

MINERAL COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

MAY 2005



FIRE PLAN COOPERATORS:

FRENCHTOWN RURAL FIRE DISTRICT
SUPERIOR VOLUNTEER FIRE DEPARTMENT
ST. REGIS VOLUNTEER FIRE DEPARTMENT
WEST END RURAL FIRE DISTRICT
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UNITED STATES FOREST SERVICE

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1.0 EXECUTIVE SUMMARY

The enactment of the Healthy Forests Restoration Act (HFRA) in 2003 set forth the purpose to reduce the amount of hazardous fuels on federal and non-federal land to reduce wildfire risk to communities, municipal water supplies, and other at-risk federal land. Under the HFRA hazardous fuels reduction projects are given a higher priority when they fall within the boundary of the wildland urban interface (WUI), as defined in the HFRA or the Community Wildfire Protection Plan (CWPP) for the respective area. Hazardous fuels reduction projects on non-federal lands that are to be carried out within the defined WUI of the CWPP are given priority with respect to funding and implementation. Any hazardous fuels reduction projects on federal land within the defined WUI of the CWPP are subject to consider the recommendations made by at-risk communities that have developed a CWPP. These criteria are especially important in Mineral County because of the large amount of Federal land and the small community base. A large wildland fire event is imminent in Mineral County. The amount of standing and fallen dead woody debris that has accumulated over the years from severe insect and disease mortality and the fire regime of the prominent fire groups within the county are indicative of such an event.

The Mineral County Community Wildfire Protection Plan will be used to define and address the core elements of community protection in the event of a wildland fire. The human and natural resources within Mineral County are at risk. The preparation of this CWPP and the coordination of the residents, private timber industries, local and state government, and the USDA Forest Service will provide for future actions that will protect said resources. It is the goal of this CWPP to create and prioritize hazardous fuels reduction projects in high-risk areas so that, in the event of a catastrophic wildland fire, there will be minimal or non-existent damages to life and property.

A working group consisting of local, State, and Federal representatives working within Mineral County started the groundwork for the CWPP process in late 2004. Weekly meetings were subsequently held to assess collected data and to collaborate on decision-making for both the wildfire risk and other community values risk ratings. Once the assessments were finished three community meetings were scheduled throughout the County to acquire public comment on areas in need of fuels reduction projects, preferred treatment methods and the definition of the WUI. After receiving all feedback from the communities, a draft CWPP was prepared for review and final changes made. The intention of the final draft is to be the foundation upon which annual/bi-annual reviews and updates will be made.

2.0 COMMUNITY DESCRIPTION

Mineral County is located on the western edge of Montana extending from the Montana/Idaho border to the east approximately 70 miles (See Map I, Appendix A). The entire county consists of a rural, semi-rural population base, with the 2000 census population totaling 3,884. Table 2.1 below is the breakdown of the Census Designated Places within Mineral County and some relevant statistics.

Table 2-1 Statistical Information for Census Designated Places

CENSUS DESIGNATED PLACES	TOTAL POPULATION	MEDIAN AGE	% POPULATION OVER 65	HOUSING UNITS	MEDIAN HOUSE VALUE	MEDIAN INCOME IN DOLLARS
Mineral County	3884	41.1	14.52	1961	88,300	27,143
Alberton	374	35.9	6.89	175	81,700	26,000
DeBorgia	69	54.5	36.36	42	n/a	22,917
Riverbend	442	43.8	23.81	216	134,600	27,813
St. Regis	315	39.2	16.24	161	73,000	23,750
Superior	893	39.5	17.78	410	70,200	25,333

2.1 Emergency Services

Frenchtown Rural Fire District (Alberton)
 Superior Volunteer Fire Department (Superior, rural and town)
 St. Regis Volunteer Fire Department (St. Regis, rural and town)
 West End Rural Fire District (DeBorgia)
 Mineral County Hospital (Superior)
 Mineral County Sheriff (Superior)
 Montana Highway Patrol (Superior)
 Quick Response Units (St. Regis & DeBorgia)
 Superior Area Ambulance Service (Superior)
 911 - Dispatch (Superior)
 Superior Ranger District
 Ninemile Ranger District

2.2 Mutual Aid Agreements

The fire agencies serving Mineral County are currently completing a mutual aid agreement. This agreement will identify response levels and responding agencies inside and outside of designated fire district boundaries.

In addition, MCA 7-33-2108 allows for mutual aid between the fire districts when a trustees or their representative makes a request for assistance pursuant to 10-3-209. A mutual aid agreement does exist between the Ninemile Ranger District and the Frenchtown Rural Fire District.

