

## Chapter 4: Treatment Recommendations

### 4 Overview

Critical to the implementation of this Wildland-Urban Interface Wildfire Mitigation Plan will be the identification of, and implementation of, an integrated schedule of treatments targeted at achieving an elimination of the lives lost, and reduction in structures destroyed, infrastructure compromised, and unique ecosystems damaged that serve to sustain the way-of-life and economy of Gem County and the region. Since there are many land management agencies and hundreds of private landowners in Gem County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across all ownerships.

The Federal land management agencies in Gem County, specifically the USDA Forest Service and the Bureau of Land Management, are participants in this planning process and have contributed to its development. Where available, their schedule of WUI treatments has been summarized in this section to better facilitate a correlation between their identified planning efforts and the efforts of Gem County.

This chapter of the plan will be separated into a few, logical sections grouping like activities together. Section 4.2 will summarize the US Forest Service's proposed treatments in Gem County, section 4.3 details policy and safety proposals, section 4.4 explores activities related to people and structure protection, section 4.5 looks at infrastructure improvements, section 4.6 explores fire fighting resources and capabilities, while 4.7 makes recommendations linked to land management. These six sections of this chapter are intended to address, together, the interrelated components making up the WUI issues for Gem County with recommendations. Proposals in this chapter have been generated from the preceding chapters where the detailed risk assessments were made.

All risk assessments were made based on the conditions existing during 2003, thus, the recommendations in this section have been made in light of those conditions. However, the components of wildfire risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations annually to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

As part of the Policy of Gem County in relation to this planning document, this entire **Wildland-Urban Interface Wildfire Mitigation Plan** should be reviewed annually at a special meeting of the Gem County Commissioners, open to the public, where action items, priorities, budgets, and modifications can be made or confirmed. A written review of the plan should be prepared (or arranged) by the Chairman of the County Commissioners, detailing plans for the year's activities, and made available to the general public ahead of the meeting (in accord with the Idaho Open Public Meeting Laws). Amendments to the plan should be detailed at this meeting, documented, and attached to the formal plan as an amendment to the WUI Wildfire Mitigation Plan. Re-evaluation of this plan should be made on the 5<sup>th</sup> anniversary of its acceptance, and every 5-year period following.

Prioritization of activities recommended in this plan should be made by the Gem County Commissioners. During the annual review of this plan, reprioritization can be justified in response to changing conditions and funding opportunities.

## **4.1 Possible Fire Mitigation Activities**

As part of the implementation of fire mitigation activities in Gem County, a variety of management tools may be used. Management tools include but are not limited to the following:

- Homeowner and landowner education
- Building code changes for structures and infrastructure in the WUI
- Home site defensible zone through fuels modification
- Community defensible zone fuels alteration
- Access improvements
- Access creation
- Emergency response enhancements (training, equipment, locating new fire stations, new fire districts)
- Regional land management recommendations for private, state, and federal landowners

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity. Net gains to the public benefit will be an important component of decisions.

## **4.2 Proposed Projects Being Developed by the US Forest Service in Gem County**

The Boise National Forest manages much of the highest risk forestlands in the region, (see maps in Appendix I). Their staff of resource and fire professionals has conducted analysis and developed management projects in the WUI, that are designed to reduce the risk of wildfire and the risk of WUI losses from those fires. The following discussions were developed by the Boise National Forest's District Fuels Specialist (Emmett Ranger District).

### **4.2.1 Mill Creek Watershed Project**

#### **4.2.1.1 Vegetation**

The vegetation of the Mill Creek Project analysis area is described using an ecological land classification as proposed by Haufler (1994), based upon habitat types developed by Steele (1981). Using this approach, individual habitat types are arranged into groups, which share similar physical environments. These groups are called habitat type classes (HTC).

Habitat type classes within the analysis area range from dry ponderosa pine / xeric Douglas-fir at the warm, dry end of the environmental spectrum, to high elevation sub-alpine fir at the cool, wet extreme on top of West Mountain. On the driest sites, usually at lower elevations and/or on south or west aspects, ponderosa pine and Douglas-fir are the most common tree species. These stands are often interspersed with range lands, supporting various shrubs, forbs, and grasses. Timber productivity is low on the driest of these sites, but rises rapidly as moisture becomes more available in the dry Douglas-fir / moist ponderosa pine HTC (Steele 1981). Common understory shrubs include: sagebrush, currant, mallow nine-bark, choke and bitter cherry, velvet-leafed ceanothus, snowberry, and scouler willow.

