**ENVIRONMENTAL ASSESSMENT** **EA# MT-100-2002-03**

# GHOST TOWN FUEL HAZARD REDUCTION

***Forest Thinning and Fuel Reduction at Garnet and Coloma Ghost Towns***

**BUREAU OF LAND MANAGEMENT, MISSOULA FIELD OFFICE**

## PURPOSE AND NEED FOR ACTION

Over 80 years of wildfire suppression has resulted in accumulations of forest fuels that pose a hazard for high wildfire intensity, and a risk to the historic Garnet and Coloma ghost towns. These sites have numerous structures composed entirely of 100-year-old dry and rotting wood which exacerbates the fire risk. The objectives for the proposed action are to:

- Reduce fuels in the forests around the ghost towns so that a wildfire would burn at lower intensity and would not generate the energy to loft firebrands onto historic structures.
- Reduce fuel loading and forest stand densities to the point that the residual stand would not support a crown fire.
- Reduce the potential wildfire intensity such that fire crews could safely combat a wildfire.
- Reduce fuels within 40 meters of flammable structures so that radiant heat from a wildfire would not ignite the structure.
- Create a defensible space around historic structures to provide for safety of firefighters.
- Retain the visual and recreational values of the ghost towns.
- Complete proposed treatments while protecting cultural resources, structures, and artifacts from damage or loss.

### Conformance with Resource Management Plan

In accordance with 43 CFR 1610.5, the Proposed Action is subject to, and conforms with, the Record of Decision for the Garnet Resource Area Resource Management Plan (RMP) and EIS (1986) as amended. Proposed activities would take place on lands designated in the RMP as Management Area 3 (General Forest Management), MA10 (Developed and Undeveloped Recreation Sites), and MA11 (Historical and Cultural Sites). After the RMP was developed, the BLM has since acquired additional lands in the project area. These lands are subject to the same goals and objectives defined in the RMP for the appropriate Management Area designation.

### Relationship to Statutes, Regulations, Policies, Plans, or other Environmental Assessments

**Garnet Ghost Town Management Plan** (BLM,1998)**:** This plan provided a fuel management strategy targeting fuel reduction, wildfire hazard, and the risk to Garnet. The proposed action would implement two recommendations made in the Plan: (1) implement a fuel reduction management plan and (2) construct additional interpretive trails for public recreation. Since the development of the plan, the BLM has acquired a portion of Coloma ghost town. The same goals and objectives for reducing fire hazard and risk are relevant to Coloma, and thus Coloma would be subject to the same fuel management strategy as Garnet.

**National Historic Preservation Act:** Section 106 processes would be followed pursuant to a Programmatic Agreement between the USDA Forest Service, the Bureau of Land Management, the Montana Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding the Management of Historic Placer and Lode Mining Properties in Montana, and the Programmatic Agreement between the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers regarding the manner in which BLM will meet its responsibilities under the Act.

**GPA/BLM Assistance Agreement** (BLM, 2000-1): The Garnet Preservation Association owns nine acres of land within the proposed project area. Under a 2000 assistance agreement, the BLM is responsible for the management of these lands.

**Canada Lynx Conservation Assessment and Strategy (1998):** Prior to a decision, the BLM would consult with the U.S. Fish and Wildlife Service on the Proposed Action and potential effects to the Canada Lynx. The strategy

provides guidance for retaining future options, providing management consistency, and offering the necessary flexibility to ultimately accomplish lynx conservation objectives.

**Grizzly Bear Recovery Plan (1993):** The overall goal is to remove the grizzly bear from threatened status in each of the occupied or reintroduced ecosystems in the 48 conterminous States. The Northern Continental Divide Ecosystem Recovery Zone is 20 miles north of the project area.

### Public Involvement & Relevant Concerns or Comments

The proposed action was included in the Missoula Field Office Quarterly Project List in April 2000. A scoping letter was sent to 70 individuals and organizations on December 5, 2001. A public meeting was held at the Missoula Field Office on December 19, 2001. Several comments and concerns were generated during scoping:

- A concern that tree densities could be reduced to a level where off-trail snowmobile travel becomes more prevalent and conflicts with other winter recreational users.
- A concern that winter logging may impact winter recreation such that alternate snowmobile and ski routes may be needed.
- A request the BLM use "best available science" for evaluating options for protecting historical and cultural resources; such as Jack Cohen's USDA fire research.
- A request that the BLM consider an alternative that does not involve "commercial logging", and a concern that logging activities may harm water quality, soils, and habitat.
- A request that timber contracts be sold as smaller packages to facilitate horse-logging.

In response to the concerns generated during scoping, the BLM incorporated the following into this assessment:

- The project area offers many recreational opportunities and values and thus recreational impacts are evaluated.
- Recent USDA fire research conducted by Cohen (2000) and Cohen and Butler (1998) was considered in the development of the proposed action and evaluation of potential impacts.
- Merchantable trees recovered from the thinning operations would likely be sold. Thinning, forwarding, and processing operations may be carried out via a small commercial timber sale contract, a service contract, or a combination of both depending which would best meet the objectives.
- Any potential impacts of the thinning operations on water, soils, or habitat are analyzed.
- The BLM seeks to avoid and/or minimize impacts to the cultural resources in the project area. The BLM would consider low-impact techniques for conducting the thinning operations, including horse-logging options.

## PROPOSED ACTION AND ALTERNATIVES

### Proposed Action

The Bureau of Land Management (BLM) Missoula Field Office proposes to reduce wildfire hazard and associated risks to two historic ghost town sites - Garnet and Coloma. The proposed project area is located in Sections 28, 29, 32, 33 & 35, T.13N., R.14W. (Missoula County); and Sections 2 & 3, T.12N., R.14W. (Granite County). The proposed treatments would be implemented in stages over three to ten years (see "Project Area Map", page 20).

The BLM proposes to reduce fuels around the ghost towns by cutting and removing a portion of the live vegetation, and reducing down/dead woody fuels within a 330-acre treatment area, including about 9 acres of private lands owned by the Garnet Preservation Association (GPA). These actions would reduce two key wildfire risks to the ghost town structures; (1) combustion from radiant heat exposure, and (2) firebrands dropping onto the structures. Fire research has determined that these are the principal ignition factors associated with structures in a wildland-urban interface (NRCG, 2001).

Special techniques would be used to ensure protection of visual corridors, recreation areas, and cultural sites. Chipped slash material (limbs, tops) would be sold as pulp or hog fuel, used on recreational trails, or hauled to a disposal site as waste. In some areas slash and chips may be left on site provided there is no increased fire risk to the ghost towns. In these areas, the slash material would be lopped, scattered and reduced to within 12" of the

ground to hasten decomposition and provide for nutrient cycling and soil productivity. Some concentrations of slash may need to be burned. Any slash burning would occur in the fall, under prescribed conditions, and take place a safe distance from any cultural features.

