastures in the travel plan area that provide a few animal unit months (AUMs) for several ranchers.

Allotments on the Helena district provide about 2069 head months of grazing on National Forest land depending on the pasture rotation, occasional non-use allotments, and rest years. A variety of fences and water developments are associated with these permits. Many of the water developments are new since the implementation of the AMPs, but there are several older ones with plans for replacing or rebuilding them. For the most part fences are old but are kept in satisfactory condition by the permittees. There are 21 water developments, with ten additional water developments proposed for installation. Two extensive pipeline systems have been installed. They pump water to holding tanks that supply gravity fed tanks. Approximately 19 miles of pasture division fences have

been built to aid in the pasture rotations. This does not include private boundary fences.

Allotments within the analysis area currently provide 8159 head months of grazing on National Forest lands.

Range Allotments

ALLOTMENT	LIVESTOCK (pair or band)	SEASON OF USE
Townsend Ranger District		
Magpie Gulch	109 cattle	7/1-10/15
Avalanche	111 cattle	7/1-10/1
Whites Gulch	277 cattle	6/15-10/15
Wagner/Snedaker	1200 sheep on/off	6/18-9/10
Spring Creek	146 cattle	6/10-10/15
Watson	81 cattle	7/1-10/15
Cement Gulch	265 cattle on/off	7/1-10/15
Thomas Gulch	142 cattle	7/1-9/22
Keene	35 cattle on/off	6/1-8/31
Mule Creek	101 cattle	7/1-9/30
Camas Creek	189 cattle	7/1-9/30
Boulder Bar	98 cattle -Forest 22 cattle -PVT	6/1-10/15
Diamond City	8 cattle -Forest 75 cattle -PVT	7/11-10/31
Weston Springs	500 cattle on/off	7/1-8/31
Weaning Corral	218 cattle	6/15-9/15
Helena Ranger District		
East West French	110 cattle 115 cattle Private land	6/28-9/20
Jim Ball	85 cattle 12 Cattle on/off	7/1-9/30 6/16-10/30

ALLOTMENT	LIVESTOCK (pair or band)	SEASON OF USE
Grouse Ridge	125 cattle	7/1-10/15
Indian Flats	180 cattle 10 on/off Conway	7/15-9/15 7/15-10/15
Moors Mtn.	130 cattle	7/1-9/30
Nelson Favorite/York Hills	80 cattle(21 days total) 355 cattle 3 cattle on/off	6/1-7/21 10/1-10/21 6/1-10/21
Beaver Creek Horse Pasture	District Livestock	11/30-5/15
Cochran Fields	vacant	Negotiated
Jimtown	vacant	Negotiated

Range, Environmental Consequences

Introduction

The effects on livestock management and grazing administration are described – considering changes in access for management and livestock mobility due to road closures and new routes. Vandalism potential is also described.

Effects Common to All Alternatives

Selection of any alternative will require additional travel variances to be issued on a case-by-case basis for high maintenance improvements or reconstruction projects. Changes in motorized accessibility could potentially increase costs to the permittees to administer the allotments. Livestock accessibility to grazeable rangelands (mobility) would also be impacted depending on how the roads were closed.

The Districts would continue to receive reports from the livestock permittees regarding vandalism to the water developments and fences, particularly gates being left open during the weekends in the summer months. These reports have increased over the past few years and this trend is expected to continue also. Vandalism, whether incidental or deliberate, allows livestock to move into areas that permittees don't want them to be in and the permittee incurs extra costs to gather and move the cattle back into appropriate areas. In addition, the permittee may incur costs to repair damaged fences or water developments. The areas most impacted by this in recent years are the Mule Creek and Camas Creek allotments. However, this seems to be a chronic problem throughout the travel plan area.

There is some limited road access to some allotments through permittee private land and permission is required from the landowner. Motorized travel is limited

on these roads. This is the case for many of the allotments. Adjacent landowners, whether they are permittees or not, report Forest users cutting fences and gates to access private land without permission. Problems like this would continue.

The Forest Service currently has no legal access to the Keene, Diamond City, Boulder Bar, Weston Spring and Weaning Corral Allotments because the permittees/private landowners do not allow the general public access without permission.

Alternative 1 – No Action

Livestock Grazing - General

Under this alternative, effects to livestock grazing would remain the same as the existing condition. Open system roads and trails would continue to be used for livestock management and permit administration. An estimated 5-10 travel variances would be issued annually on a case-by-case basis for high maintenance improvements or reconstruction projects where applicable.

The above general description of effects would apply to all of the allotments on the Helena District. These include: East West French, Jim Ball, Grouse Ridge, Indian Flats, Moors Mountain, Nelson Favorite/York Hills, Beaver Creek Horse Pasture, Cochran Fields, and Jimtown. The effects would also apply to the Camas Creek allotment on the Townsend District. The remaining allotments, on the Townsend District, and associated effects are described below.

Magpie Gulch

The effects of the closure method of this alternative would be minimal. Roads 425-C1, E5, E6, E9, H1, H2, I1, J1, K1, N1, M1, R1, and 693-B1 would be needed for permit administration and livestock management. All of these roads are currently open.

Trails 239 and 240 are motorcycle trails and this increases the impacts on livestock grazing. Motorized users on the trail may displace livestock. The potential risks of off trail travel increases in this area because it accesses an open ridge.

Avalanche

The non-system route between Doolittle and Hellgate affects livestock grazing by providing for more motorized use in the remote areas between these areas. Livestock on NFS lands are more prone to harassment by motorcycles and ATV's. There is currently vandalism of improvements such as water developments and fences. There is also an increased risk that gates would be left open and livestock would move into areas that they are not authorized to be in. This would have the effect of more intensive and expensive management by the permittee.

Whites Gulch

This alternative proposes that road 587-A1, 1020-A1, B1, 4161-D1, and J1 continue to stay closed. Currently the closure area is violated especially during hunting season. Numerous motorcycle, ATV, and vehicle tracks have been reported on the ridge tops above these roads. There are no closure gates to prevent people from driving on these roads. This situation is expected to continue. The permittees would obtain travel variances if access is needed on these roads.

Roads 4161-A1, A2, A3, A4, and B1 are proposed to remain closed. By having these closed, motorized trespass use on the permittees adjacent private land would be prevented.

Wagner/Snedaker

Road 259-A1 is currently open and it accesses the permittee's private land which is used in conjunction with the permit to trail sheep. Under this alternative, road 259-C1 and 259-A2 are proposed to remain closed which prevents vehicle trespass on private lands.

Spring Creek

Road 4161-H1 is currently closed. This road is needed for private land access and livestock management and the permittee would continue to use travel variances. Road 4161-C2 is almost impassible now and it runs through two allotments. The risk of gates being left open, resulting in livestock use on the wrong allotments would still exist. This alternative would also increase the risk of trespass on the permittees private land.