The middle of the moisture-temperature gradient is occupied by the cool, moist grand fir, and dry grand fir HTCs. These two HTCs are likely the most abundant within the watershed, and are

often located on north or east aspects and/or above 4,500 feet. Grand fir is the climax species, while ponderosa pine, Douglas-fir, lodgepole pine, western larch, and Engelmann spruce all occur as seral components, depending upon the habitat type. Timber productivity is very high on these sites (Steele 1981). Blue huckleberry, mountain maple, mallow nine-bark, white spirea, and alder are shrubs common to grand fir HTC.

The coolest and/or wettest sites support subalpine fir and lodgepole pine HTCs. These habitats generally occur at the highest elevations, on north aspects, or within cold air drainages and frost pockets. The climax species is usually subalpine fir, but may be whitebark pine or lodgepole pine on some habitat types. Seral species include Douglas-fir, lodgepole pine, western larch, and Engelmann spruce. Understory shrubs associated with the subalpine fir HTCs are: dwarf huckleberry, grouse wortleberry, Utah honeysuckle, and thimbleberry.

Vegetation structure and species composition within the analysis area has been heavily influenced by man-caused and natural disturbance agents. Historically, frequent, low-intensity fires perpetuated open, park-like stands of large-diameter ponderosa pine in the drier HTCs. More recently, years of fire suppression, intensive logging, and western pine beetle mortality has resulted in the replacement of this large-tree, multi-storied stand structure with single-storied stands of small or medium-sized trees of mixed species.

In the more moist HTCs, such as the cool, moist grand fir and the subalpine fir types, fire occurred at longer intervals and could result in either mixed severity or lethal burns. As a result, these HTCs often were a “mosaic” of different size classes, structures, and species compositions. These types have also been influenced by fire suppression and logging, but not to the extent of the drier HTCs. Western spruce budworm and Douglas-fir tussock moth infestations have also resulted in significant amounts of mortality in recent years.

#### **4.2.1.2 Fire Occurrence/Risk**

Historically, this portion of the Emmett Ranger District has not been a high fire occurrence area. Large stand replacing fires also have been infrequent to this watershed. The lack of typical summer lightning storms moving across this area, the presence of grassland areas to the west and south of the watershed, agriculture, grazing, fire suppression, have contributed to the decrease in fire occurrence.

Fire history information for this area was developed from a review of historical fire starts. Large fire history records (>100 acres) during the period of 1900-2002 show 4 large fires within the watershed burning approximately (1,470 acres) occurring in the southern portion of the analysis area. Approximately 80 smaller (less than 9 acres) size fires have occurred since the early 1900's that required fire suppression action. The majority events occurred mid-late summer apparently on south and west facing slopes in the mid to lower elevations. Approximately 45-50% of these ignitions were lightning caused with the remainder human caused (i.e. the area has higher potential for human caused fires due to good road access into the analysis area). The Forest Hazard/Risk Assessment (Boise National Forest 1996) placed this area at Low Risk for fire ignition and at Moderate Risk for an uncharacteristic fire event.

#### **4.2.1.3 Wildfire Risk**

Wildfire risk was calculated for this area using the methodology described by Steele, *et al.* (1996). This rating system provides an estimate of tree mortality from crown scorch, resulting from a surface fire. It does not reflect the interaction of stand structure and density on various aspects of fire behavior, such as crowning and torching.

A more dynamic model has recently become available for Central Idaho, which works interactively with the Forest Vegetation Simulator (FVS). This model is known as the Fire and Fuels Extension (FFE) (Beukema 2000) to FVS. The FFE estimates wildfire risk, and allows the user to model fuels mitigation treatments to mitigate these risks.

*The FFE generates two wildfire risk indices: torching index and crowning index.*

A principle advantage of the FFE over the Steele rating system is the inclusion of stand structure and density, via the calculation of crown bulk density, in the determination of the crowning and torching indices. Since stand management activities are typically applied to alter stand structure, density, and species composition, it is important to consider these variables in the calculation of wildfire risk.