2.3 Infrastructure at Risk

Bonneville Power Authority – high voltage power lines
 Power lines and telephone lines
 Emergency services and Forest Service repeaters, located on mountaintops
 Montana Rail Link - railroad
 Municipal water supplies in Alberton and Flat Creek

2.4 Land Use and Development Trends

83%	USDA Forest Service (Lolo National Forest)
4%	State of Montana
8%	Private Industrial Timber
5%	Private

3.0 CLIMATE

The general climate of Mineral County is typical of the northern Rockies west of the continental divide. The winter months (November-February) are normally cold and wet, and fires are extremely rare, although the accumulated snow pack during these months is often a factor in the summer fire season. Moderate fire activity can occur in the spring before green-up (March-April) but short days, high fuel moistures and residual snow pack limit this activity to valley bottoms and lower southerly-facing aspects. Late spring (May-June) is normally a moist period with low fire frequencies, and when fires do occur the high live fuel moistures of green-up significantly slow them. Early summer brings high temperatures, low relative humidity, long days and dry thunderstorm activity. Fire danger increases as dead fuels dry and live fuels cure out. Fire frequency normally picks up in early July. Fire activity and danger typically peak sometime in August. By early fall the atmosphere begins to cool and thunderstorm activity decreases, but continued dry fuel conditions and dry cold front passages often create conditions favorable for significant fire behavior. Those fires that do start and those that are still burning can grow rapidly. Many of the largest fire events in the area's history have occurred in September during cold front passages. This late fire season can continue into November during dry years, although normally rain, snow and winter conditions have returned by mid-October.

4.0 FIRE ECOLOGY

“Fire Ecology of Western Montana Forest Habitat Types”, General Technical Report INT-223, by William C Fischer and Anne F. Bradley (1987), examines the role of fire in western Montana habitats, and identifies 11 fire groups that have similar forest vegetation, response to fire, forest succession, forest fuels, and fire history. These fire groups can be used to understand and explain past, current and future conditions of the forest and its relationship to fire. Following are brief summaries of the significant fire groups in Mineral County. Complete descriptions of the fire groups can be found in “Fire Ecology of Western Montana Forest Habitat Types”.

4.1 Fire Group 4: Warm Dry Douglas-fir Habitat Types

4.1.1 Vegetation

Group Four consists of Douglas-fir habitat types where ponderosa pine usually occurs as a major seral or climax associate especially at lower elevations. Group Four stands may exist as fire-maintained ponderosa pine stands that develop Douglas-fir regeneration beneath the pine in the absence of

disturbance. Douglas-fir is usually present in seral stands, but ponderosa pine often dominates. Sites are too droughty for most other conifer species.

4.1.2 Forest Fuels

As a general rule, fuel loads tend to increase with the stand age as a result of accumulated downfall from insect and disease damage, blowdown, and natural thinning. Sometimes the combined effect of moderate amounts of periodic deadfall and moderate amounts of periodic downfall from natural thinning will result in a heavy fuel load.

Live fuels can be a significant factor in some Group Four stands. Dense thickets of Douglas-fir regeneration may become established during fire-free periods. Overstories become susceptible to stand-destroying crown fire when such situations are allowed to develop.

4.1.3 Role of Fire

Frequent fires in seral stands maintained a ponderosa pine “fire climax” condition by killing fire-susceptible Douglas-fir seedlings. In this role, fire frequency largely determined the stand composition. Following a prolonged fire-free period, Douglas-fir regeneration became established beneath the canopy. A ground or surface fire that reached a thicket of saplings and small poles could ascend into the overstory, killing or injuring adjacent mature trees through the vegetative “fuel ladder.” Fuel ladders increase the potential destructiveness of a fire by providing access to the canopy. During periods of high fire danger, this often resulted in a stand-destroying crown fire.

Historic fire frequency probably was 5 to 25 years between fires. Successful suppression of surface fires in open, fire-maintained stands over the last several decades has increased the potential for a fire to become severe.

4.2 **Fire Group 6: Moist Douglas-fir Habitat Types**

4.2.1 Vegetation

Fire Group Six habitat types occur throughout western Montana at elevations of about 3,000 to 6,500 feet. Douglas-fir is both the indicated climax species and a vigorous member of seral communities. It is not uncommon for Douglas-fir to dominate all stages of succession on these sites. Ponderosa pine, western larch, and lodgepole pine are seral components whose abundance varies considerably by phase.

At low elevations, Group Six sites can be found on all aspects. On cooler sites, ponderosa pine becomes less important and larch and lodgepole increase in importance.

4.2.2 Forest Fuels

Fuel conditions will vary according to stand density, species composition, age, and stand history. The tendency toward overstocking and the development of dense understories result in high-hazard fuel

conditions in many stands. Natural thinning, snow breakage, blowdown, and insect and disease mortality operate at a high level in many stands.

The most hazardous conditions occur in well-stocked stand with dense Douglas-fir understories. The absence of dense understories results in reduced fire hazard, even in well stocked stands. However, the density of overstory trees and the presence of dead branches near ground level create a crown fire potential under severe burning conditions.

4.2.3 Role of Fire

Fire was an important agent in controlling density and species composition. Low to moderate severity fires converted dense stands of pole-sized or larger trees to a more open condition, and subsequent light burning maintained stands in a park like state. Severe fires probably occurred on dense, fuel-heavy sites and resulted in stand replacement. Stand replacement fires favored lodgepole pine on sites where this species was present.