Road 4161-I1 is currently closed. However, vehicles drive around the road closed signs and create user created roads. Roads 4161-G1, G2, F1, C1, and K1 are all currently open. There is an increase of user created roads in this area. By leaving these roads open, off road travel will continue and there could be more vandalism and livestock displacement. 4161-C1 is the only road needed for permit administration and livestock management.

Watson

Road 8971 is the only trailer accessible road that accesses all of the allotment for permit administration and livestock management. This allows for more efficient livestock management and permit administration because of the close proximity to many improvements scattered throughout the allotment.

Cement Gulch

Road 4171-A1, which accesses trailhead 142 is currently closed. The permittees expressed concern that this road should remain closed to avoid the risk of motorized use in this non-motorized use area.

Roads 4171, E1, D1, 287-D1, C1, 4161-XX, and B1 are currently closed to motorized use. Under this alternative, they would remain closed. The livestock on this allotment use these roads as travel corridors.

Thomas Gulch

Roads 8969, A1, and B1 are currently open with a seasonal restriction of 10/15 to 5/15. This works well for the permittee because access to this area is controlled by the permittee, who is the private landowner.

Road 8969-C1 is currently open. In the past, the forest users have used ATV's on trail 145 to access road 8969-A1 during the seasonal restriction. By leaving this road open, motorized use in non-motorized areas would continue.

Mule Creek

Currently open roads 575-B1, C1, D1, E1, 4185- A1, and B1 are used to access pipelines, water developments, and fences. These roads are also accessed by the permittees off of their private land to manage the livestock. Leaving these roads open without gates will continue to impact the permittees private land with trespass and vandalism to the improvements.

Roads 575-E3 and 4185 are currently closed. Access to these roads is currently gained through a travel variance and this is acceptable to the permittee. These roads are needed for permit administration and livestock management.

The seasonal restriction for this area is currently from 10/15 to 5/15. Roads in this area are usually impassable after 11/15 due to the snow levels.

Alternative 2

Livestock Grazing - General

Under this alternative, the road closure methods would generally not be compatible with livestock grazing. Ripping alone on closed roads may not impair livestock trailing. However, slashing could potentially decrease livestock accessibility to primary rangelands. Closing existing roads using the rip and slash method could potentially block livestock driveways, resulting in livestock concentrations in sensitive upland and riparian areas. Permittees would need pack animals to haul materials to improvement sites for construction or reconstruction on those areas with the ripping and slashing recipe. This would make projects less cost effective depending on the stocking rate. An estimated 20-30 travel variances would need to be issued on a case-by-case basis for high maintenance improvements or reconstruction projects where roads are proposed to be closed using gates. The proposed seasonal restrictions would not impact livestock grazing unless indicated under each allotment.

Building new trails could potentially lead to livestock using the trail system to move from one area to the next. This would mean that there is a higher potential for user/livestock interactions. New fence construction may be required.

The above general description of effects would apply to all of the allotments on the Helena District. These include: East West French, Jim Ball, Grouse Ridge, Indian Flats, Moors Mountain, Nelson Favorite/York Hills, Beaver Creek Horse Pasture, Cochran Fields, and Jimtown. The effects would also apply to Camas Creek and Whites Gulch allotments on the Townsend District. The remaining

allotments, on the Townsend District, and associated effects are described below.

Magpie Gulch

Roads 425-C1, E5, E6, E9, H1, H2, I1, J1, K1, N1, M1, R1, and 693-B1 are needed for permit administration and livestock management. This alternative would not be cost effective to the permittee because it would require a lot of additional time and money to both manage the livestock and maintain improvements.

The new proposed trail, Old Magpie trail, runs parallel to the open main Magpie road. It is likely that the cattle would use the trail to move up and down the drainage because it would be 'more quiet' on the trail. Magpie is a fairly narrow valley bottom that doesn't offer many opportunities to go places other than the road, creek bottom or trail.

The new proposed ATV trail, Magatv, and non-motorized trail, Magpie Crest, could potentially provide access to livestock into areas not authorized. Additional fencing may be needed to keep the cattle on the allotment.

Trails 239 and 240 are motorcycle trails and this would increase the impacts on livestock grazing. The livestock are likely to get displaced by motorized users of the trail. The potential risks of off trail travel increases in this area because it accesses an open ridge.

Avalanche

The new proposed motorized trail between Doolittle and Hellgate would affect livestock grazing by providing more motorized use in the remote areas between these areas. Livestock on the forest would be more prone to harassment by motorcycles and ATV's. There may be more vandalizing of improvements such as water developments and fences. The risk of off-trail travel would be more likely because there is an open ridge at the top. There is also an increased risk that gates would be left open and livestock would move into unapproved areas.

Wagner/Snedaker

The effects of the closure method of this alternative would be minimal. If road 259-A3 was ripped but not slashed, the permittee would still be able to drive the sheep along the road if necessary. Vehicle access, if needed, could be gained on adjacent road 259.

Proposed motorized use of trail 234 (Narytime) would affect livestock grazing by providing more motorized access to previously inaccessible areas. This area is a sheep allotment. They are herded using a horse, rider, and dogs. Motorized use in this area could potentially displace the sheep resulting in additional costs to the permittee.

Spring Creek

The effects of the closure method of this alternative would be minimal with the exception of ripping roads 4161-H1 and 8971. Road 4161-H1 provides access to

private land as well as for livestock management and permit administration. There are several improvements that are accessed by this road. Road 8971 is the only trailer accessible road that accesses part of the allotment for permit administration and livestock management. The result of ripping these roads would be more costly management and administration for monitoring and maintenance or reconstruction of the improvements.

Watson

The closure method associated with this alternative would make management of this allotment extremely costly to the permittee. Road 8971 is the only trailer accessible road that accesses all of the allotment for permit administration and livestock management. If this road were ripped, the permittee would have to ride for several hours to get to the northern most pasture. This road allows the permittee close proximity to many improvements scattered throughout the allotment. Permit administration and livestock management would be extremely difficult.

Cement Gulch

The effects of the closure method of this alternative would be minimal with the exception of roads 287-F1 and 287-F2. 287-F1 provides access to two allotments for livestock management and permit administration. Road 287-F2 is used by the permittee to access the allotment from their private land for livestock management. All other roads identified in this alternative could be closed as proposed with little to no effect to the management or administration of the allotment.

Road 4171-A1 is proposed to be re-opened for better access to trailhead 142. Motorized use in this non-motorized use area has been reported in the past by the permittees.

Thomas Gulch

The effects of the closure method of this alternative would be minimal to livestock grazing, with a few exceptions. The proposed seasonal restriction would be from 10/15 to 5/15 with a game retrieval designation. Providing access for game retrieval would impact the permittee because he owns the land that roads 8969, A1, and B1 cross to get to public lands. The Forest Service does not have legal access to the public lands and it is unlikely that the permittee would allow this to be a game retrieval area for motorized use.