Any fuels immediately adjacent to historic structures would be evaluated for potential risk to the structure prior to removal. These are commonly individual trees or small clumps of trees growing against the structures or whose branches touch or overhang the structures. In these instances, mechanized equipment may be used to better control the fall of a severed tree to avoid structure damage. If the risk of mechanical damage is unacceptable, the fuel would be left and modified by other means such as pruning.

Special adaptive techniques would be used as needed for cultural resource protection. An example is placing logs in old ditches to protect them from damage from equipment.

The thinning operation would be designed to utilize and enhance the effectiveness of any fuel breaks provided by existing roads and the condition of the adjacent forest community in proximity to the project area.

Public safety measures would include extensive hazard signing and treatment implementation during periods of low use when visitation is substantially reduced. In addition, guided tours of the treatment area may be used to give the public the opportunity to satisfy their curiosity without being exposed to hazardous conditions.

Throughout the project area, there are scattered dense groups of young trees in the understory which could provide a fuel "ladder" for a ground fire to spread into overstory tree crowns. These regeneration pockets, particularly those composed of subalpine fir, also provide foraging habitat for the threatened Canada lynx. To preserve foraging habitat while also reducing the fuel ladder/crown fire hazard, the overstory trees within 1 to 2 tree lengths around the perimeter of these pockets would be cut and removed to move the overstory canopy beyond the reach of flames in the event these dense fir patches burn.

The BLM proposes to construct 2 miles of new road . However, no new roads would be constructed to facilitate fuel reduction on the initial 20 acre test area of the 330 acres proposed for treatment in the EA. These would be low-standard roads constructed to the minimum width necessary to accommodate cutting, skidding, and processing equipment. Upon completion of the fuel reduction, these roads would be converted to interpretive trails and closed to vehicles. To facilitate access, 0.74 miles of existing road from Kearne Creek would be reconditioned for temporary use and closed with a gate after project completion. The BLM also proposes to rehabilitate approximately 0.4 miles of existing road that is not needed for future management. This road segment accesses the Blue Moon mining claims which are accessed by another road a short distance downslope. The BLM would seek road use easements on approximately ½ mile of existing roads to access the Coloma portion of the project area. Additional easements around Garnet may be sought as needed. Log/chip hauling and equipment access would occur on either the Garnet Range Road or the Cave Gulch/Bear Creek road depending on contractor preference and potential conflicts with recreational users.

The estimated volume of salable timber is 1 to 2 million board feet. The actual volume will depend on the number and size of trees removed to achieve fuel reduction and other stated project objectives.

After completion of the proposed action, it would be necessary to periodically remove accumulating fuels to maintain down, dead woody fuel loads at 5 tons per acre or less, and ladder fuels to a minimum. These maintenance treatments would be on a much smaller scale, and would generally not occur over the entire project area at one time.

**Scope of the Proposed Action and Analysis:**
The proposed action would occur within a 330-acre project area (see "Project Area Map", page 20). Hauling of chips and/or logs would be the only associated activity occurring outside the project area. The analysis of environmental effects is limited to the project area for most resource concerns. Where necessary however, a larger area of analysis is considered for the cumulative effects on some resources (Lynx Analysis Units, water quality, Coloma allotment grazing, and recreation use).

**Design Features of the Proposed Action:**

- Implement the project by first treating a 20-acre test area (see "Project Area Map", page 20) to test the effectiveness of the special techniques designed to avoid damage to cultural resources.
- The remaining treatments would be implemented in stages over the next three to ten years.
- Down and dead woody fuels would be removed to a target fuel load of 5 tons or less per acre. Decomposing coarse woody debris is not considered fuel and would be retained for nutrient cycling and soil productivity.
- To reduce radiant heat exposure to the highly ignitable structures, surrounding trees would be thinned according to the following guidelines developed by USDA fire researchers (NRCG, 2001).

| Distance from structure | Crown Spacing (minimum) |
|---|---|
| Less than 20 meters | 26 feet |
| 20 - 30 meters | 13 feet |
| 30 - 40 meters | 10 feet |

- Outside the 40-meter zone, overstory trees would be removed to open tree crowns and reduce crown fire potential, fire intensity, and firebrand production. Groups of trees which require treatment to reduce crown closure, but which are not wind firm, may be removed since leaving a portion of these trees could result in increased fuel loads.
- The proposed interpretive trails would be laid out prior to fuel treatment, and a skid trail would follow this layout to help ensure no unnecessary trails are constructed.
- To minimize disturbance to historic ditches from the project, trees would be placed in ditches where mechanical equipment crosses them to lessen damage to their banks.
- Care would be taken to prevent or minimize disturbance at sites. Prior to the project implementation a cultural resource staff member would go out in the field with the tree marking crew and assist with tree marking near sites.
- The BLM Missoula Field Office Archaeologist would be present or would randomly spot check when the fuel reduction work occurs near cultural sites.
- Access to the Blue Moon claims would be retained while reclaiming a redundant access road.

**Minimizing Measures of the Proposed Action:**

- Weed establishment and proliferation would be closely monitored and infestations controlled using integrated weed management strategies. Equipment and vehicles would be washed to avoid introducing weed seed.
- Off-road equipment use would be limited to conditions which minimize soil compaction.
- In instances where removing trees within the 40-meter zone might compromise visual objectives, the trees would instead be pruned of their lower branches to remove ladder-fuels. Trees immediately adjacent to structures would be removed, where feasible, to reduce needle accumulation on the shake roofs.
- Natural stands of trees would remain along roads to enhance visual objectives.
- Temporary closures, signage, temporarily rerouted trails, or other measures would be used as needed to help ensure visitor safety.
- To help achieve visual objectives, no skid trails or landings would be visible from Garnet Ghost Town or the overlook.
- To help reduce recreational traffic conflicts, hauling on the Garnet Range Road and Cave Gulch Road would be restricted. No hauling would occur on weekends. Hauling routes would be signed and commercial traffic may be routed to the China Grade Road and away from the Cave Gulch Road.
- All forest practices are subject to Montana Best Management Practices as minimum protective measures for activities near streams and wetlands. Site-specific BMPs would be designed and employed as needed if additional or special protection is needed.
- Mining claim corner markers would be identified and protected from damage.
- To reduce potential human/grizzly bear conflicts, standard contract specifications would include requirements that contractor camping occur in areas agreed upon by the BLM and contractors would be prohibited from carrying firearms in the project area. Food storage and sanitation guidelines would be written into all contracts to reduce potential human/grizzly bear conflicts.
- Snags and replacement snags would be retained at 5 to 10 per acre and greater than 10 inches diameter to provide nesting habitat for cavity dependent birds.

- Surveys would be conducted for sensitive species inhabiting the project area to help mitigate potential adverse impacts to habitat.
- Sensitive species' bird nests would be protected from adverse impacts related to project activities.