Fire's role as a stand replacement agent becomes more pronounced when the natural fire-free interval is increased through fire suppression, unless corresponding fuel reduction occurs.

Fire history studies indicate fire-free intervals of 15 to 40 years on these sites.

4.3 **Fire Group 8: Dry Lower Subalpine Habitat Types**

4.3.1 Vegetation

Fire Group Eight consists of dry lower subalpine habitat types where spruce, subalpine fir, or mountain hemlock are the indicated climax species.

Douglas-fir and lodgepole pine are dominant seral species, with lesser amounts of spruce, and occasional larch or western white pine. The prevalence of Douglas-fir and lodgepole pine may be due, in part, to periodic wildfire that sets back the invasion of subalpine fir and spruce.

4.3.2 Forest Fuels

Stands are characterized by relatively large amounts of downed woody fuels of all sizes, but especially large amounts of material greater than 3 inches in diameter.

As is the case within many subalpine fir habitat types, live fuels can contribute significantly to overall fire hazard during dry conditions. Dense understories develop in many stands and provide fuel ladders to the overstory tree crowns, although some stands are devoid of such understories.

4.3.3 Role of Fire

The occurrence of periodic low to moderate-severity fire favors Douglas-fir and lodgepole pine. Such fires set back invasion by the more tolerant subalpine fir and spruce, which in the absence of fire form dense understories and eventually take over the site. Severe, stand-destroying fire will generally favor lodgepole pine on many of these sites.

Before organized fire suppression, fire intervals probably fell between 50 and 130 years.

4.4 **Fire Group 9: Moist Lower Subalpine Habitat Types**

4.4.1 Vegetation

Fire Group Nine is a collection of moist and wet lower subalpine habitat types in the spruce and subalpine fir climax series. Soils are moist or wet much of the year. Elevations range from about 2,900 to 7,500 feet.

Engelmann spruce is usually a major component of seral stands along with lodgepole pine and Douglas-fir. Older stands are usually dominated by subalpine fir and spruce, although Douglas fir and lodgepole pine may be well represented in the overstory.

4.4.2 Forest Fuels

Fire Group Nine fuels are similar to those found in Fire Group Eight.

A large percentage of the downed woody fuel is material greater than 3 inches in diameter. The combination of deep duff and large amounts of dead rotten fuel can result in severe surface fire during unusually dry moisture conditions. Where dense understories exist, such fires can easily spread to the tree crowns and destroy the stand. Even if a severe surface fire does not crown, there is a good chance the overstory trees will be killed by cambium heating.

Under normal moisture conditions for these sites, a lush undergrowth of shrubs and herbs usually serves as an effective barrier to the rapid spread of fire.

4.4.3 Role of Fire

Fire history for moist, lower subalpine habitat types is limited. Mean fire-free intervals are probably longer than those of the drier upland sites in Fire Group Eight.

The impact of fire on Group Nine sites west of the Continental Divide in Montana is indicated by stand conditions and species composition. The general absence of spruce, subalpine fir, or mountain hemlock climax condition is evidence of disturbance by past fires. The dominance of lodgepole pine, Douglas-fir, larch or spruce on many sites suggests these stands developed on a fire-created mineral soil seedbed.

Available evidence indicates that fires on such sites are infrequent and are mostly low severity or stand-replacing. Moderate-severity fires are apparently less frequent although they do occur.

4.5 Fire Group 11: Warm, Moist Grand Fir, Redcedar, and Western Hemlock Habitat Types

4.5.1 Vegetation

Fire Group Eleven is composed of moist, warm habitat types often occurring on valley bottoms, benches, ravines, and protected exposures in west-central Montana and more commonly on upland sites in northwestern Montana. This group occurs only west of the Continental Divide in Montana and reflects the influence of the inland maritime climate in west-central and northwestern portions of the state.

Up to ten species of conifers may occur during the successional process. Western hemlock, western redcedar, and grand fir are climax species within the group.

4.5.2 Forest Fuels

Much of the downed woody fuel results from accumulated deadfall and occasional natural thinning. Compared to the other Fire Groups, Group Eleven fuel loadings average higher in all size classes. Despite the heavy fuel loadings that characterize these stands, fire hazard is normally low to moderate under normal weather conditions. The potential for serious conflagrations is usually mitigated by the high humidity of these moist sites.

4.5.3 Role of Fire

The relatively warm, moist conditions sustain the growth of diverse and highly productive stands. These same factors keep the fire frequency generally low. A fire may burn into the edge of a stand, scarring some trees, but it will usually die out when it reaches the moist duff layer.

Moist weather conditions predominate, but the region is occasionally subject to severe summer drought. Heavy fuel loadings exist in most stands because of overall high plant productivity. This, combined with droughty conditions, sets the stage for severe, widespread fires. Stands are replaced and sites revert to pioneer species.