8969-C1 would have minimal impacts to the permittee for livestock management. By closing this road, motorized use in non-motorized areas would decrease and problems with gates being left open would decrease.

Mule Creek

Roads 575-B1, C1, D1, E1, E2, 4185, A1 and B1 are used to access pipelines, water developments, and fences. Many of these are high maintenance improvements due to the snow loads and terrain they are located in. These roads are also used by the permittees from their private land to manage the allotment. Furthermore, the permittee is requesting handicapped access into these areas

for livestock management. If these roads were ripped, the cost to the permittee would increase dramatically.

The proposed seasonal restriction for this area is 10/15 to 12/1 and the current seasonal restriction is 10/15 to 5/15. Roads in this area are usually not passable after 11/15 due to the snow levels. Leaving this area open longer would increase the risk of trespass on adjacent private land for individuals trying to get onto the Forest other than using the main Atlanta Creek road.

Alternative 3

Livestock Grazing - General

Under this alternative, effects to livestock grazing would be similar to Alternative 1, which is compatible with livestock grazing. There would be the potential for increased vandalism to range improvements and displacement of livestock with increased motorized routes. Travel variances would not be as much of an issue under this alternative because most of the necessary roads would still be open or gated under this alternative. The proposed seasonal restrictions would not impact livestock grazing unless indicated under each allotment.

The above general description of effects would apply to all of the allotments on the Helena District. These include: East West French, Jim Ball, Grouse Ridge, Indian Flats, Moors Mountain, Nelson Favorite/York Hills, Beaver Creek Horse Pasture, Cochran Fields, and Jimtown. The effects would also apply to the Camas Creek allotment on the Townsend District. The remaining allotments, in the Townsend District, and associated effects are described below.

Magpie Gulch

Roads 425-C1, E5, E6, E9, H1, H2, I1, J1, K1, N1, M1, R1, and 693-B1 are needed for permit administration and livestock management. Under this alternative, the closure method proposed is ripping. This alternative would not be cost effective to the permittee because it would require a lot of additional time and money to both manage the livestock and maintain improvements.

The new proposed trail, Old Magpie trail, runs parallel to the open main Magpie road. It is likely that the cattle would use the trail to move up and down the drainage because it would be 'more quiet' on the trail. Magpie is a fairly narrow valley bottom that doesn't offer many opportunities to go places other than the road, creek bottom or trail.

The new proposed ATV trail, Magatv, and non-motorized trail, Magpie Crest, could potentially provide access to livestock into areas not authorized. Additional fencing may be needed to keep the cattle on the allotment.

Trails 239 and 240 are motorcycle trails and this activity would increase the impacts on livestock grazing. Livestock would likely be displaced by motorized users of the trail. The potential risks of off trail travel would increase in this area because it accesses an open ridge.

Avalanche

The new proposed motorized trail between Doolittle and Hellgate would affect livestock grazing by providing opportunities for more motorized use in the remote sections between these areas. Livestock on the forest would be more prone to harassment by motorcycles and ATV's. There may be more vandalism of improvements such as water developments and fences. The risk of off-trail travel would be higher because there is an open ridge at the top. There would also be an increased risk that gates would be left open and livestock would move into unauthorized areas.

Whites Gulch

This alternative proposes that roads 587-A1, 1020-A1, B1, 4161-D1, and J1 be left open. This would increase the risk of off-road travel due to the open ridges. There would also be an increased risk of vandalism to the range improvements. Livestock would most likely be displaced and gates would be left open. A gate is the proposed closure method for road 587-B1, which would allow for livestock management, permit administration, and private land access.

Roads 4161-A1, A2, A3, A4, B1, D1 and J1 are proposed to be re-opened. This could potentially increase motorized trespass use on the permittees private land. This would also increase the risk of off road travel due to the open ridges. There may also be an increased risk of vandalism to the range improvements. Livestock could be displaced if gates are left open.

Wagner/Snedaker

The use of gates on roads 259-A1 and A2 would allow for the permittee to trail the sheep. These roads also access the permittees private land, which is used in conjunction with the permit. Under this alternative, road 259-C1 is proposed to be closed. This route is also used by the permittee to access their private land and to trail sheep.

Proposed non-motorized use of trail 234 (Narytime) would have fewer impacts on livestock grazing. This area is a sheep allotment and they are herded using a horse, rider, and dogs.

Spring Creek

Road 4161-H1 is proposed to be closed with a gate – which could still provide reasonable access for the permittee. This road is needed for private land access and livestock management. Road 4161-C2 is almost impassible now and it runs through two allotments. Leaving this road open would increase the risk of gates being left open, resulting in livestock use on unauthorized allotments. This alternative would increase the risk of trespass on the permittees private land. Road 8971 is the only trailer accessible road that accesses part of the allotment for permit administration and livestock management. Under this proposal, a gate is the proposed closure method. The gate would provide the permittee reasonable access.

Roads 4161-I1, G1, G2, F1, C1, and K1 are all proposed to be open. The existing condition in this area is that there is an increase of user created roads.

By leaving these system roads open, this off-road travel would continue and there could be an increase in vandalism and livestock displacement. 4161-C1 is the only road needed for permit administration and livestock management.

Watson

Road 8971 is the only trailer accessible road that accesses all of the allotment for permit administration and livestock management. This road is the only road in close proximity to many improvements scattered throughout the allotment. The proposed closure method for this road is to use a gate. Therefore, allotment administration and livestock management would still be cost effective and efficient.

Cement Gulch

The effects of the closure method of this alternative would be minimal with the exception of roads 287-F1 and 287-F2. 287-F1 provides access to two allotments for permit administration and livestock management. Road 287-F2 is used by the permittee to access the allotment from their private land for livestock management. Gates are the identified closure method for both roads.

Road 4171-A1 is proposed to be re-opened for better access to trailhead 142. Motorized use in this non-motorized area has been reported in the past by the permittees. This could increase the problem of motorized use around Boulder and Camas lakes.

Roads 4171, E1, D1, 287-D1, C1, 4161-XX, and B1 are proposed to be re-opened for game retrieval. This could increase the problem of motorized use in non-motorized areas. Livestock use these roads as travel corridors and increased travel on previously closed roads could disperse the livestock. Risk of vandalism to range improvements may also be increased.

Thomas Gulch

Under this proposal, roads 8969-A1 and B1 are proposed to be open and a gate is proposed for road 8969. There is also a proposed seasonal restriction from 10/15-5/15 with a game retrieval designation. Access to this area is controlled by the permittee, who is the private landowner. The Forest Service has no legal access to this area and it is unlikely that the permittee would allow increased use in this area.

Closing road 8969-C1 would have minimal impacts to the permittee for livestock management. By closing this road, motorized use in non-motorized areas would decrease.