### No Action Alternative (continuation of current management)

No cutting/removal/chipping of live vegetation down/dead fuel treatments would occur around Garnet or Coloma as proposed. Seasonal grass mowing, brush trimming, and occasional removal of a hazard tree along visitor trails would continue around Garnet. In the event of wildfire, the protection of these historic sites would depend on direct fire suppression techniques (fire-line fuelbreaks, retardant/water drops, etc.) and structure protection techniques (foaming, sprinkler systems, building wraps). The success of these measures would be subject to fire intensity and spread, as well as firefighter availability, dispatch priority, and safety considerations.

## Alternatives Considered but not Analyzed

**Treatment of fuels within 40m of structures with no treatments outside the 40m zone:** This alternative would reduce risks from radiant heat combustion of the structures during a wildfire, but it would not reduce the risk from firebrand ignition. Both radiant heat combustion and firebrand ignition were identified as two important risks to structures in USDA fire research (NRCG, 2001). Foregoing a major portion of the risk reduction would not meet the purpose and need for action, and the post-treatment fire risk to ghost town structures would remain unacceptable. This alternative was therefore not analyzed.

**Implement treatments with no "commercial logging":** The Proposed Action could be implemented as either a service contract, stewardship contract or a timber sale, although the low volume of merchantable timber may not be attractive as a "commercial" timber sale. In terms of environmental effects, there would be no difference between a service contract operation and a "commercial logging" operation because either would be required to meet the same project objectives and contractual stipulations which would require removal of some large diameter trees, both down and standing, from the site. No distinction was evident between this alternative and the proposed action and was therefore not analyzed.

### Issues for Analysis

Concerns generated from public input, as well as from BLM internal procedures, were evaluated to determine relevant issues for impact analysis, mitigations, and alternative development. In addition, BLM procedures require analysis of the following *Critical Elements of the Human Environment* to screen for potential impacts.

| Critical Element | Review Screen | Affected? |
|---|---|---|
| Air Quality | No impacts anticipated. Ongoing dust abatement associated with normal road maintenance, and slash disposal burning conducted under cooperative smoke management procedures. | Yes |
| Areas of Critical Environmental Concern | None present | No |
| Cultural Resources | Garnet and Coloma ghost towns and numerous associated cultural sites. | Yes |
| Environmental Justice | No anticipated effects to low-income or minority communities. | No |
| Farm Lands (Prime or Unique | None present | No |
| Floodplain | None present – High mountain/small stream environment. | No |
| Native American Religious Concerns | None present | No |
| Threatened or Endangered Species | Gray wolf, grizzly bear, Canada lynx, and bald eagle may be present. | Yes |
| Wastes, Hazardous or Solid | None identified or known present. | No |
| Water Quality, Drinking or Ground | Garnet Spring developed source | Yes |
| Wetlands, Riparian Zones | First Chance Gulch, McManus Gulch, springs, wetland area | Yes |
| Weeds | There are small populations of weeds in the project area. | Yes |
| Wild and Scenic Rivers | None present | No |
| Wilderness | None present | No |

In addition to the six affected Critical Elements, the following issues are analyzed for potential impacts:

- Recreational experience - including impacts on off-trail snowmobile use and conflicts with other winter recreation uses.
- Visual Resource Management
- Watershed values (soils, hydrology, stream channels)
- Public safety and firefighter safety
- BLM Sensitive species
- Other wildlife
- Public and private access, including mining claims
- Livestock Grazing
- Vegetation/Fuels

## ENVIRONMENTAL CONSEQUENCES

### Air Quality

**Affected Environment:** The proposed project area maintains good air quality during the majority of the year. During the summer and winter, atmospheric conditions tend to be more stable with a greater frequency of valley inversions, therefore air quality can be reduced during these times of the year. Spring and fall typically have atmospheric conditions that favor smoke dispersal which minimizes the adverse effects of open burning. Burning conducted on this project would generally be in the spring or fall. Wood smoke from slash burning and wildfires is the most common reason for reduced air quality although windstorms can carry dust from fields and roads into populated areas at times. While burning can adversely affect air quality, it is usually less than 48 hours before unstable air and winds push the smoke out of the populated valleys. Additionally, due to the high elevation and remoteness of both Garnet and Coloma Ghost Towns, wood smoke impacts to populated valleys would be minimal. The State of Montana regulates open burning in this airshed.

**Proposed Action:** The possibility of slash burning discussed in the Proposed Action has the greatest potential to adversely affect air quality if not properly timed. The BLM is a member of the Montana State Airshed Group and is required to have all burn activity approved through the Airshed Coordinator. The Airshed Coordinator considers atmospheric conditions and any residual smoke from previous burning prior to approval of new burning. No significant adverse effects are expected on air quality.

*Cumulative Effects:* There are no anticipated cumulative effects to air quality as a result of other actions combining with the proposed action.

**No Action:** Wildfire is the only event likely to affect air quality under the no-action alternative. There is no reliable way to accurately predict the volume and dispersal of smoke should a wildfire occur.

### Cultural Resources

**Affected Environment:** Twenty-one cultural resource inventories have been conducted on BLM land in the project area – twelve Class III inventories, two archaeological investigations, and seven conducted at an unknown level. In addition to cultural resource inventories, 4 theses have been written on Garnet Ghost Town and 1 thesis written on Coloma Ghost Town.

Based on a limited amount of field inventory, 24 cultural resource properties (1 prehistoric lithic scatter and 23 historic sites) and 2 historic mining districts have been recorded on BLM land within the project area. The ages of the historic sites range from the 1860s to the 1960s and are all mining related. These include 7 mines/mining complexes, 5 cabins, 3 cabins with trash scatter/dumps, 3 cabins and mine features, 1 cemetery, 1 trash scatter, 1 structure with dump, 1 structure with faunal dump, and 1 townsite with over 150 features.

Five of the cultural resource properties have been formally evaluated for eligibility to the National Register of Historic Places, four of which have been determined to be eligible for the National Register of Historic Places. Both mining districts are eligible for listing in the National Register of Historic Places. Many of the cultural resource properties need to be researched, re-recorded and evaluated for eligibility to the National Register of Historic Places.

In 1989, BLM Archaeologist Jerry Clark inventoried an area around Garnet Ghost Town and recorded over 117 features, but only those related to lode mining and Garnet Ghost Town.

A Class III cultural resource inventory was started in 2002 in response to the proposed action, focusing on the areas not inventoried in 1989. 132 additional sites or features were observed, including 50 prospect or placer pits, 7 placer tailings/stacked rock, 3 mining claim corners/posts/stacked rock, 20 dams and ditches, 20 trenches, 5 can dumps, 4 tent sites, 15 log structures, and 8 mine adits/shafts.

Garnet and Coloma are surrounded by hundreds of mining features, most of which have not been formally recorded. Of those that have been recorded however, most need to be re-recorded because they lack important information required for determining eligibility for the National Register of Historic Places.