Fire-free intervals are reported from 50 to greater than 200 years.

4.6 Fire Group 0: Miscellaneous Heterogeneous Collection of Special Habitats

Fire Group Zero is considered for sites in western Montana that exist as scree, forest rock, wet meadow, mountain grassland, aspen grove, or alder glade. This fire group is used for areas that do not fit into one of the other categories of Fire Groups or for areas that there is no data available for.

The higher elevation areas of Fire Group Zero within Mineral County are primarily alpine meadows. The lower elevation portion is largely private lands in which there is no current data available for and can be assumed that these areas are similar to the areas that surround them.

4.7 Distribution of Fire Groups

The Lolo National Forest, which accounts for 83% of the land area in Mineral County, has surveyed, identified and mapped the fire groups within its boundaries (See Map II, Appendix A). Approximate percentages of land in each fire group are:

Fire group 4	16%	123,000 acres
Fire group 6	23%	181,000 acres
Fire group 8	12%	91,000 acres
Fire group 9	13%	104,000 acres
Fire group 11	15%	116,000 acres
All other fire groups	4%	32,000 acres

The remaining 17% of land, about 133,000 acres, held by state and private interests, has not been assessed for fire groups. The map indicates that a great majority of this land is within the lower elevations and valley bottoms, where fire groups 4 and 6 are predominate.

The map shows that fire groups 8, 9 and 11 primarily occur along the State Line area and in the drainages that originate there, and on the CC Divide and the Ninemile Divide. Due to the after effects of the 1910 fire and earlier fires in the 1890's, these areas tend to be dominated by stands of lodgepole pine.

Fire groups 4 and 6 dominate the lower elevations along the major rivers and creeks, especially in the drier east side of the county. These areas are generally characterized by stands of ponderosa pine and Douglas-fir.

5.0 FIRE HISTORY

Written records documenting fire history in Mineral County begin in the latter half of the 19th century, with the influx of miners and other settlers into the country. J.B. Leiberg, describing his reconnaissance of western Montana and northern Idaho for the U.S. Geological Survey at the turn of the century, records that "immense fires have ravaged the district both in past and recent times.....one meets with burnt areas everywhere – in the old growth, in the second growth, in the young growth.....the burnt tracts are in large blocks, thousands of acres in extent, and in small patches of 15 to 50 acres which extend in all directions throughout the forest." Fire history studies indicate that this was the norm for thousands of years. Fire burned freely throughout the area according to different fire regimes – vegetation, slope, aspect, elevation and weather all played a role in how frequently and how severely a patch of forest burned. Large, stand replacement fires were not uncommon.

In 1910, the historic “year of the Great Fires”, over a hundred thousand acres burned within the county, which was at that time still a part of Missoula County. Large tracts of Fish Creek, Trout Creek, Cedar Creek and the canyon west of St. Regis were burned, as was the entire west end of the county, including the towns of Taft, Saltese, Haugan and DeBorgia. In 1919 another large fire burned tens of thousands of acres around St. Regis, though the town was spared.

In response to these catastrophic events government agencies initiated a policy of strict fire suppression that remains in place today. For decades this policy has been successful, protecting people and property by eliminating destructive fires. But the lack of fire has also led to a buildup of fuel in the forest, and has over time created conditions that have apparently led to a new era of large fires. In the last 20 years the northern Rockies have experienced a series of particularly bad fire seasons, in 1985, 1988, 1994, 1996, 2000 and 2003. In Mineral County, in 2000 and again in 2003, dry weather and heavy fuel loadings combined to produce large fires in Flat Creek, Trout Creek, First Creek and Fish Creek.

Fire occurrence can vary dramatically from year to year. The county can experience anywhere from 20 to well over 200 fires in a year (with an average of 60-80), depending on the length and severity of the fire season. Temperature, precipitation, wind, fuel conditions, lightning, human carelessness, arson, snow pack, relative humidity and long-term drought are all important variables in determining the severity of each fire season. Significant rainfall – a “season ending event” - can occur anytime from late August to early November, but normally occurs some time in September.

6.0 CURRENT CONDITIONS

It is well established that fire suppression over the past century has led to a dramatic increase of fuel, both live and dead, in the forests of the west. As a result, firefighters are encountering numerous, more intense fires that are becoming more and more difficult, if not impossible, to control.

In fire groups 4 and 6, where ponderosa pine and Douglas-fir are predominate, fire exclusion has led to an unnatural buildup of both deadfall and Douglas-fir regeneration. These areas have missed several natural fire cycles. The frequent understory burns that in the past have kept the forest floor clean of debris and ladder fuels have been eliminated, and many stands are now susceptible to stand replacement fires as a result. Most of the wildland-urban interface in Mineral County occurs within these fire groups. This increasing threat of crown fire in the wildland urban interface brings with it an increased likelihood of loss of life and property.