Mule Creek

Roads 575-B1, C1, D1, E1, 4185, A1 and B1 are used to access pipelines, water developments, and fences. These roads are also accessed by the permittees off of their private land for livestock management. Furthermore, the permittee is requesting handicapped access into these areas for livestock management. Gates would be the proposed method of closure. Closing these roads with gates

would help enforce the seasonal closure and decrease the amount of trespass on private lands.

Road 575-E2 is proposed to be closed. No closure method was identified for this road under this alternative. If the road were ripped it would not be cost effective for the permittee to do livestock management. This road is required for permit administration and livestock management because it accesses several high maintenance improvements.

The seasonal restriction for this area is proposed for 10/15 to 12/1 with a retrieval designation. The current seasonal restriction is 10/15 to 5/15 without a retrieval designation. Roads in this area are usually not passable after 11/15 due to the snow levels. Leaving this area open longer could increase the risk of trespass on adjacent private land.

Alternative 4

Livestock Grazing - General

This alternative would not be compatible with livestock grazing. Under this alternative, closing all roads except, roads 425, 693, 359, 587, 287, 397, 397-E1, 397-F1, 397-F3, and 397-F4 would greatly impact livestock grazing. The permittees would have to be issued travel variances to even enter some of the allotments. It would not be cost effective to administer the allotments or manage livestock under this alternative. The mobility of the livestock would decrease due to the ripping and seeding and recontouring of all roads except the ones identified above. Limited access to maintain, construct, or reconstruct range improvements would impact permittees such that pack animals would be the only means for getting materials to sites. This would make the projects less cost effective. It would be impossible for permittees to maintain or reconstruct many of the existing improvements. The proposed seasonal restrictions would not impact livestock grazing.

Alternative 5 – Proposed Action

Livestock Grazing - General

Under this alternative, livestock grazing would be compatible. An estimated 10-20 travel variances would be issued annually on a case-by-case basis for high maintenance improvements or reconstruction projects. The rest of the effects of this alternative are the same as in Alternative 1. The proposed seasonal restrictions do not impact livestock grazing unless indicated under each allotment.

The above general description of effects would apply to the Helena District allotments except that stock trailing could become difficult with the proposed relocation of the Yellowstone Pipeline access route on the allotment. The current pipeline route provides an established trailing route for cattle to move from private land in the valley to summer pasture. Rerouting of this pipeline access route out of the drainage bottom would make trailing difficult for ranchers moving cattle to summer pastures. This area serves as the fourth day gathering point - a

good location for cows to mother up with calves that have been left behind during the previous days trailing. Pairing up cows with calves before reaching summer pasture is very important to ensure the health of both cows and calves through the summer grazing season.

The above general description of effects would also apply to the Avalanche and Camas Creek allotments on the Townsend District. The remaining allotments, on the Townsend District, and associated effects are described below.

Magpie Gulch

The effects of the closure method of this alternative would be minimal. Roads 425-C1, E5, E6, E9, H1, H2, I1, J1, K1, N1, M1, R1, and 693-B1 are needed for permit administration and livestock management. Gates are the closure methods identified for these routes so travel variances would need to be issued for construction/reconstruction of the improvements.

The new proposed trail, Old Magpie trail, runs parallel to the open main Magpie road. It is likely that the cattle would use the trail to move up and down the drainage because it would be 'more quiet' on the trail. Magpie is a fairly narrow valley bottom that doesn't offer many opportunities to go places other than the road, creek bottom or trail.

The new proposed ATV trail, along the mountain face between Cave Gulch and Magpie Gulch, and the non-motorized trail, Magpie Crest, could potentially provide access for livestock to enter into areas not authorized. Additional fencing may be needed to keep the cattle on the allotment.

Trails 239 and 240 are motorcycle trails and this would increase the impacts on livestock grazing. Livestock would likely be displaced by motorized users of the trail. The potential risks of off trail travel increases in this area because it accesses an open ridge.

Whites Gulch

The use of gates on roads 587-A1 and B1 would allow for livestock management and permit administration. This would also cut down on unauthorized ATV and motorcycle use in the closure area.

Wagner/Snedaker

The use of gates on roads 259-A1, A2, and C1 would allow for livestock management to better move the sheep and perform some permit administration duties. These roads also access the permittees private land, which is used in conjunction with the permit.

Proposed non-motorized use of trail 234 (Narytime) would have fewer impacts on livestock grazing. This area is a sheep allotment and they are herded using a horse, rider, and dogs.

Spring Creek

The effects of the closure method of this alternative would be minimal. Roads 4161-H1, C1, and C2 are proposed to be closed with gates. These identified roads are needed for private land access and livestock management. Road 4161-C2 is almost impassible now and it runs through two allotments. Placing a gate on this road would eliminate the risk of fence gates being left open and allowing livestock to use adjacent allotments. This alternative would also minimize the risk of motorized trespass on the permittee's private land. Road 8971 is the only trailer accessible road that accesses part of the allotment for permit administration and livestock management. A closure gate is the proposed method for this road. The gate would ensure reasonable access for the permittee.

Watson

Road 8971 is the only trailer accessible road that accesses all of the allotment for permit administration and livestock management. This road is the only road in close proximity to many improvements scattered throughout the allotment. The proposed closure method for this road is the use of a gate, which would provide reasonable access.

Cement Gulch

The effects of the closure method of this alternative would be minimal with the exception of road 287-F1 and 287-F2. 287-F1 provides access to two allotments for livestock management and permit administration. Road 287-F2 is used by the permittee to access the allotment from their private land for livestock management. Gates are the identified closure method for both roads.

Thomas Gulch

Under this proposal, roads 8969, A1, and B1 are proposed to be closed. Gates are the identified closure method, which would allow for permit administration and livestock management. Gates may not be needed since the permittee controls the access to these roads through his private land.

Closing road 8969-C1 with a gate would have minimal impacts to the permittee for livestock management. By closing this road, motorized use in non-motorized areas would decrease.

Mule Creek

Roads 575-B1, C1, D1, E1, E2, 4185, A1 and B1 are used to access pipelines, water developments, and fences. These roads are also accessed by the permittees off of their private land to manage livestock. Furthermore, the permittee is requesting handicapped access into these areas for livestock management. Gates are the proposed method of closure. Closing these roads with gates will help enforce the season closure and decrease the amount of trespass on private lands.

The proposed seasonal restriction for this area is 10/15 to 5/15. Roads in this area are usually not passable after 11/15 due to the snow levels.