In this project area, crowning index is used to quantify wildfire risk. This decision is predicated upon recent work by Fiedler (2001). Crowning index is defined as the twenty-foot wind speed, above which an active crown fire is possible. Consequently, crowning index values are inversely related to wildfire risk; a low crowning index value corresponds to high wildfire risk. Wildfire risk ratings for this analysis are the same as defined by Fiedler: <25 mph = high, 25-50 mph = moderate, and >50 mph = low. An estimated 5,445 acres of the project area came out at High, 15,090 acres Moderate and 7,970 acres were evaluated as Low.

#### **4.2.1.4 Current Condition by Fuel Models**

An analysis was done to identify existing fuels models for the Mill Creek Watershed project area. These models were identified using “Aids to Determining Fuel Models for Estimating Fire Behavior” (Anderson 1982), by examining the stand exam information regarding cover types, and by potential vegetation groups. Fuel models describe general vegetation properties and what current conditions would be to fire risk when considering surface fuels. More site-specific data is needed for future projects. The models are characterized in four groups: grass, brush, timber and slash. Four fuel models are present in the analysis area. The fuel models are described in Section 2.7.2.1 of this document.

**Fuel Model 0-** 615 acres of the project for approximately 5% of the watershed.

**Fuel Model 1-** (Grass Group) 7,240 acres of the project area are in this fuel model type for approximately 20% of the watershed.

**Fuel Model 5-** (Shrub type) 4,366 acres were identified in this fuel model type, approximately 10% of the area.

**Fuel Model 8 –** (Timber type) 18,315 acres were identified in this fuel model type, majority of the area for approximately 45%.

**Fuel Model 9 –** (Timber type) 6,990 acres were identified in this fuel model type, for approximately 20% of the area.

Before active grazing and fire suppression in the late 1800’s and early 1900’s, wildfires occurred as non-lethal surface fires, with occasional crown fires every 3-35 years in these forest types (Crane and Fisher 1986, USDA Forest Service 1998). These frequent fires would maintain relatively open forests of ponderosa pine and Douglas-fir in a variety of age and diameter classes with low surface fuel loadings and herbaceous plants. Widely spaced overstory trees, lack of dense regeneration over large areas and lack of heavy surface fuel loadings have and will continue to keep unwanted fire events at a low to moderate risk in these treated areas. Continued maintenance with prescribed fire and mechanical tree thinning would keep fuel loadings low, reduce brush and seedlings and help develop and perpetuate stands more typical of historic conditions. The remainder of the analysis area has missed one to numerous fire

events and is at risk of experiencing a fire event over a large area. Fuel loads and ladder fuels would be expected to increase, potentially leading to an uncharacteristic fire event. However, it is unclear what the potential is this event occurring at this time.

#### **4.2.1.5 Project Area Objectives:**

Primarily, treatments are going to focus on prescribed burning of natural fuels and reducing stand densities by using mechanical treatments. The prescribed burning project will be completed on approximately 3,700 acres. The main objectives for this treatment are tied to research. The objectives of the research are to study the effects of prescribed fire on intermittent streams and their adjacent terrestrial areas, reduce existing surface fuels and reduce stand densities. The mechanical treatments occurring within this area are small timber sales of approximately 2,900 acres. The purpose and need will be to reduce the potential for uncharacteristic and undesirable disturbances such as wildfires, insect, and disease infestations. These projects are to be completed within the next 5 years (2004-2008).

### **4.2.2 North Kennedy-Cottonwood Stewardship Project**

The North Kennedy-Cottonwood Stewardship Project encompasses about 8,600 acres and is 7 miles north of Ola Idaho and lies primarily in Gem County. The proposed actions include modify the existing road system, treat 3,646 acres of vegetation through commercial thin, and noncommercial thin, and create a fuel brake on approximately 117 acres. North Kennedy-Cottonwood Project was chosen as one of 28 national pilot projects to demonstrate the use of stewardship contracts.