Land management practices, where implemented, have both helped and hindered the situation. Where slash buildup is disposed of after logging, fuel breaks are created where fires may slow and give firefighters a chance to stop them. Where logging has occurred and the slash remains on site, the increased dead fuel load can significantly boost fire intensities and make a fire even more difficult to control. Examples of both situations can be found scattered throughout the county. Prescribed fire has been used to underburn some stands and reduce the hazard, and fuel reduction program projects have been undertaken, but these programs so far have been able to treat only a small percentage of the stands at risk.

In the portions of fire groups 8, 9 and 11 where lodgepole pine is predominate, the fire cycle that began with the 1910 fire and the other large fires around the turn of the century is concluding. Large expanses of dead trees are obvious throughout the county, the result of an ongoing mountain pine beetle epidemic. A Forest Service aerial survey in 2003 estimated that 47,000 acres of lodgepole pine forest were infested on the Superior Ranger District alone, and that the epidemic was continuing to expand. On these sites dead fuel loadings are increasing exponentially, and the probability of large, stand replacement fire is high. While these areas are generally removed from private land, the communities of Saltese, Haugan and DeBorgia are bordered by lodgepole pine forest. Even where the lodgepole mortality is a distance from communities, there is a significant concern that large fires that start and grow in the high hazard areas will become overwhelmingly large and then move into town during a wind event, incurring catastrophic results.



Figure 6-1 Lodgepole pine mortality in Thompson Creek, Fire Group 6

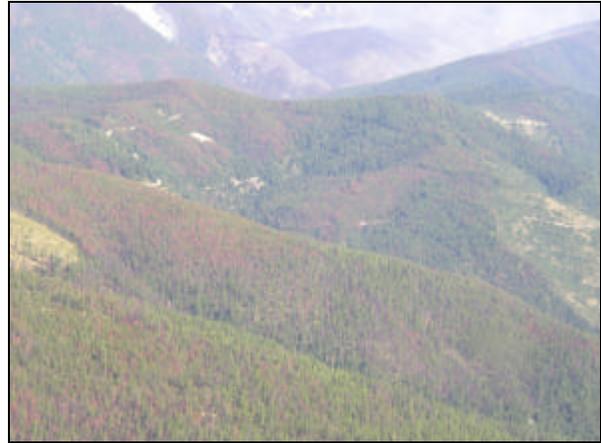


Figure 6-2 Lodgepole pine mortality on CC Divide, Fire Group 9



Figure 6-3 Lodgepole pine mortality in Rock Creek, Fire Group 8



Figure 6-4 Douglas-fir ladder fuels in Wolf Creek, Fire Group 4

7.0 FIRE BEHAVIOR

The general weather pattern during fire season in western Montana flows from southwest to northeast. Large fires tend to burn in that direction over a period of weeks and months, but daily variations occur that make fire spread unpredictable.

Fire behavior is dependent on fuel, weather and topography. On relatively calm days a fire will follow slope and fuels, burning generally uphill and up canyon, burning hot and fast where the slope is steepest and the fuels are most dry – a fuel driven or plume dominated fire. A recent, fairly typical example of such an event occurred during the Fish Creek fire in 2003, when about 8,000 acres burned in one afternoon, in a high-intensity stand replacement fire. A similar example, see Figure 7.1, is the Cherry Creek fire on the CC Divide, which burned about 3,000 acres in one afternoon.



Figure 7-1 Cherry Creek Fire, 2003. Stand replacement fire in mountain pine beetle killed lodgepole.

On windy days a fire will generally follow the wind direction. While Mineral County has not experienced a major wind-driven fire event for some time, there are recent examples of what can happen, in similar fuel types. One such example is the Canyon Creek fire, which occurred east of Missoula in 1988. It burned over 180,000 acres during a 24-hour firestorm, pushed by a cold front passage.

Recent fire history records indicate that a severe fire season, capable of supporting large, stand replacement fires, can be expected to occur every 2-6 years. Most recently severe conditions occurred in 2000 and 2003. During less severe seasons most fires will be caught quickly by initial attack forces and those that escape initial attack will be caught within a few days. But on hot, dry days during severe seasons initial attack is less likely to succeed and those fires that escape quickly grow out of control. It is

under these conditions that life and property are at greatest risk, and that large catastrophic fires such as those described above will occur. Stand replacement fire has been normal for this area, and will continue to be common in the future. As fuel conditions in the forest continue to deteriorate, larger and more destructive fires will inevitably occur.

8.0 ISSUES OF CONCERN

8.1 Wildland Fire Response

Wildland fire response in Mineral County is divided into two categories; forested zone and non-forested zone.

The **Non-forested Zone** includes approximately 660 acres in the Tarkio area and fire response in this area is the responsibility of the Mineral County Commissioners because it lies outside of any organized fire jurisdiction. Additionally, the incorporated cities of Superior and Alberton have some non-forested areas. Fire response to the Tarkio area may be provided under the Montana State County Co-op Plan if requested by the County Commissioners through the Mineral County Fire Warden. The Fire Warden may request response from County fire agencies for fires within this non-forested zone.