Weeds, Affected Environment

Introduction

Currently about 9,691 acres of the project area, including about 390 miles of roads and motorized trail, are known to be infested with noxious weeds. The main species of concern are spotted and diffuse knapweed, leafy spurge, Dalmatian and common (or yellow) toadflax, oxeye daisy and sulfur cinquefoil. Other species of concern include Russian knapweed, Canada and musk thistles, St. Johnswort, burdock, and houndstongue. The rate of spread of these weeds, especially Dalmatian toadflax, is about 10% per year and may increase due to large wildfires (recent and future). A shift from timber, shrubs, and bunchgrass vegetation to noxious weeds will cause a decrease in wildlife forage, a reduction in species diversity, and an increase in soil erosion and overland flow due to a decrease in surface cover. It is estimated that 40% (136,951 acres) of the North Belts Travel Plan project area, are currently susceptible to weed invasion based on acres of rangeland and timbered areas with less than 35% canopy coverage (including the 29,000 acres burned in 2000). Future activities or events that would reduce canopy cover could increase the number of susceptible acres. Key components of a successful weed management program are sustained effort, constant evaluation, and adoption of improved strategies as they arise.

Analysis Area

The North Belts Travel Plan area encompasses approximately 229,010 acres of National Forest Land in central Montana within Lewis and Clark, Broadwater, and Meagher Counties. The project area consists of land within the boundaries of the Helena National Forest in the Big Belt Mountains and the Dry Range. Proposed treatments would occur within the project area on National Forest System lands.

Since the late 1800s, exotic plant species have been spreading across the Pacific Northwest. Distribution records indicate exotic plant species are increasing and expanding their range (Rice 1999). From these historic trends, this pattern of expansion is expected to continue due to transport of seeds from increasing travel and trade, and through continued disturbance on all land (agricultural, residential, recreational, and commercial developments).

Results of uncontrolled weed spread are well documented (Sheley, et al, 1998) (Rice, 2001) (U.S. Congress 1993). These studies project the number of invader species and their distribution will continue to increase if aggressive action is not taken to control their spread. Damage from noxious weeds is increasing due to their expanding populations. Noxious weeds can crowd out native plants and diminish the productivity, bio-diversity, and appearance of land.

Although only a portion, 9,692 acres, of the North Belts Travel Plan area is now infested with weeds. Experience shows weeds become epidemic when an aggressive weed control program is delayed (Lolo, Bitterroot, Flathead, and Idaho Panhandle National Forests). Infested acres continue to increase due to a variety of factors including; continuing drought conditions, increased use by the public, and wildfires. Ongoing inventory and monitoring shows that there is a need to:

1. Control noxious weeds

New weed species are coming into the Helena area from all directions and there is a potential for new weed species to move in and spread. Adjacent states and other areas in Montana already have infestations of weeds that have not yet arrived on the Helena NF. New invaders need to be treated aggressively to limit establishment of new weed populations

2. Treat weeds on rangeland

A healthy rangeland provides high quality forage for native herbivores and domestic livestock as well as providing cover and foraging habitat for many small animals and birds. Establishment of weeds reduces forage production, which can result in reduced wildlife numbers.

Rangeland with a good cover of native vegetation holds the soil, reducing erosion from runoff. Soil erosion from a weed-dominated site may contribute sediment to waterways, which can decrease productivity of a stream by reducing availability of aquatic habitats.

3. Treat weeds in burned areas

One large wildfire in the North Belts Travel Plan area in 2000 burned a total of about 29,000 acres of both rangeland and timber. Previous fire areas, such as the Scapegoat fire (1988) and the North Hills Fire (1984), have experienced accelerated weed spread as well. Susceptibility to new weed invasion is increased due to decreased canopy cover, an increase in bare ground, and additional nutrients that are made available to the weeds. Nearby weed infestations stand poised to invade burned areas if management measures are not taken.

4. Treat weeds in remote and inaccessible areas

Large weed infestations continue to expand in the North Belts Travel area because of difficult access for equipment and personnel creating unsafe working conditions. Access may be unsafe for weed sprayers if the area has loose rock, hazard trees, or is very steep. As a result, approximately 969 acres of the total infested acres are not currently being treated. Weed infestations have expanded in inaccessible areas over the last decade; while weed populations in accessible areas, such as along roads, have shown decreases due to consistent treatment measures. Cost-effective and safe methods are needed to control spread of weeds in inaccessible areas. Inaccessible areas may be, and often are visible from the road. However, due to steep, rocky terrain they cannot be treated by ground spraying methods.

During 1997 and 1998, weed mapping was done in preparation for the planned "North Belts Travel Plan Magpie/Confederate Vegetation Restoration Project" Draft EIS. The resulting weed infestation information was used as baseline information for determining weed expansion in that part of the current draft North Belts Travel Plan area. These weed maps were updated in 1999 and in early 2000 in preparation for the planned Noxious Weed EIS. These weed maps and the linked weed polygon information were the basis of the existing condition

information provided in this report. More updated information from noxious weed surveys in 2001 and 2002 will be located in the project file.

Noxious weed populations have decreased in the burned portion of the new North Belts Travel Plan affected area, in sites accessible to ground spraying equipment, due to adequate funding for weed control during the Fire Restoration Project years. In the backcountry (remote areas at least 1 mile from the nearest road), on the Townsend Ranger District portion of the North Belts Travel Plan affected area, Dalmatian toadflax infestations in particular have expanded rapidly. Dr. James Jacobs in his research paper describing the effects of fire on Dalmatian toadflax found that light infestations of Dalmatian toadflax could be expected to expand rapidly in the first few seasons after a prescribed burn. (James S. Jacobs and Roger L. Sheley, March 2003) Similar results are expected after wildfires. In remote areas the patch sizes of weeds have been very small, <.5 acre in size, and many areas are free of noxious weeds. However, these small infestations have increased and may continue to increase rapidly until desirable vegetation is well established.

On the Helena Ranger District Portion of the North Belts Travel Plan area approximately 5,500 acres are infested by Dalmatian toadflax. Portions of these acres were controlled in 2001 and 2002. There are knapweed infestations in Beaver Creek and spurge sites in lower Beaver Creek. Toadflax infests much of the York Hills, and Hedges Mountain. Trout Creek has been invaded by burdock. These noxious weed infestations have been treated intensively during the past two years, (2001 and 2002). These infestations are shrinking in size and level of infestation. However, surveys must be conducted in the spring of 2003 before deciding the weeds have reached a maintenance level.

Noxious weed populations in the areas outside of the Cave Gulch fire perimeter but within the North Belts Travel Plan area have declined over the last two years due to more intensive treatment in the entire North Belts Travel Plan area. Monitoring plots of several designs have been established in the "black", areas affected by wildfires in the last decade. These plots and trend studies will enable the Helena National Forest weed managers to measure results of weed treatment efforts. Summaries of information gathered in the monitoring plots and the full monitoring studies are located in the project file.