#### **The associated need for action is as follows:**

- Reduce big game vulnerability
- Reduce road sediment
- Improve fish habitat
- Improve management of motorized access
- Reduce forest susceptibility to severe, uncharacteristic wildfire
- Reduce forest susceptibility to western spruce budworm
- Increase long-term forest productivity

#### **4.2.2.1 Vegetation**

Primary habitat type for this area is cool and moist grand fir, warm and dry Douglas-fir/moist ponderosa pine. Current wildfire risk ratings were calculated using the procedure developed by Fiedler (2001), and described in: A Strategic Assessment of Fire Hazard in Montana. This approach utilizes a recently developed component of FVS, the Fire Fuels Extension (FFE) to estimate crown fire hazard from tree, stand, and site characteristics (Buekema *et al.* 2000). FFE calculates fire hazard in terms of Crowning Index, or the wind speed necessary for a fire that reaches the tree canopy to continue as a crown fire. Fiedler defines high-hazard conditions as those stands with a Crowning Index less than 25 miles per hour, high hazard, a Crowning Index from 25 to 50 mph, moderate hazard and a low hazard a Crowning Index over 50 miles per hour. This project area current fire hazard is moderate to high.

### 4.2.2.2 Fire History/Occurrence

Large fire history from 1900 to 2003 shows three large fires for approximately 725 acres. Approximately 24 smaller size fires occurred in the area mainly caused by lighting. In 1995/96 1,500 acres of natural fuels were treated using prescribed fire.

### 4.2.2.3 Proposed Vegetation Management Activities

Silvicultural prescriptions would include Shelterwood, Improvement cuts, Commercial thins, Pre-commercial thins and tree planting. Post harvest activities would include, whole tree yarding, prescribed burning, and mechanical piling. Project is to be implemented within the next 5 years (2004-2008).

## 4.3 WUI Safety & Policy

Wildfire mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for safety and consistency. The recommendations enumerated here serve that purpose. Because these items are regulatory in nature, they will not necessarily be accompanied by cost estimates. These recommendations are policy related in nature and therefore are recommendations to the appropriate elected officials; debate and formulation of alternatives will serve to make these recommendations suitable and appropriate.

Table 4.1. WUI Action Items in Safety and Policy.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
<b>4.3.a: Amend existing building codes to require a site plan be approved by Fire District Chiefs prior to issuance of Building Permits.</b>	<b>Protection of people and structures</b> by applying a standard of road widths, access, and building regulations suitable to insure new homes can be protected while minimizing risks to firefighters. (defensible space, roads and access management, water systems, building codes, signage, and maintenance of private forest and range lands)	<b>County Commissioners</b> in cooperation with Rural Fire Districts and Planning and Zoning.	<ul style="list-style-type: none"> <li>Year 1 debate and adoption of revised code (2004).</li> <li>Review adequacy of changes annually, make changes as needed.</li> </ul>
<b>4.3.b: Rural Addressing Update</b>	<b>Protection of people and structures</b> by improving database of structures in the county which will link to fire fighting efforts and improved response times. Also linked to developing an enhanced 911 system.	<b>County Assessor's office</b> in cooperation with the County Commissioners Office	<ul style="list-style-type: none"> <li>To be implemented during first year (2004), pending funding and adoption by elected officials. May take most of a year to complete.</li> <li>Estimate cost at around \$40,000 to complete entire county</li> </ul>
<b>4.3.c: Enhanced 911 Service with emphasis on cellular phone locators.</b>	<b>Protection of people and structures</b> by improving the ability of emergency response personnel to respond to an emergency.	<b>County Commissioners</b> in combination with County Sheriff's Office, County Assessor's Office and Fire Departments.	Can be completed only after the Rural Addressing project is completed. Target implementation during year 2 (2005) of this project.