The **Forested Zone** includes the remainder of Mineral County not identified as non-forested zone. Wildfire response in the forested zone is the direct protection responsibility of the USFS Lolo National Forest, Superior and Nine Mile Ranger Districts. Their direct protection includes all of the forested zone areas in Mineral County including the forested areas within the boundaries of the four fire districts. Wildfire responses includes response from the four fire districts in Mineral County; Superior Rural Fire District, St. Regis Rural Fire District, West End Rural Fire District and the Frenchtown Rural Fire District also respond to wildland fires within their legal boundaries and outside their boundaries as part of automatic or mutual aid with the USFS.

8.2 Structure Protection

Structure fire protection is the act of protecting structures from the threat of wildfire and does not include suppression of a structure already on fire. This protection may be conducted by either a wildland agency or fire district and is part of coordinated wildland suppression. Structure fire suppression is not the responsibility of the USFS; they are neither trained nor equipped for such a response. However, the USFS will participate as partners in structure protection efforts prior to and during a wildland fire.

8.3 Community Preparedness/Evacuation

Emergency evacuation procedures are the responsibility of the Mineral County Sheriff's Office. The Incident Commander, in coordination with, and with the approval of the agencies having jurisdiction, will recommend evacuation during a wildfire. Evacuation centers and routes will be identified by the Mineral County Sheriff's Office depending on the location of fire and number of individual property owners affected.

8.4 Reducing Structure Ignitability

This CWPP identifies methods and options of removing and reducing vegetation to lower the risk from wildfire. The other component to reducing that risk is preventing the ignition of structures by use of improved fire resistant construction materials, Firewise landscaping, and homeowners assuming responsibility for protection of their own property.

Building Codes and Subdivision Regulations should require structures that are built within the wildland urban interface (WUI) to utilize non-combustible roofing materials, a water supply, placement of underground utilities and access road standards. Regulations for subdivisions within Mineral County are in the process of being developed. Homeowners assuming responsibility for fuels mitigation around the home and landscaping that limits the chance fire can move from the forest and ignite a home are also parts of reducing structural ignitability. For information and tips on how to make homes less susceptible to wildfire through different types of construction and landscape design, go to www.firewise.org.

8.5 Watersheds

The municipal water supplies that provide for the communities of Alberton and Superior are an important issue to address when setting priorities for fuel reduction projects. Reducing the fuels in and around these watersheds, which fall within the defined WUI boundary, will decrease the potential risks, such as erosion and increased sediment loading, brought about by a wildland fire.

9.0 DEFINING THE WILDLAND URBAN INTERFACE

For the purposes of this plan and the assessment that accompanied it, the wildland urban interface (WUI) was defined as one mile and a half from structures within Mineral County (See Map III, Appendix A). This mile and a half buffer is the minimum mandated under the HFRA because of the topographical and geographical features within Mineral County.

The community involvement and collaboration process yielded agreement that the mile and a half buffer from structures was the initial objective and also an understanding that in some instances it would be more logical to use natural boundaries, such as ridges, where appropriate. The intention of this CWPP is to set forth priorities in order to protect communities at risk from wildfire. Setting the WUI at one mile and a half and targeting fuels reduction within this area will provide for the best protection of public safety and community infrastructure.

Expanding the buffer and working in other areas outside the one mile and a half area are also encouraged to aid in the long term protection from catastrophic wildfire and to improve forest health.

10.0 ASSESSMENT OF HAZARDS AND RISKS

The hazard and risk assessment for the Mineral County CWPP was conducted with the use of a Geographic Information System (GIS). Through the consultation within the working group the county

was divided into nine separate communities based on the clusters of structures and continuity of geographic features. The communities were then clipped at the north-south boundary of the WUI (See Map IV, Appendix A). Once the communities were defined, the working group decided on the critical hazards that influence the risk of wildfire to life and property.

The critical hazards included the following: insect and disease mortality, slope, fuels, structure density, and protection and response capabilities. Table 10.1 represents the wildfire risk rating for each of the nine communities and the methods and data used to arrive at the individual ratings for each category are subsequently identified. Table 10.2 represents the identified “other community values” within each of the communities and assesses the distribution and density of each of the values. The other community values addressed were designated historical sites, designated recreational sites, taxable valuation, and municipal water supplies. The methods and data used to rate each of the values are later described. Table 10.3 illustrates the combined totals from each of these assessments to address the overall risk rating for each of the nine communities.

Table 10-1 Wildfire Risk Rating

Community	I&D Mortality	Fuels	Slope	Structure Density	Protection/Response	Totals
Haugan/DeBorgia	8	3	1	6	6	24
Cabin City	7	3	1	5	7	23
Superior	6	3	2	9	3	23
Sevenmile	9	3	1	2	5	20
Riverbend to Fish Creek Exit	4	3	3	4	4	18
Saltese	3	3	1	3	8	18
St. Regis	5	3	1	7	2	18
Fish Ck/Hole in the Wall	1	3	3	1	9	17
Fish Creek Exit to Alberton	2	3	2	8	1	16

10.1 Insect and Disease Mortality

The analysis for the percent of insect and disease mortality within each of the communities was done with data aerially collected by the Lolo National Forest. Flights have been completed annually since 1980. The compilation of these data provided a clear and concise way to measure the number of acres killed between 1980 and 2004, subsequently adding to the fuel loading.