Noxious weed treatment in the North Belts Travel Plan area has been effective for the past two years, 2001 and 2002 due to commitment of time, effort, and budget. As long as we can continue to fully implement our weed treatment in this area the Helena National Forest goal of 70% reduction of noxious weeds should be met. However, the seeds of noxious weeds may survive in the "seed bank" for decades. Knapweed studies show that the seeds survive in the soil at least 20 years and Dalmatian toadflax seeds survive at least 10 years. Leafy spurge root sections can reach a depth of nearly 30 feet and may re-establish months to years after treatment. According to "*Weeds of the West*" (published by The Western Society of Weed Science in cooperation with Western US Land Grant Universities and the Cooperative Extension Services), the seeds of leafy spurge have survived at least 8 years in the soil, (seed bank). Other or newer noxious weed seeds or plant parts may survive as long or longer than knapweed, spurge, or toadflax in the seed bank. Therefore, once an area has been infested with

noxious weed species an ongoing monitoring and maintenance level of treatment must be established.

In the North Belts Travel Plan area, the following noxious weed species have been identified in populations greater than 50 acres. Additional noxious weeds have been identified in this area but the populations are less than 50 acres.

Noxious Weed Species		Acres infested
CARNU	musk thistle	51.9
CENMA	spotted knapweed	2378.6
CIRAR	Canada thistle	995.5
EUPES	leafy spurge	732.8
LINDA	Dalmatian toadflax	5532.9
Total		9691.7

Current Weed Treatment, Prevention, and Education Program For the Helena National Forest.

Control

Over the last six years, the Helena NF program has focused on reducing weed populations within major travel corridors in the North Belts Project area (J. Winfield, pers. comm.). As a result, Forest Service personnel, external agencies, and the public have noticed a decrease in weed populations along travel routes.

Recent equipment purchases have allowed the Forest to expand treatment into more difficult terrain; creating off-road equipment tracks on steep open hillsides. This expansion of herbicide application in remote terrain has required a greater need for posting signs about weed management and herbicide use in response to public concerns.

It should be recognized that off-road travel could be reduced if aerial treatments were scheduled for implementation. Aerial treatment of noxious weeds would minimize much of the off road travel in remote areas, as well as reduce potential for soil disturbance.

Monitoring plots established in remote areas that have been treated with the latest equipment indicate successful herbicide treatments; hence, the Helena NF has established a very aggressive noxious weed goal of reducing weed populations by 70 percent forest-wide.

The existing Helena NF weed control program consists of a forest-wide approach with emphasis placed on the Fire Restoration areas of 2000. The elevated concern of existing weed species spread and new invader species becoming established has resulted in an intensified effort of Integrated Pest Management Program (IPM) consisting of; Prevention, Education, Biological Control, Herbicide

control, Mechanical control, and Monitoring. Since the fires of 2000, increases in program accomplishments have been made, particularly in prevention, education, biological control, herbicide control, and monitoring. Weed treatments (biological and herbicide) have targeted over 10,000 acres annually, while inventory and monitoring efforts have targeted all blackened area within fire perimeters.

Biocontrol

The Helena NF biological control program has expanded over the past three years. Leafy spurge, Dalmatian toadflax, spotted knapweed, and musk thistle are the primary species selected for biological insect releases. All insect release sites are mapped using a Global Positioning System (GPS). Selection of these sites to treat is based on accessibility and treatment effectiveness. Due to the success with the *Apthonia* spp. on leafy spurge, efforts have been concentrated on a large-scale release program targeting large/remote infestations of leafy spurge. Over two million *Apthonia* insects have been released over the last three years (PF-Weed Database). Insectary monitoring indicates that if site conditions favor survival of the insect, reduced weed populations can be observed within 3 to 5 years. To date, 104 releases have been established targeting approximately 3,734 acres of leafy spurge, Dalmatian toadflax, spotted knapweed, and musk thistle.

There are currently 5 insectary sites in the North Belts Travel Plan area and 104 insect release sites. Insectary sites are locations that have optimum conditions for both the insect and the noxious weed so these locations are likely to support a large enough population of the insect agent to eventually become a collection site. A release site is an area where bio-control agents have been released and are expected to impact the weeds but may not be an ideal collection site. There are insect agents for the following noxious weeds in the N-Belts Travel Plan area:

The following table lists noxious weeds and biocontrols used for those weeds.

Noxious Weed	Biocontrol
Dalmatian toadflax (<i>Linaria dalmatica</i>), and yellow toadflax (<i>Linaria vulgaris</i>)	<i>Brachypterolus pulicarius</i> (flower feeding beetle), <i>Calophasia lunula</i> (defoliating moth) <i>Gymnetron antirrhini</i> (seed feeding weevil) <i>Mecinus janthinus</i> stem-boring weevil
Leafy spurge (<i>Euphorbia esula</i>)	<i>Apthona flava</i> , <i>A. czwalinae</i> , <i>A. lacertosa</i> , and <i>A. nigriscutis</i> , (root boring weevils as larva and defoliators as adults)
Musk thistle (<i>Carduus nutans</i>)	<i>Rhinocyllus conicus</i> (seed head feeding weevils as larva and defoliators as adults) and <i>Trichosirocalus horridus</i> (growth tip feeding weevil)
Spotted knapweed (<i>Centaurea maculosa</i>)	<i>Agapeta zoegana</i> (root feeding moth in larva stage), <i>Cyphocleonus achates</i> , (root feeding weevil as larva and defoliator as

Noxious Weed	Biocontrol
	adult), <i>Larinus minutus</i> (seedhead weevil as larva and rosette feeding adult)

Herbicide Control

The Helena NF strategy has changed from a few years ago, when all roads were high priority for treatment. Aggressive treatment of all roads and trailheads (consisting of approximately 371 miles of infested roads and trailheads, totaling about 3,600 acres) over the past five years has decreased weed populations in these areas (PF-Weed Database). This success required a shift in strategy to continue with a maintenance level program that consists of spot treatments along roads and trailheads, while expanding treatment onto rangeland and timber harvest units outside road corridors.

This expansion of treatment required purchase of equipment that can access difficult terrain. Currently, land located off of road corridors with slopes less than 35% is targeted for treatment, which has enabled treating approximately 2,500 to 3,500 additional acres with herbicides each year using picloram, 2,4-D, and clopyralid.

The fires of 2000 and the completion of the Burned Area Emergency Rehabilitation (BAER) Project has allowed treatment to expand to approximately 5,000 acres in 2001 and 2002 and incorporated use of cholorsulfuron (Telar) herbicide. Cholorsulfuton has proven to be very effective in control of dalmatian toadflax, while being more selective and not harming desirable native vegetation.

Three sites within the Scapegoat Wilderness infested with spotted knapweed and Canada thistle have been periodically treated with 2,4-D and picloram. Trailheads and wilderness boundaries are focus points for treatment, however, locations such as the Big Log area that burned in 1984 (North Hills Fire) has experienced spread of leafy spurge and dalmatian toadflax toward the Gates of Mountains Wilderness. Blow-down in this area prevents access with ground-based spray equipment.