**Proposed Action:** Treatment activities such as road and trail construction, skidding/forwarding trails, and tree felling/dragging could potentially and directly affect cultural resources through destruction, modification, removal, or altering context. The initial implementation of a 20-acre test treatment would allow for a small-scale determination of effects on cultural resources, and an opportunity to refine protective techniques and mitigation prior to treatment of the entire project area. Provided protective measures are employed and the test treatment meets objectives, direct effects would be kept to a minimum.

Indirect effects may include an increase in theft or tampering of cultural resources due to greater visibility and accessibility as a result of a more open forest structure. These potential effects would also be minimal by proper signage, monitoring, and interpretative efforts that focus on visitor education and appreciation for cultural resources.

The Proposed Action would result in much less overall impact than the No Action alternative in the event of a wildfire and destruction and loss of cultural resources.

*Cumulative Effects:* There are no anticipated cumulative effects to cultural resources as a result of other actions combining with the proposed action.

**No Action:** The BLM would continue with current management defined in the Garnet Ghost Town Management Plan which includes additional interpretive activities to enhance the recreational experience of the ghost town. A management plan for Coloma would be completed and would likely include similar interpretive activities.

The BLM would forego the opportunity to enhance the recreational and cultural experience through greater accessibility and visibility of the cultural resources provided by the Proposed Action. In a wildfire scenario, cultural resources would be at much higher risk of destruction and loss. The old wooden structures are highly flammable and would be susceptible to ignition from radiant fire heat as well as firebrands falling on the structures.

## Threatened and Endangered Species

**Affected Environment:** The grizzly bear, Canada lynx, and gray wolf may be affected. The bald eagle would not be affected.

The grizzly bear is listed as a threatened species by the FWS. Grizzly bear sightings have not been reported and den sites are not known to occur in the project area. However, the Garnet Mountains are recognized as occupied grizzly bear habitat. Verified grizzly sightings have been reported and two mortalities have occurred in the Garnet Range during the past five years (Jamie Jonkel, pers. comm.). It is reasonable to expect that grizzly bears may inhabit the project area during snow-free months. Roads, sanitation, and livestock grazing are important issues related to grizzly bears.

The Canada lynx is listed as a threatened species by the FWS. The Canada lynx has been reported in the project area, in Garnet Ghost Town, and throughout the Garnet Range (BLM, 2000-2; Ruediger and others, 2000). Maternal and natal dens have not been located in the project area. A Canada lynx study is currently being conducted in the Garnet Range by the Rocky Mountain Research Station. To date, more than a dozen lynx have been captured and radio-collared; some captured in the project area. Garnet Ghost Town is not located in a Lynx Analysis Unit (LAU); Coloma is in the Elk Creek LAU (21,304 acres). Garnet Ghost Town and surrounding area (9,600 acres) will be added to the Elk Creek LAU for this analysis; which includes an additional 2000 acres of suitable habitat. The size of the LAU would increase to 30,904 acres; suitable lynx habitat would increase to 10,336 acres; unsuitable habitat would equal ten percent and den habitat would equal 22 percent.

The gray wolf is listed as a threatened species by the U. S. Fish and Wildlife Service (FWS). Gray wolf sightings have not been reported in the project area. However, the Blanchard and Potomac wolf packs inhabit the Garnet Mountains (Joe Fontaine, personal communication), where a healthy prey base of deer and elk reside. These two wolf packs are naturally occurring and are not part of the reintroduced, non-essential experimental wolf population. Den and/or rendezvous sites are not known to occur in the project area.

**Proposed Action:** Direct effects on grizzly bear would be low. Temporary displacement may occur during road work and thinning, but is considered discountable. Work crews would be prohibited from carrying firearms to reduce potential mortalities. Camp locations, food storage and sanitation guidelines would be written into any contracts to reduce human/bear conflicts. Indirect effects would not occur since the area is located outside whitebark pine habitats. Fruit-producing shrubs would benefit from opening forest canopies and allowing greater sunlight penetration for under-story vegetation. Temporary roads would be converted to hiking, cross-country ski, and snowmobile trails after project use. The proposal complies with the grizzly bear recovery plan.

Direct effects on Canada lynx would be moderate. Mortalities are not anticipated and den sites are not known to occur. Temporary displacement may occur during road work and thinning activities, but would be discountable. The area is moderate snowshoe hare habitat; impacts to red squirrel habitat would be low. There would be a slight increase in unsuitable habitat. The area does not currently meet den habitat requirements because stands are relatively young and large woody debris is not abundant. The project area is located along a ridge, which is used as a travel corridor by lynx. Indirect effects would be moderate; the project area would be managed for cultural resource protection and future fuel buildup would be managed to reduce fire hazards at regular intervals (10-20 years). This would maintain the area as unproductive lynx habitat. Consequently, potential suitable habitat and den habitat would not result. The net mileage of roads open to motor vehicle traffic would decrease slightly due to closures and obliteration. However, road densities are not known to negatively impact lynx. The proposal complies with the lynx assessment and strategy for unsuitable/suitable habitat (maximum unsuitable habitat of 30 percent and/or no more than 15 percent over the decade), and meets the minimum standard of ten percent for den habitat.

Direct effects on the gray wolf would be low. Short-term, temporary displacement may occur. Wolf mortalities are not anticipated, especially since den and rendezvous sites are not known to be present. Indirect effects are not anticipated. Negative impacts to big game species, utilized for wolf prey, would not occur. The project may create more grass, forbs, and shrubs, which may enhance forage conditions for elk and deer, which would indirectly benefit wolves.

*Cumulative Effects:* The cumulative effects boundary for the analysis is the Garnet Mountain Range; which includes Plum Creek Timber, State, Private, and BLM lands.

Cumulative effects to the grizzly bear may occur, but would not adversely impact the grizzly bear. Hunting, logging, mining, ghost towns, road building, livestock grazing, wildfire, and other natural and human disturbances have impacted the grizzly bear in the past, present, and will continue in the future. Past hunting pressure contributed significantly to grizzly bear declines; a male grizzly was recently killed by a black bear hunter in the Garnet Range. Silvicultural treatments in the Elk Creek drainage over the next 20 years are designed to restore vegetative communities and would benefit the grizzly bear and other native wildlife. Combined with ongoing efforts to manage roads, livestock, and sanitation at acceptable levels for grizzly bear conservation and recovery, no adverse impacts to grizzly bear would occur.

Cumulative effects to Canada lynx may occur, but would not have adverse impacts. The past, present, and future activities listed in the grizzly bear cumulative effects analysis above are the same for the Canada lynx. Thirteen percent of suitable lynx habitat in the Elk Creek LAU is in unsuitable condition. The proposal would create a slight increase in unsuitable habitat due to low impacts and project design. Den habitat represents 22 percent of the LAU, which is within the *Canada Lynx Conservation Assessment and Strategy* standards. The project area is not considered suitable den habitat due to stand structure, which is relatively young and to small amounts of large woody debris.