The nine communities were individually assessed for the percentage of insect and disease mortality by totaling the number of acres killed between 1980 and 2004 and dividing that number by the total number of acres within that community. Each community was then ranked on a scale of one to nine, nine having the highest percent of insect and disease mortality.

10.2 Slope

The slope analysis was completed using digital elevation models from the Montana Natural Resource Information System. Using capabilities within the GIS these models were converted to convey the slope distribution throughout Mineral County. The next step involved classifying the slope classes. Slope Class 1, characterized as low, includes all slopes between 0 and 35%. Slope Class 2, characterized as moderate, includes all slopes between 35 and 65%. Slope Class 3, characterized as high, includes all slopes greater than 65%. The amount of each community falling into each of the slope classes allowed for the delineation between communities for the overall ranking. Communities were ranked on a scale of one to three, three being the highest, depending on the amount of the community that fell within Slope Class 1. A rating of one is classified as having between 56 and 70%, a two rating being between 41 and 55%, and a three rating for having less than 40%.

10.3 Fuels

There was an attempt to differentiate the fuels within the borders of Mineral County into low, moderate and high categories. All fuels were rated as high and not set apart any further. Different treatment options were displayed for each type of stand as most are in need of fuels reduction. It is important to note that all fuel types present within Mineral County will burn at high severity under average summer conditions due to the increased fuels, extended drought and amount of insect and disease mortality.

10.4 Structure Density

During the fire season of 2000 the Superior Ranger District initiated a project to acquire the GPS locations of structures outside of the limits of incorporated areas within Mineral County, excluding the very east end of the county. The east end GPS points were acquired by the Frenchtown Rural Fire District during and after the 2003 fire season. These GPS points were used as well as an estimated number of residences within the towns of Alberton and Superior to calculate the number of structures per square mile. Each of the nine designated communities were analyzed and ranked on a scale of one to nine, nine being the highest.

10.5 Protection and Response Capabilities

The protection and response capabilities were evaluated through the collaboration of the Mineral County fire agencies. There are four factors that primarily affect the delivery of fire response: available resources, firefighters and fire engines; time, from fire start to notification of the fire agency; and distance, from the fire stations to the fire. All of these factors were considered in determining the overall score for various areas of this CWPP. An area with good resource availability, such as Upper Fish Creek, might score very low on response capability because of the long travel distance or increased notification time because of the remoteness of the area. In contrast an area with limited resources, such as St. Regis, might score high in a populated area where early notification would be more likely and a short travel time from the fire station to the fire exists.

10.6 Designated Historical Sites

The National Register of Historic Places was used to identify the designated historic places within Mineral County. Once the locations were identified their exact position was recorded using a GPS device and subsequently downloaded into the GIS. The assessment for the historical sites was done by counting the number of historical sites within each of the nine communities. Those communities with or without historical sites were ranked accordingly.

10.7 Designated Recreational Sites

A number of different kinds of recreational sites were documented in the GIS using data acquired from the Lolo National Forest. Boat launches, campgrounds, fishing accesses, interpretive sites, lookouts, picnic areas, points of interest, trailheads and a category of others were mapped within Mineral County. An assessment was done on the number of designated recreational sites within the nine communities and scored from highest to lowest.

Table 10-2 Other Community Values Risk Rating

Community	Designated Historical Sites	Designated Recreational Sites	Taxable Valuation	Municipal Water Supply	Totals
Superior	1	9	9	1	20
St. Regis	0	7	8	0	15
Riverbend to Fish Creek Exit	0	8	7	0	15
Fish Creek Exit to Alberton	2	6	6	1	15
Fish Ck Drainage Hole in the Wall	0	7	5	0	12
Haugan/DeBorgia	1	5	4	0	10
Saltese	0	3	3	0	6
Cabin City	0	4	1	0	5
Sevenmile	0	2	2	0	4

10.8 Taxable Valuation

The taxable valuation was calculated for all parcels, federal and private, within the nine designated communities of Mineral County. The CAMA data used was made available through the Montana Department of Administration and the Montana Department of Revenue. The total land value was used for analysis and includes the value of the land and any improvements on that land. Each of the nine communities were assessed separately by their total taxable value and then ranked accordingly from highest to lowest.

10.9 Municipal Water Supplies

Superior and Alberton are the only two out of the nine designated communities in Mineral County that rely on a municipal water supply. The ranking in this situation was done by assigning a “1” for yes; there is a municipal water supply and a “0” for no; there is not a municipal water supply.