Mechanical Control

In the past, hand-pulling has been implemented in conjunction with light applications of herbicide to control spotted knapweed and common burdock within the Trout creek trail head and the Vigilante Campground, and along isolated sections of selected riparian areas. Hand-pulling weeds as the sole method of eradicating weeds appears to be ineffective; however, combining it with light applications of herbicides has reduced spotted knapweed and common burdock infestations to a maintenance level requiring only annual spot treatments (PF-Monitoring). Hand-pulling weeds has been coordinated with volunteers and high school students for the past three years.

Prevention

The current prevention program places emphasis on limiting introduction, establishment, and spread of noxious weeds by implementing the following techniques:

- limiting weed seed dispersal from major routes
- attempting to contain neighboring weed infestations
- minimizing soil disturbance
- signing trailheads and requiring weed seed free forage for backcountry users
- proper forage management based on condition class of the vegetative community, and
- implementing Best Management Practices (BMPs) that includes washing of all vehicles when moving into a new area.

The Forest Service has prepared a comprehensive guide to Noxious Weed Prevention Practices (USFS 2001c) for use in planning forest and wildland resource management activities and operations. This guide assists managers and cooperators in identifying weed prevention practices that mitigate identified risks associated with weed introduction and spread.

Monitoring

The weed monitoring program has expanded over the past three years. All known weed infestations are currently mapped through our Geographical Information System (GIS). The current monitoring program has identified and mapped approximately 70 permanent plots to measure:

- density and rate of spread of Dalmatian toadflax
- effects an aggressive plant species has on natural resources
- effect of herbicides on noxious weeds and non-target vegetation
- coverage application of herbicides, and
- effectiveness of biological control agents.

Currently, the Helena NF is spending approximately \$1.8 million on noxious weed control consisting of Regional appropriated funds, fire restoration funds, and several grants and agreements with Montana State Trust Funds, Rocky Mountain Elk Foundation, Sikes Act, Mule Deer Foundation, and the Federal Bighorn Sheep Foundation.

Other herbicides, such as Plateau, are currently under study in cooperation with Dow Elanco within the burned areas, measuring effectiveness and non-target mortality. Cooperative monitoring is also being conducted with the Rocky Mountain Research Labs in Missoula and Bozeman, as well as with Montana State University, University of Montana, and several federal and state agencies.

Weeds, Environmental Consequences

Introduction

Weeds spread aggressively and the most effective time to treat new infestations or new species is when they are discovered. An Adaptive Management Strategy has been included to address new areas of infestation, new weed species discovered or listed and new weed treatment methods becoming available (herbicides, biocontrols and cost effective mechanical methods).

Effects Common to All Alternatives

The following table displays various weed control methods and their associated costs. These methods and costs would be similar across all alternatives.

Weed Control Methods and Costs		
Method	Effectiveness	Cost/Acre
Ground application of herbicides – easy vehicle access	High	\$24. - \$115.
Ground application – primary vehicle access -some backpacking (current Helena NF method)	High	\$62.
Ground application – herbicide backpack or horse pack access	High	\$125 - \$350
Aerial application of herbicide	High	\$18. - \$24.
Biological control	Low to High	\$40.
Grazing	Low	\$20. - \$48.
Handpulling	High for small infestations of tap-rooted weeds; low for rhizomatous weeds or high density infestations	\$8,800.

Alternative 1 – No Action

Should the No Action Alternative be chosen weed management would continue as stated in the Weed BMP's and according to the HNF weed treatment methods previously described.

In the analysis area, there are currently 272 miles of roads open year-long, which includes system roads and non-system roads, 140 miles are open with seasonal restrictions, and 85 miles are managed under year-long restrictions (the majority of these are closed by gates). Under this alternative there will be no change from the current management of travel routes in the analysis area. Therefore, the level of uncontrolled weed spread will not be affected by new travel management

changes resulting from this decision. Hence, access to weed treatment areas will continue under the current management direction that addresses travel on the Forest.

Alternative 2

Should Alternative 2 be chosen, weed management would continue as described in the No Action Alternative above with the following changes:

In the analysis area, there would be 98 miles of roads open year-long, which includes system roads and non-system roads, 22 miles are open with seasonal restrictions, and 121 miles are managed under year-long restrictions (with most of these roads closed by ripping, seeding and slashing methods). An increase in “restricted use” yearlong road closures would decrease public access to the Forest, hence reducing the potential for weed spread. Although potential weed spread would be reduced, continuing weed control efforts would become more difficult, jeopardizing safety, effectiveness, and cost efficiency.

All new routes would be surveyed for weeds before construction, (ground disturbing activities). If noxious weeds are found they would be treated before soil is disturbed, or if the infestation is large and well-established, an alternate route may be chosen to avoid the infestation as a mitigation measure. Weed infestations along the new route must be treated and monitored yearly until they have reached a maintenance level.

The 425 acre “off-route play area” has been chosen in an area which has a leafy spurge infestation on each side of it. A “motocross” type of “Play Area” that de-vegetates the site and disturbs the soil would require intensive management to maintain it in a noxious weed free state.

This alternative would add 29 miles of new road construction, 209 miles of dual use route, and 111 miles of motorized trail. These miles of new construction and other motorized routes would require approximately 2,443 acres (7 acres/mile) of treatment/monitoring. These additional acres would need annual monitoring and treatment until open soils are revegetated, usually based responding within 3 to 5 years based on soil productivity and precipitation.

About 48 miles of road would be converted to motorized trails in this alternative, and 6 miles of re-vegetated roads would be proposed for use again. This would add about 72 acres of disturbed soils, requiring annual monitoring on approximately 378 acres, including treatment on cut and fill slopes until fully revegetated.

Snowmobile play areas have been chosen in areas free of noxious weeds. The snowmobiles are not likely to disturb the soils directly through increased erosion, however snowmobiles can collect seed heads under the cowling and spread seeds off site while recreating from one area to another. The play areas would require annual monitoring to determine if erosion and subsequent weed invasion occurs.

Alternative 3

If Alternative 3 is chosen, full-sized four-wheel drive vehicle type recreation would be emphasized. The basic weed management strategy would continue as described in Alternative 1, the No Action Alternative above with the following changes.

In the analysis area, there would be approximately 97 miles of roads open year-long; 22 miles are open with seasonal restrictions; and 86 miles are managed under year-long restrictions (the majority of these are closed by gates). Under this alternative there would not be a notable change from the current level of weed treatments because of the reduction of miles in the road category would be potentially off set by an increase of 113 miles of dual-use routes. Therefore, the level of uncontrolled weed spread will not be affected by new travel management changes resulting from this decision. Since there is no proposed decommissioning of existing roads, including those roads currently under yearlong closures, there may be positive opportunities for weed treatment access.