**Table 4.1. WUI Action Items in Safety and Policy.**

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
<b>4.3.d: Rural Road Sign Improvements across the county</b> , link local names to USFS road numbers when possible, use standardized signs 9' signs with 6" letters.	<b>Protection of people, structures, and infrastructure</b> by improving the ability of emergency services personnel, residents, and visitors to navigate roads.	<b>County Roads Department</b> in cooperation with County Commissioners, and Assessor	Can be completed during year 1 (2004) pending funding to implement the project. Estimate \$8,000 for signs and posting.
<b>4.3.e: Rural Fire District Boundary Signs Improvements across the county</b> (entering and exiting signs).	<b>Protection of people, structures, and infrastructure</b> by improving the familiarity of residents and visitors to understand boundaries and protection zones.	<b>City and Rural Fire Districts</b> in cooperation with County Commissioners	Can be completed during year 1 (2004) pending funding to implement the project. Estimate \$6,000 for signs and posting.
<b>4.3.f: Develop County policy concerning building materials used in high-risk WUI areas on existing structures and new construction (esp. Pearl, Gross, Ola, Sweet, and Montour), emphasis on water supplies and building materials.</b>	<b>Protection of people and structures</b> by improving the ability of emergency response personnel to respond to threatened homes in high-risk areas.	<b>County Commissioners Office</b> in cooperation with Rural Fire Departments, Planning and Zoning, and Building Inspectors.	<b>Year 1 (2004) activity:</b> Consider and develop policy to address construction materials for homes and businesses located in high wildfire risk areas. Specifically, a County policy concerning wooden roofing materials and flammable siding, especially where juxtaposed near wildland fuels.
<b>4.3.g: Development and Enforcement of a more restrictive burn permit system in conjunction with a more restrictive burning season.</b> Consider a central clearing house for issuance of all burning permits in Gem County.	<b>Protection of people and structures</b> by reducing wildfire ignition through debris burning where resources or conditions are not adequate to support burning (approx. 7.4% of ignitions in Gem County were ignited from debris burning).	<b>Idaho Department of Lands, Rural Fire Departments and local Landowners</b>	Consider and develop policy to address this issue in cooperation with rural fire chiefs and the IDL to better coordinate on timing and location of allowable debris burning.
<b>4.3.h: Development of a "camp fire" use policy for recreation related camp fires in camp grounds and rural areas.</b> Also include better signing during periods of high or extreme fire danger.	<b>Protection of people and structures</b> by reducing wildfire ignition through camp fire escape where resources or conditions are not adequate to contain fires (approx. 8.6% of ignitions in Gem County were ignited from escaped camp fires).	<b>US Forest Service, Idaho Department of Lands, Rural Fire Departments and local Landowners</b>	Consider and develop policy to address this issue in cooperation with the US Forest Service (camp ground management), rural fire chiefs and the IDL to better coordinate on timing and location of allowable camp fires.
<b>4.3.f: Develop a formal WUI Advisory Committee to advise County Commissioners on WUI Issues and Treatments</b>	<b>Protection of people and structures</b> by improving the ability of decision makers to make informed decisions about wildfire issues.	<b>County Commissioners Office</b>	<b>Year 1 (2004) activity:</b> Formalize a committee, its membership and service decided on by the County Commissioners, to collaborate on WUI issues within Gem County. Members potentially to include land management

**Table 4.1. WUI Action Items in Safety and Policy.**

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
<p><b>4.3.g: Develop a county-wide GIS database which can be used for rapid response during wildfire events assisting fire suppression efforts.</b></p>	<p><b>Protection of people and structures</b> by utilizing a GIS system to facilitate rapid dispatch of people to fire incidents.</p>	<p><b>County Commissioners Office, Rural Fire Departments, US Forest Service, Bureau of Land Management.</b></p>	<p>organizations and companies, private landowners, and fire protection personnel.</p> <p><b>Year 1 (2004) activity:</b> Develop a needs assessment to determine GIS needs and follow-up to implement within the next 2 years.</p> <p>Use the database created during the preparation of this plan as initial data for this effort.</p>

## 4.4 People and Structures

The protection of people and structures will be tied together closely as the loss of life in the event of a wildland fire is generally linked to a person who could not, or did not, flee a structure threatened by a wildfire. The other incident is a fire fighter who suffers the loss of life during the combating of a fire. Many of the recommendations in this section will define a set of criteria for implementation while others will be rather specific in extent and application.

Many of the recommendations in this section involve education and increasing awareness of the residents of Gem County. These recommendations stem from a variety of factors including items that became obvious during the analysis of the public surveys, discussions during public meetings, and observations about choices made by residents living in the Wildland-Urban Interface. Over and over, the a common theme was present that pointed to a situation of landowners not recognizing risk factors:

- Homeowners in the public mail survey ranked their home site wildfire risk factors significantly lower than a random sample of home rankings completed by fire mitigation specialists.
- Fire District personnel pointed to numerous examples of inadequate access to homes of people who believe they have adequate ingress.
- Discussions with the general public indicated an awareness of wildland fire risk, but they could not specifically identify risk factors.
- Almost half of the respondents to the public mail survey indicated (43%) that they want to participate in educational opportunities focused on the WUI and what they can do to increase their home's chances of surviving a wildfire.