Cumulative effects to the gray wolf are not anticipated. The past, present, and future activities listed in the grizzly bear cumulative effects analysis (above) are the same for the gray wolf. The prey base of big game and small mammals is healthy. Elk and deer populations continue to increase in and around the Garnet Mountain Range.

**No Action:** Direct effects to the grizzly bear would not occur. Mortalities and other immediate impacts would not be anticipated. Indirect effects may occur. Increased fuel buildup, followed by wildfire, would temporarily decrease forage, but forage production would increase over the next few years, as would large woody debris buildup which would increase foraging habitat for wood boring insects. Large woody debris and regenerated stands would increase hiding and security cover. Road densities would be higher, which may contribute to potential mortalities.

Direct effects to the Canada lynx would not occur. Mortalities and other immediate impacts would not be anticipated. Increased fuel buildup, followed by wildfire, would reduce suitable habitat within the project area which would potentially increase unsuitable habitat throughout the LAU. Indirect effects may occur but would be beneficial to lynx recovery. Snowshoe hare foraging habitat would increase in 15 to 20 years as seedling/sapling patches become established. Down woody debris would increase as snags fell to the ground, increasing den habitat by four percent over the LAU.

Direct and indirect effects to the gray wolf would not occur. Both wolf and prey base (elk and deer) populations continue to increase in the Garnet Mountains and around western Montana.

### BLM Sensitive Species

**Affected Environment:** Sensitive species surveys have not been conducted in the project area. The proposed action may affect the following sensitive species: northern goshawk, flammulated owl, great gray owl, hairy woodpecker, three-toed woodpecker, pileated woodpecker, fisher, and wolverine. These species are known to occur in the Garnet Resource Area but their occurrence in the project area is uncertain.

**Proposed Action:** Thinning activities may cause temporary displacement, nest and den site disturbance, and abandonment of adults and mortalities of young. Forage quality may be temporarily reduced. Potential nest and densite locations may be reduced by tree removal, and forage quality may increase as some stands recover to seedling/sapling stages. However, the scope of this recovery would be limited due to the continued thinning and fuel reduction activities every 10-20 years.

*Cumulative effects:* The boundary for cumulative effects of past, present, and future activities are the same as that described for Threatened and Endangered Species. Cumulative effects may occur, but would not adversely impact sensitive species. Design features for the project would provide and protect sensitive species habitat.

**No Action:** Mortalities and other immediate impacts would not occur. Fuel buildup, followed by wildfire, would temporarily decrease forage and breeding habitat. Eventually, forage and breeding habitat may increase as portions of some stands regenerate.

### Other Wildlife

**Affected Environment:** The project area represents 330 acres of forested lands, providing habitat for elk, mule deer, moose, black bears, mountain lions, and a variety of small mammals and forest birds. The area is fall and summer range for big game species. The small mammals inhabiting the area, such as meadow voles and deer mice

are permanent residents staying active throughout the year. Most forest birds are neo-tropical migrants present only during the breeding season. Small numbers of resident bird species, such as mountain chickadees, red-breasted nuthatches, and gray jays are year-round residents.

**Proposed Action:**
Big Game Species
Direct effects may occur and are associated with temporary displacement; temporary loss of foraging and security habitat; potential mortalities are considered rare. Indirect effects may result in increases of forage and security as stands recover from initial impacts.

*Cumulative effects* would occur, but are considered low. The area would be selectively harvested, retaining overstory trees or understory trees and shrubs. Overall effects may increase foraging opportunities in the project area and retaining security habitat in adjacent areas.

Small Mammals
Direct effects would occur associated with mortalities and loss of habitat. Indirect effects are related to habitat recovery, which would increase foraging and breeding opportunities.

*Cumulative effects* would occur, but are considered low. Small mammal populations have remained in good condition despite human activities. The area would be selectively harvested, retaining overstory trees or understory trees and shrubs. Recovery of vegetation would allow populations to increase.

Forest Birds
Direct effects would occur associated with displacement of adults and potential mortalities of nestlings. Indirect effects may be increased species richness attributed to stand complexity and reduced species abundance due to reductions in habitat. Project activities should occur outside the nesting season to mitigate direct effects.

*Cumulative effects* would occur, but would not adversely impact local bird populations. The area would be selectively harvested, retaining overstory trees or understory trees and shrubs. As the area recovers after treatment, habitat qualities would support forest birds; species richness may be retained or increased; species abundance would possibly decrease.

**No Action:** Direct effects would not occur. Indirect effects may result due to increased potential of wildfire resulting in habitat loss. Wildfire would result in temporary impacts, but long-term benefits.

## Water Quality

**Affected Environment:** Water resources in the project area include the headwaters of McManus Gulch (tributary to Elk Creek), the headwaters of First Chance Gulch (tributary to Bear Creek), and several springs. A bog-type wetland occurs on private land inside the project area. Outside the project area, road reconditioning would occur across the headwaters of Kearne Creek (tributary to Bear Creek). A spring at Garnet Ghost Town provides drinking water for the town facilities and visitors, and the water quality is routinely monitored during the visitor season. Water quality in all project area stream segments is estimated good based on existing riparian and stream channel conditions. Outside the project area, First Chance Gulch, Kearne Creek, Bear Creek, and Elk Creek have been extensively placer mined in the past. Of these streams, Elk Creek is on the 303(d) list (DEQ, 2002) because of partial support of aquatic life and the trout fishery due to metals, nutrients, habitat alterations, and siltation from silviculture, logging, roads, and mining. The main concern for project activities is thus sediment delivery and channel disturbances, especially to Elk Creek via McManus Gulch.

**Proposed Action:** Water quality is unlikely to be impacted by the proposed action. Soil disturbance would be minimal with the proposed low-impact thinning techniques and the gravelly-loam soils have low erodibility. Hillslope erosion and off-stream sediment production would not occur. Stream shading would not be altered and no new stream crossings would be built. Existing crossings would be protected through proper road drainage maintenance and road reconditioning would improve any existing road drainage problems. Streams and springs

would be protected by proper BMP application and avoiding disturbance to channels and riparian vegetation. Because of the relatively gentle topography, vegetation cover, and soil types, sediment delivery from off-stream erosion is highly unlikely. Water quality would not be negatively affected. In instances where road drainage problems are corrected, water quality would be improved.

*Cumulative Effects*: There are no other foreseeable activities which might combine with the proposed action to cause water quality concerns. The heavy shrub cover around McManus Gulch precludes livestock access, and no present conditions are cause for water quality concern. The probable source area for the Garnet Spring may receive greater deep percolation of snowmelt and thus summer/fall spring flow may be slightly greater depending on subsurface flow rates. This is not likely to negatively affect water quality, however.

**No Action:** Water quality would remain the same as current conditions except in the event of a large high-intensity wildfire. The lack of cover combined with water-repellant burned soils would produce a flashy hydrologic response and surface runoff which could cause excessive peak streamflows that may initiate instream erosion and destabilization, and impact downstream water quality with siltation and ash acidification. The magnitude of such impacts would depend on fire intensity and how fast vegetative regrowth occurred but could persist for 5 to 10 years.