Table 10-3 Combined Risk Ratings

Community	Wildfire Risk	Other Values at Risk	Total
Superior	23	20	43
Haugan/DeBorgia	24	10	34
Riverbend to Fish Creek Exit	18	15	33
St. Regis	18	15	33
Fish Creek Exit to Alberton	16	15	31
Fish Ck Drainage Hole in the Wall	17	12	29
Cabin City	23	5	28
Sevenmile	20	4	24
Saltese	18	6	24

11.0 HAZARD REDUCTION AREAS AND TREATMENT OPTIONS

11.1 High Priority Areas for Fuels Reduction

The following priority areas were identified by the communities during the public meetings. Each area is a description of a large area in which no specific project boundaries have been delineated. For a geographical reference as to the location of these areas see Map V in Appendix A.

- ? North facing slopes across the river from the Trestle Creek Golf Course (St. Regis)
- ? Tin Can Alley (St. Regis)
- ? North facing slopes on Superior
- ? Slopes above Johnson Lane (Superior)
- ? Slopes above Spirit Walk Lane (Superior)
- ? Drainage area above Alberton water supply
- ? Slopes above the town of Alberton
- ? East and West Twin Creek drainages (DeBorgia)
- ? Savenac Creek drainage(Haugan)
- ? Packer Creek drainage (Saltese)

11.2 Preferred and Non-preferred Treatments

An overall consensus on treatment methods was reached during the community meetings process. The issue of cost was the most important factor in choosing the best treatment for an area. There was also an expressed desire to boost the local economy, when and where possible, by utilizing local timber companies and mills. The preservation of the viewshed/aesthetics was also a chief concern in the consideration of the different treatment options available.

- ? Thinning, leaving large timber in a fire resistant pattern
- ? Chipping
- ? Intermingled methods to ease visual aspect of some treatments
- ? Temporary roads okay, if they are left can be used for fire fighting purposes
- ? Helicopter treatments may be feasible on north facing slopes on Superior
- ? If slash piles are a chosen method, removal in a timely manner is preferred. No piles left on site.
- ? If and when burning is utilized, it should be done at times smoke is least likely to settle in valleys

11.3 Treatment Options

The following are treatment methods for hazardous fuels reduction and the descriptions for federally managed lands within the wildland urban interface.

- ? Slashing and Underburning: Trees less than six inches in diameter are felled with mechanized equipment, left on site to cure and the area is underburned. Access with existing roads is usually required.
- ? Slashing and Pile Burning: Trees less than six inches in diameter are felled with mechanized equipment, piled on site by hand or with equipment and then the piles are burned. Access with existing roads is usually required.
- ? Commercial Harvest and Underburning: Trees of merchantable diameter would be harvested and whole tree yarded with ground based equipment or skyline systems and remaining activity fuels could be underburned. Access with existing roads is required, short temporary roads allowed.
- ? Commercial Harvest and Chipping: Trees of merchantable diameter would be harvested and yarded with ground based equipment or skyline systems, utilization specifications would have unmerchantable material yarded to landing and chipped. Access with existing roads is required, short temporary roads allowed.
- ? Commercial Harvest and Pile Burning: Trees of merchantable diameter would be harvested and yarded with ground based equipment or skyline systems and remaining activity fuels would be piled by hand or with mechanized equipment and burned. Access with existing roads is required, short temporary roads allowed.

- ? Commercial Harvest and No Fuels Treatment: Trees of merchantable diameter would be harvested and whole tree yarded with ground based equipment or skyline systems and remaining activity fuels would be left on site to decompose. Access with existing roads is required, short temporary roads allowed.
- ? Thinning: Area would be (pre-commercially or commercially) thinned to spacing and species specifications to improve conditions for growth of remaining trees. Thinned trees would remain on the site to decompose. Access with existing roads is required. Access by hiking reasonable distances is adequate.
- ? Thinning with Underburning: Area would be thinned to spacing and species specification to improve conditions for the growth of remaining trees. Thinned trees would be left on site to drop needles then the stand would be underburned. The right tree species is required for underburning. Access with existing roads and access by hiking reasonable distances is adequate.
- ? Prescribed Fire: Area would be treated with hand ignition or an aerial ignition method to reduce stand density, reduce ground fuels and reduce ladder fuels. Access can be limited.
- ? Commercial Harvest with Helicopter Yarding and Underburning: Trees of merchantable diameter would be harvested and yarded with helicopters and remaining activity fuels would be underburned by hand or aerial ignition. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas.
- ? Commercial Harvest with Helicopter Yarding and Utilizations Specifications for Chipping at Landings: Trees of merchantable diameter would be harvested and whole tree yarded with helicopters, included in the yarding would be smaller diameter trees for chipping at the landing site. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas. These landings would need to be large to accommodate chipping operations. The market for chips would drive the feasibility of this option.
- ? Commercial Harvest with Helicopter Yarding and No Fuels Treatment: Trees of merchantable diameter would be harvested and whole tree yarded with helicopters. The activity fuels generated would be left on site to decompose. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas.

**APPENDIX A:
PROJECT MAPS**