In addition to those items enumerated in Table 4.4, residents and policy makers of Gem County should recognize certain factors that exist today, that in their absence would lead to an increase in the risk factors associated with wildland fires in the WUI of Gem County. These items listed below should be encouraged, acknowledged, and recognized for their contributions to the reduction of wildland fire risks:

- **Livestock Grazing** in and around the communities of Gem County has led to a reduction of many of the fine fuels that would have been found in and around the communities and in the wildlands of Gem County. Domestic livestock not only eat these grasses, forbs, and shrubs, but also trample certain fuels to the ground where decomposition rates may increase. Livestock ranchers tend their stock, placing resource professionals into the forests and rangelands of the area where they may observe ignitions, or potentially risky activities. Livestock grazing in this region should be encouraged into the future as a low cost, positive tool of wildfire mitigation in the Wildland-Urban Interface and in the wildlands.
- **Forest Management** in Gem County has been affected greatly by the reduction of operating sawmills in the region (see section 2.2). However, the active forest management program of Boise Corp., the Idaho Department of Lands, and many of the private forestland owners in the region has led to a significant reduction of wildland fuels where they are closest to homes and infrastructure. An excellent example of this has already been highlighted in this document (Section 3.3) involving the US Forest Service's planned activities from 2004-2008. This management will improve forest health, reduced the buildup of forestland fuels, and provided for the effective treatment

of logging residue. All of this management will occur in an area that if ignited could easily threaten the homes of Gross, Sweet, Montour, and Ola. In addition, forest resource professionals managing these lands, and the lands of the state and federal agencies are generally trained in wildfire protection and recognize risk factors when they occur. One of the reasons that Gem County forestlands have not been impacted by wildland fires to a greater degree historically, is the presence and activities related to active forest management.

- **Agriculture** is a significant component of Gem County's economy (see Section 2.2). Much of the valley bottomlands and rangeland interface is dotted and intermixed with agricultural crops. The original conversion of these lands to agriculture from valley bottom and rangeland, was targeted at the most productive soils and juxtaposition to water. Many of these productive ecosystems were consequently also at some of the highest risk to wildland fires because biomass accumulations increased in these productive landscapes. The result today, is that much of the valley bottom and rangeland historically prone to frequent fires, has been converted to agriculture, which is at a much lower risk than prior to its conversion. The preservation of a viable agricultural economy in Gem County is integral to the continued management of wildfire risk in this region.

**Table 4.2. WUI Action Items for People and Structures.**

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
<b>4.4.a: Youth and Adult Wildfire Educational Programs</b>	<b>Protect people and structures</b> by increasing awareness of WUI risks, how to recognize risk factors, and how to modify those factors to reduce risk	Cooperative effort including: <ul style="list-style-type: none"> <li>• University of Idaho Cooperative Extension</li> <li>• Idaho Department of Lands</li> <li>• USFS Boise National Forest and State and Private Forestry Office</li> <li>• Bureau of Land Management</li> <li>• Local School Districts</li> </ul>	To start immediately using existing educational program materials and staffing. Formal needs assessment should be responsibility of University of Idaho Cooperative Extension faculty and include the development of an integrated WUI educational series by year 3 (2006). Costs initially to be funded through existing budgets for these activities to be followed with grant monies to continue the programs as identified in the formal needs assessment.
<b>4.4.b: Wildfire risk assessments of homes in identified communities</b>	<b>Protect people and structures</b> by increasing awareness of specific risk factors of individual home sites in the at-risk landscapes. Only after these are completed can home site treatments follow.	To be implemented by <b>County Commissioners Office</b> in cooperation with the <b>Rural Fire Departments</b> . Actual work may be completed by Wildfire Mitigation Consultants.	<ul style="list-style-type: none"> <li>• <b>Cost:</b> Approximately \$100 per home site for inspection, written report, and discussions with the homeowners.</li> <li>• There are approximately 5,888 housing units in Gem County, roughly 350 (6%) of these structures would benefit from a home site inspection and budget determination for a total cost estimate of \$35,000.</li> <li>• <b>Action Item:</b> Secure funding and contract to complete the inspections during years 1 &amp; 2 (2004-05)</li> <li>• Home site inspection reports and estimated budget for each home site's treatments will be a requirement to receive funding for treatments through grants.</li> </ul>
<b>4.4.c: Home Site WUI Treatments</b>	<b>Protect people, structures, and increase fire fighter safety</b> by reducing the risk factors surrounding homes in the WUI of Gem County	<b>County Commissioners</b> in cooperation with Fire Mitigation Consulting company and Rural Fire Districts  <i>Complete concurrently with 4.4.b.</i>	<ul style="list-style-type: none"> <li>• Actual funding level will be based on the outcomes of the home site assessments and cost estimates</li> <li>• <b>Estimate</b> that treatments in rangelands will cost approximately \$1,000 per home site for a defensible space of roughly 150'. Approximately 350 homes in this category for an estimated cost of \$350,000. Median home and business assessed value in County is \$28,373 (average \$57,800): <b>B/C Ratio of this treatment is approximately 57.8:1.</b></li> <li>• Home site treatments can begin after the securing of funding for the treatments and immediate implementation in 2004 and will continue from year 1 through 5 (2008).</li> </ul>