## Watershed Values (Soils, Hydrology, Wetlands/Riparian, Streams)

**Affected Environment:** The area has very deep, well-drained soils with low erosion potential. Soil types include Elkner, Ovando-Elkner, Whitore, and Evaro series (NRCS, 1995). Historic mining, prospecting, and settlement have resulted in relatively large amounts of old soil disturbance. The deep soils combined with about 26 inches annual precipitation provides good vegetation production, cover, organic matter, and frost action which provides for generally good soil productivity. Overturned soils from early mining activities now support dense vegetation cover in some areas.

The headwaters of First Chance Gulch and McManus Gulch are small broad basins of shallow-relief. Deep gravelly to cobbly soils provide for rapid infiltration on the slopes. There is a bog-type wetland area about 2000 feet up First Chance Gulch from the townsite on private lands. Subsurface water emerges as several springs along the downstream margin of the shallow-relief basin where Garnet is located. This springflow is seasonal and readily responds to snowmelt and shallow subsurface flow. Springflow converges to form a steep single-threaded lotic channel deeply incised in a steep v-shaped valley. The stream has been heavily impacted by past mining activities. McManus Gulch in the project area is characterized by small poorly formed channels dominated by seepage flow. Stream cover is heavy and riparian conditions are good.

The high elevation, low-relief ridge-top location of the project area provides snowpacks lasting well into the spring. The gently-sloping, well-drained soils permit good infiltration of melting snow, while the many fractures and contact zones around the intruded Garnet Stock provide good percolation. These are typically perennial and easily identified and avoided.

Undisturbed soils have high amounts of organic matter which would be expected for soils developing under denser forest stands. Charcoal in the soil indicates past fires as well. Denser forest canopies permit higher interception and evapotranspiration rates, leaving less water available for runoff than in open vegetation communities. Much of the available water is subsurface in the deep soils of the area, with very little surface water for stream channel development. Therefore, no extensive or well-defined lotic channels are thought to have existed in the project area, nor do any exist today. Surface water occurs primarily as springs and seeps.

**Proposed Action:** Removal of fuels from the forest floor would reduce the coarse woody debris (3 inches or more in diameter), which can also reduce nutrients and site productivity. Graham and others (1994) recommend 9 to 24 tons/acre of coarse woody debris on these vegetation types to help maintain forest productivity. With the target of 5 tons/acre of fuel, the remaining 4 to 19 tons would be at least partially provided by existing large non-flashy fuels (10,000+-hour fuels) and old decomposing logs. Lopping and scattering slash material will also add nutrients. Over the long-term, the residual stand would continue to provide needles, cones, and dead limbs for decomposition and

nutrient cycling. The occasional dead tree and isolated windfall would provide some very large woody material for nutrient cycling, while still maintaining a relatively low overall fuel load for the project area. The fuel reduction effort would maintain total woody debris amounts to the lower end of the values (8 – 14 tons/acre) found in the research (ibid), but would still provide adequate debris and nutrient cycling to maintain soil productivity.

Performing all tractor work when soils are dry, frozen, or under snow cover would help prevent soil compaction and displacement, as would designating skid-trails to avoid any pockets of soils that are most easily compacted or eroded.

The proposed thinning would reduce canopy density in the catchment of First Chance Gulch. Residual canopy densities of 20 to 50% would increase snowpack accumulation because of lower losses due to tree canopy interception. While a more open canopy would promote more solar energy reaching a snowpack and earlier snowmelt initiation, the larger snowpack would also prolong snow retention and water storage. The result would be increased soil moisture, subsurface water, and surface water storage in the wetland area and springs. Seepage flow in First Chance Gulch and McManus Gulch would also likely persist longer into the summer, and benefit riparian-dependent vegetation. The magnitude of this effect would depend largely on subsurface drainage characteristics but overall the runoff hydrograph would be broader and flatter, with an earlier melt initiation, a lower peak, and extension of baseflow into the summer months.

Actual downstream flow rates cannot be determined since much of it is of subsurface origin and the affected area is relatively small at the watershed scale. Any change in water availability would primarily influence shallow subsurface water and the flow apparent in springs and seeps in the immediate project area, rather than in downstream channels.

*Cumulative Effects:* There are no other foreseeable activities which might combine with the proposed action to cause concerns for soils, hydrology/streams, or riparian/wetlands. The extent of livestock grazing in the area is quite small and does not appear to impact the streams in the project area.

**No Action:** Current conditions would persist until the event of a large high-intensity wildfire. The sudden lack of cover combined with water-repellant burned soils would increase runoff and cause instream erosion and destabilization. The lack of cover for 5 to 10 years would alter hydrology to permit early season snowmelt compressed into a shorter window causing high peak runoff and instream erosion. Springflow may be reduced as more water would runoff the site than would infiltrate. The scope of impacts would depend on fire intensity and how fast vegetative regrowth occurred.

## Recreation/Visual Resource Management

**Affected Environment:** Garnet and Coloma ghost towns are classified as Visual Resource Management (VRM) classes III and IV as defined by the Garnet RMP.

VRM Class III "provides that management activities may be evident to the casual visitor; however, the activity should remain subordinate to the visual strength and natural character of the landscape." "Clearcuts may be seen but must simulate natural openings. No geometric shapes are allowed. Shelterwood cuts are permitted, with a maximum initial entry of 60 percent to reduce modification of textural contrast. Resulting openings should appear natural."

VRM Class IV "provides that management activities may be visually apparent to the casual observer and may also become dominant in the landscape." "Clearcuts may be seen but must incorporate the non-geometric lines of the natural landscape. Shelterwood cuts can be of any size."

Recreational use within the project area is dominated by activities associated with visiting a ghost town. Visitors come to view the old towns, learn about the lifestyle of the original residents and experience the abandoned feeling unique to ghost towns. Activities that complement this experience include photography, rock hounding, picnicking and driving for pleasure.

From 1971 to about 1980, Garnet attracted between 7,500 and 8,500 visits annually. Visitation then climbed steadily and peaked in 1995 with over 22,000 visitors. Visitation has since remained steady with about 60 percent of the total visitation occurring from June to August, and 23 percent from September to November. About 60 percent of all use occurs on weekends and holidays. The remaining 17 percent of visits occur from December through May, consisting mostly of local snowmobilers. Winter visitation varies widely from year to year because of snow and road conditions. Snowmobilers access Garnet via the Range Road and the groomed Garnet Snowmobile Trail system. Garnet is a primary destination for many winter users in the Garnet Range.

Little is known about recreation use or activities at Coloma. The BLM just recently acquired the core of the town area. Prior to this acquisition the bulk of the historic structures were on private land. There are no reliable visitor data, but the estimate is less than 1000 visitors per year.