This alternative calls for closures by gate only and no change in the road prism, unlike the other alternatives, all of which include rip and seed, reclaim, or re-contour strategies for road closures. If the road prism could re-vegetate without additional effort, such as ripping and seeding, then as desirable vegetation becomes established weed invasion is less likely. However, due to soil compaction and other factors, sometimes road prisms do not re-vegetate on their own and the risk of weed invasion remains. There would be a risk of weed invasion when the soil disturbing activities involved in ripping and seeding etc. occur, but the risk would be short-term and the positive effects of revegetating a closed road prism are long term.

This alternative would involve 158 acres of soil disturbance on roads and trails. The cost of inspecting and treating weeds on additional roads or on current roads with increased use (such as retrieval routes) impacts the current weed program by costing more in both time and dollars.

Alternative 4

Should Alternative 4 be chosen, weed management would continue as described in Alternative 1 – the No Action alternative, with the following changes;

In the analysis area, there would be approximately 97 miles of roads open year-long; 40 miles are open with seasonal restrictions; and 327 miles would be managed under year-long restrictions (the majority of these would be closed by ripping or re-contouring). This alternative would greatly reduce weed spread from motorized equipment. Under this alternative there would be notable reductions from the current level of weed treatments because of the reduction of miles in the motorized category and additional disturbance involved with ripping/seeding, or re-contouring. Therefore, the reduced level of uncontrolled weed spread would be tremendously affected by new travel management changes resulting from this decision. Vehicle access for weed control would be substantially reduced due to

the 263 miles of decommissioning of existing roads by closure methods other than gates. Extreme concern exists with the proposed disturbance and lack of access to control weeds in these areas.

Weed control efforts would continue with appropriate strategies, but considering crew safety, values and equipment, resource management objectives would be difficult to achieve.

Alternative 4 includes the closure of some motorized trails. These closures may result in the loss of weed treatment opportunities by ATV type equipment. Where weeds exist along old trails that are closed for use by motorized equipment, the cost of weed treatment escalates dramatically. See the previous table that displays the cost of weed treatment by style, backpack, horsepack, ATV, truck etc. Unless helicopter spraying is adopted through the Weed EIS, access to remote patches of weeds and their treatment would be difficult and costly.

Alternative 5 – Proposed Action

Should Alternative 5, the Proposed Action Alternative, be chosen weed management would continue as stated in the Weed BMP's and according to the weed treatment methods previously described.

In the analysis area, there would be approximately 176 miles of roads open year-long; 67 miles are open with seasonal restrictions; and 224 miles are managed under year-long restrictions (with a maximum of 181 miles of these closed by gates). Under this alternative there would be a notable change from the current level of weed treatments because of the reduction of miles in the roads open to access. Therefore, the level of uncontrolled weed spread would be affected by new travel management changes resulting from this decision. Under this alternative there would be notable reductions from the current level of weed treatments because of the reduction of miles in the motorized category and additional disturbance involved with ripping/seeding, or re-contouring. Therefore, the reduced level of uncontrolled weed spread would be tremendously affected by new travel management changes resulting from this decision. Vehicle access for weed control would be substantially reduced due to the 43 miles of decommissioning of existing roads by closure methods other than gates. Concern exists with the proposed disturbance and lack of access to control weeds in these areas.

Weed control efforts would continue with appropriate strategies, but considering crew safety, values and equipment, resource management objectives would be difficult to achieve.

Conclusions

The quantitative effect of travel management on noxious weed management is difficult, if not impossible to completely assess. Debates can arguably be made that the more routes that are open for weed control/monitoring access, the more effective the Forest program will be at attaining resource goals. Those same routes if open to the public provide an increase in the potential for increased s

open routes also provide better opportunity for new detection of spreading weed species.

Therefore, analyzing travel management alternatives based on the risk of weed spread is subjective, using probability and professional judgment to arrive at a conclusion. Current Forest noxious weed authority heavily depends administrative access for accomplishing land and resource objectives, so alternatives can be quantitatively measured in this area.

Three main issues stand out when addressing noxious weed management:

1. Access for personnel, and equipment for treatment of existing infestations
2. Access for personnel involved in follow up pre and post treatment monitoring.
3. Access by the public. Potential weed spread increases as public access becomes more available.

The following table displays the degree (High, Moderate, Low) to which each alternative allows access for these three issues.

Comparison Element	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Access for weed treatment and monitoring	High	Moderate	High	Low	Moderate
Public Access	High	Moderate	Moderate	Low	Moderate

Alternative 1, the existing condition, would have no effect on the current noxious weed management strategies or the level of risk for public spreading noxious weeds. Areas that are currently not readily accessible for resource management such as noxious weed treatment will continue to be at risk for change due to the effects of weed spread. On-going weed management efforts in the Big Belts include treatment/monitoring and an Environmental Impact Statement (EIS) addressing areas of difficult access that provide for unsafe working conditions due to steepness of terrain.

Alternative 2, proposes for nearly 118 miles of road to be ripped or re-contoured making access for noxious weed management nearly impossible in these areas. While the risk of weed spread would be reduced along these decommissioned roads, the risk level of new invasion would increase substantially in the proposed 425 acre off route recreation area.

Alternative 3, proposes nearly the same amount of road to be removed from general usage as Alternative 2. However, the most notable difference lies in the methods involved. Most of the affected miles, approximately 106, would be

closed by gates, while only about 7 miles would be ripped or re-contoured. This has significant importance in that administrative use for weed control and monitoring could occur on these gated roads, thereby maintaining Forest Plan consistency in protecting key habitats. Legal public access would be restricted, reducing the potential of the public motorized vehicles spreading weed seeds.

Alternative 4, emphasizes much less motorized use, eliminating approximately 380 miles of motorized trails and roads. Most of these closures would be implemented by ripping and re-contouring. While reducing the risk of future weed spread by motorized human activity, most of any alternatives, there is also a reduced capability for controlling and monitoring weed infestations. With the loss of access to many areas the cost and efficiency will greatly increase.

Alternative 5, the proposed action, attempts to implement a more diverse combination involve gating, thus permitting a great deal of administrative access for noxious weed management efforts. Approximately 65 miles would be by a combination of ripping and re- of methods to close roads and trails. Most of the closure miles, approximately 100, would contouring. In addition, another 15 miles of tread would be allowed to re-vegetate as a closure method. This alternative most closely aligns itself with Noxious Weed Management strategy for travel route priorities displayed in the recently completed Helena National Forest Roads Analysis.

Based solely on the issue of access for Noxious Weed management, Alternative 1 and Alternative 3 provide the most access, with Alternative 2 and Alternative 5 having somewhat less, and Alternative 4 clearly allowing substantially less motorized access.

Forest goals and Forest plan consistency for managing noxious weeds in native ecosystems would be attained by Alternatives 1, 3, and 5, because they would provide administrative access at least, into those areas.