Once the BLM completes management planning for Coloma, visitation may increase. Unlike Garnet, these structures have not benefited from over 30 years of stabilization and protection. All buildings in Coloma have now deteriorated to the point that most stabilization techniques used in Garnet would be ineffective. For this reason the crumbling buildings of Coloma provide the public with a unique counterpoint to Garnet. In addition, if the proposed expansion of the Garnet Back Country Byway were implemented, additional visitors would be attracted to this site. It is possible that a substantial percentage of the visitors to Garnet would also tour Coloma as part of their trip to this area.

Impacts to recreation use within the project area are quantified in four ways:

1. *Changes in visitor numbers*: Other factors affect visitor numbers however, and Coloma has no past visitation data.

2. *Visitor satisfaction*: Tracking numbers of visitor complaints on visitor surveys or to BLM or GPA staff. Any complaints registered by the public would be an increase over the total lack of comments to date. No data for Coloma.

3. *Visual contrast ratings*: Comparing visual impacts to RMP constraints.

4. *Changes in long-term winter use patterns*

**Proposed Action:** Visitor use numbers are unlikely to be affected during the treatment. Nearly all proposed work would occur outside the most-visited areas and would not be readily noticeable to visitors.

Visitor satisfaction may be lessened by heavy truck traffic, noise, dust, and other treatment activities inconsistent with maintaining a ghost town atmosphere and recreation experience. There may be temporary relocation or closure of some ghost town trails, as well as temporary disruption of snowmobiling on the Range Road in early winter. There is an opportunity with the proposed action to provide interpretation and education regarding the purpose of the project, and to show the public innovative fuel treatment techniques. Public accessibility to the historic sites would increase, and interpretive signing would increase the overall recreation experience. Increased access to the area surrounding the ghost town would likely increase the length of stay for the average visitor. It is also possible that with the treatment of the overstory trees there would be increased light penetration to the forest floor which could lead to increased huckleberry crops. Berry picking is a popular activity associated with visits to the ghost towns. Overall visitor satisfaction is expected to be impacted only minimally over a short term.

A moderate impact on visual resources and would be consistent with RMP direction for VRM class III and IV. The visual contrast rating would be within established RMP parameters. For some visitors, the increased tree spacing would look "manicured" and less like an untreated forest.

Long-term winter use patterns may be affected by increased spacing between trees which may cause more off-trail snowmobile use and a negative effect on skiers. However, Garnet does not have deep powder bowls or "high-mark" areas popular to off-trail snowmobiling. Therefore, any increase in off-trail use would be small.

*Cumulative Effects:* Ongoing interpretive efforts at Garnet ghost town would combine with the post-treatment conditions to enhance visitor use and satisfaction over the long-term. The Garnet Backcountry Byway Expansion would also likely increase visitation to Garnet and Coloma.

**No Action:** There would be no affect on visitor numbers, visitor satisfaction, visual resources, or winter use patterns. However if the Ghost Town were to burn, all of these values would be greatly impacted.

### Public and Firefighter Safety

**Affected Environment:** Currently, public safety concerns around the ghost towns are primarily associated with various mining-related features such as adits, shafts, structures, etc.

The current fuel situation around the ghost towns poses a safety hazard for firefighters in the event of a wildfire. Direct suppression efforts would not be undertaken in the event of a high intensity crown-fire scenario. The trend is toward continued increase in fuels and fire hazard, and further unlikelihood of firefighters being able to provide effective suppression due to safety concerns. In 2000, an Acting BLM Western Zone Fire Management Officer determined that there are no good escape routes for firefighters at the ghost towns.

**Proposed Action:** Public safety concerns would expand because of the thinning operations and increased truck traffic during project implementation. Indirectly, the increased visibility and access around the ghost town may increase the public's exposure to abandoned mine workings that would otherwise be hidden from view. With the signage and interpretive efforts proposed, any increase in public safety risk would be minimized.

In the event of a wildfire, potential fire intensity would be greatly reduced allowing firefighters to work more safely and effectively in and around the ghost towns.

*Cumulative Effects:* There are no anticipated cumulative effects to public or firefighter safety as a result of other actions combining with the proposed action.

**No Action:** General visitor safety concerns would continue as the current condition through the foreseeable future. With an ongoing buildup of fuels in the area, firefighter safety concerns would continue to increase beyond the current high risk.

### Public and Private Access

**Affected Environment:** Two primary routes provide access to the project area. Access from State Highway 200 to the north is over BLM controlled roads, the Garnet Range Road (#0401) and the Centennial Road (#0425). Access from Interstate 90 to the south is over the Bear Creek county road. The BLM controlled Cave Gulch Road (#4613) provides an alternative to a portion of the Bear Creek county road.

Within the project area access is provided by BLM controlled and county roads. An old county road connecting Garnet with Coloma also exists but a portion of its on-the-ground location is in dispute.

Primary access to the project area is provided from State Highway 200 to the north over the BLM controlled Garnet Range Road (#0401). Within the project area access is provided by BLM controlled roads and portions of the old Garnet to Coloma county road.

**Proposed Action:** The closure/obliteration of the road towards the old Blue Moon claim should not cause a hardship to current unpatented mining claimants, as there is an alternate and better road to the same area.

*Cumulative Effects:* There are no anticipated cumulative effects to public or private access as a result of other actions combining with the proposed action.

**No Action:** The current access situation would not change.

## Livestock Grazing

**Affected Environment:** Currently, there is no grazing authorized for the project area around Garnet. In the vicinity of Coloma there is a grazing allotment governed by the Coloma Allotment Management Plan (AMP) No. 7106. This plan authorizes up to 133 AUMs from mid-June to mid-October. In recent years, only 89 AUMs have actually been used.

**Proposed Action:** With no authorized grazing near Garnet, there would be no impacts to grazing from the proposed action. In Coloma however, the more open timber stands would allow grass cover to increase in the area. Palatable tame grasses such as timothy, smooth brome, Kentucky bluegrass and orchard grass would gradually move on to the site along with native grasses such as oatgrass, hairgrass, needlegrass, elk sedge, and pinegrass (pinegrass is considered as mostly unpalatable to livestock). Livestock would be more frequently drawn to these opened up timber stands and grasses. Allotment-wide however, livestock grazing would continue much the same as current conditions. The additional palatable forage created by this proposed thinning around Coloma would not cause an increase in allowable livestock numbers.

*Cumulative Effects:* There are no anticipated cumulative effects to livestock grazing as a result of other actions combining with the proposed action. Actual cattle use of the Coloma area would also be affected by how often visitors come through the area and cause cows to move out. Overall grazing use on the allotment would not likely change to any noticeable degree.

**No Action:** The existing livestock grazing management would continue. In the event of a large intense wildfire, grazing use in the BLM portion of the Coloma allotment would likely be impacted depending on burn extent and severity, and the recovery of palatable forage. Grazing use could possibly be unavailable or excluded for several years.

## Vegetation, Weeds and Fuels

**Affected Environment:** Much of the area around the ghost towns had been logged in the past in association with mining activities and development of the towns during the late 1800's. The current stands are about 100 years old or more. More recent logging has occurred outside of Garnet in the Elk Creek and Bear Creek drainages. The most recent logging activity occurred in the past three years on private lands both to the north and southeast of Garnet and also on private lands in and around Coloma.

Douglas-fir and lodgepole pine are the dominant cover types present in the project area. Prior to the development of the towns, fire had been the main disturbance in the area with generally a lethal fire regime. Fire groups present are 5,6, and 7 with most of the area in fire group 7 (Fischer and Bradley, 1987). Normal expected fire frequencies would range from 150 to 200 years with lower severity surface fires occurring on a 50-year or greater mean interval.

Habitat types around Garnet and Coloma are Douglas-fir/pinegrass on south and west-facing slopes, subalpine fir/beargrass/blue huckleberry on cold north and east-facing slopes, and subalpine fir/menziesia on moist north slopes and in draws. More specific habitat type characteristics are described by Pfister and others (1977).

Current fuel loading is within the normal ranges for habitat types in the area - varying between 20 to 40 tons per acre with much of the area around 20 tons per acre based on photo guides (Fischer, 1981). Fuel loadings are expected to continue to increase and contribute to the support of a lethal fire regime. Maintaining a lethal fire regime in the area around the ghost towns is not consistent with maintaining these cultural resources.

Small infestations of weeds occur in the project area, including thistle, hounds tongue and spotted knapweed. The ghost town area has been treated with herbicides to eradicate or contain new infestations.

**Proposed Action:** Down, dead woody fuels would be reduced in the treatment area to 5 tons per acre or less. Ladder fuels would be removed or isolated from overstory trees. As a result, expected fire behavior would be modified to a level that could more likely be handled by hand crews. As a positive indirect effect, hand crews would be more capable than heavy equipment of avoiding damage to cultural resources during the course of their suppression efforts.

The release of the residual stand would result in an increase in diameter growth. The residual stands would appear more open and "park-like" with scattered regeneration thickets retained as lynx habitat features. Tree regeneration of more shade-tolerant species (Douglas-fir, subalpine fir, spruce) would likely occur over time in the understory of the residual stand.

Blowdown may increase in the thinned lodgepole pine stands if the residual trees are not wind-firm. However, blowdown can be reduced by leaving the less wind-firm trees in groups or reducing the distance between leave tree crowns. Gradual thinning over a period of years can also allow residual trees to become more wind firm over time.

The low-impact thinning techniques would minimize mechanical damage to residual trees.

The removal of non-merchantable sized fuels would involve little to no soil disturbance since the work would be done by hand crews and a minimal amount of equipment using existing roads or trails. Since frozen or dry ground conditions would be required to use equipment off of roads or trails, no soil compaction outside of existing roads or trials is likely to occur. By minimizing soil disturbance, the chance of weed invasion and resulting indirect effects on site productivity and vegetation health would be greatly reduced.

Pinegrass, as well as other grasses and forbs, would increase in the understory of the residual stands in the Douglas-fir/pinegrass habitat types. Pinegrass has been reported to increase in central Idaho in response to timber harvest that dramatically opened up the existing timber stand (Steele and Geier-Hayes, 1993). Pfister and others (1977) reported decreases in pinegrass after overstory removal in the bluebunch wheatgrass phase of the Douglas-fir/pinegrass habitat types. The production of fine fuels (grass & forbs) would continue to be of greater quantity then is presently found as long as the stands remain open. In the event of a wildfire, pinegrass could burn quickly but at much lower intensity than a crown fire or a fire in larger woody fuels, and would also be easier for firefighters to suppress.

*Cumulative Effects:* Fuel loads have been reduced on adjacent private lands around Garnet and Coloma as a result of recent logging activities. Combined with the proposed action, the resulting cumulative effect will be an overall reduction in fuel loading over a larger area than the proposed project area. These conditions would further result in the lower likelihood of a large high-intensity wildfire approaching the ghost towns.

**No Action:** Stand development would be characterized by some natural mortality that would gradually increase down woody material and fuels over time. The fine fuels (grasses and forbs) should remain the same as current conditions. Grass and forb density would likely increase in the event of a large stand-replacing fire. Fuels would continue to increase to levels that would be more difficult for hand crews to attack wildfires within the project area.

In the event of wildfire, the high fuel load combined with a dense overstory may result in a high-intensity stand-replacing event. Depending on event-specific localized fire behavior, the area would then likely be dominated by grasses, forbs, and shrub species for several years as some tree regeneration slowly appears. Over the long-term (several decades) even-aged shade-intolerant stands would likely develop and be subject to a stand replacement fire regime.

### Mitigation and Residual Impacts

Residual impacts are those effects that would occur or remain after implementing any prescribed mitigations. These are anticipated to include;

- Some incidental damage or exposure of previously unknown cultural artifacts that were not visible during pre-project surveys.
- For historic mining properties, the BLM may need to develop an MOA with the SHPO pursuant to Historic Mining PA to mitigate any adverse effects to sites. These mitigations would be developed with the SHPO.

## MONITORING

*Cultural resources:* Monitoring of features during implementation of the 20-acre test treatment, followed by spot monitoring of significant features during implementation of the larger scale project.

*Fuel loading & debris retention:* Fuel load estimate guides or fuel transects will be used during project implementation to determine when fuel loads have reached project objectives. Coarse woody debris retention will be ensured through contract stipulations that classify what is, or is not, classified as fuel.

*Montana Forestry BMPs*: Implementation monitoring would be conducted during treatments by BLM contracting officers representative and/or hydrologist. The Best Management Practices for Forestry in Montana (DNRC,2002) are largely geared toward protecting streamsides, riparian areas, and water quality. Since very little of the proposed treatment area involves streams, Streamside Management Zone requirements would easily be met with the proposed thinning objectives.

*Recreation Use:* Visitor satisfaction would be monitored by tracking numbers of visitor complaints on visitor surveys or to BLM or GPA staff. Any complaints registered by the public would be an increase over the total lack of comments to date.

*Visuals*: Visual contrast ratings would be monitored against Garnet Resource Management Plan constraints for Visual Resource Management Classes III and IV.

*Wildlife:* Monitoring of special status species or other wildlife is recommended. However, if surveys indicate the presence of sensitive species, monitoring should be conducted to determine the success of recommended mitigation.

## CONSULTATION AND COORDINATION

The BLM would consult and/or coordinate with the following agencies:

Montana Fish, Wildlife, Parks
U.S. Fish & Wildlife Service
Bryce Maxwell, Wildlife Biology Program, University of Montana, Missoula, MT 59812
U.S. Forest Service
Montana State Historic Preservation Office
Lolo National Forest
Montana Department of Natural Resources
Garnet Preservation Association

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