**Table 4.2. WUI Action Items for People and Structures.**

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
<b>4.4.d: Community Defensible Zone WUI Treatments</b>	<b>Protect people, structures, and increase fire fighter safety</b> by reducing the risk factors surrounding high risk communities in the WUI of Gem County	<b>County Commissioners</b> in cooperation with Fire Mitigation Consulting company and Rural Fire Districts	<ul style="list-style-type: none"> <li>• Actual funding level will be based on the outcomes of the home site assessments and cost estimates.</li> <li>• <b>Years 2-5 (2004-08):</b> Treat high risk wildland fuels from home site defensible space treatments (4.4.c) to an area extending 400 feet to 750 feet beyond home defensible spaces, where steep slopes and high accumulations of risky fuels exist. Should link together home treatment areas. Treatments target high risk concentrations of fuels and not 100% of the area identified. To be completed only after or during the creation of home defensible spaces have been implemented.</li> <li>• <b>Communities to target:</b> Sweet, Ola, Montour, and Pearl. High risk areas along northern and southern edge of Emmett and Letha.</li> <li>• Approximate average cost on a per structure basis is \$1,500. Couple this cost with the home defensibility space costs of \$1,000. The number of structures to benefit from these treatments include the 350 structures receiving home site treatments plus an estimated 2,100 more structures. The <b>average B/C Ratio for these treatments combined in Gem County is 161.8:1.</b></li> </ul>
<b>4.4.e: Maintenance of Home Site WUI Treatments</b>	<b>Protect people, structures, and increase fire fighter safety</b> by reducing the risk factors surrounding homes in the WUI of Gem County	<b>County Commissioners Office</b> in cooperation with Rural Fire Departments and local home owners	<ul style="list-style-type: none"> <li>• Home site defensibility treatments must be maintained periodically to sustain benefits of the initial treatments.</li> <li>• Each site should be assessed 5 years following initial treatment</li> <li>• Estimated re-inspection cost will be \$50 per home site on all sites initially treated or recommended for future inspections (\$17,500)</li> <li>• Follow-up inspection reports with treatments as recommended years 5 through 10.</li> </ul>
<b>4.4.f: Re-entry of Home Site WUI Treatments</b>	<b>Protect people, structures, and increase fire fighter safety</b> by reducing the risk factors surrounding homes in the WUI of Gem County	<b>County Commissioners Office</b> in cooperation with Rural Fire Departments and local home owners	<ul style="list-style-type: none"> <li>• Re-entry treatments will be needed periodically to maintain the benefits of the initial WUI home treatments. Each re-entry schedule should be based on the initial inspection report recommendations, observations, and changes in local conditions. Generally occurs every 5-10 years.</li> </ul>

**Table 4.2. WUI Action Items for People and Structures.**

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
<p><b>4.4.g: Survey and Rate bridges, cattle guards, and limiting road surfaces in the county on all private property.</b></p>	<p><b>Protection of people, structures, infrastructure, and economy</b> by improving access for residents and fire fighting personnel in the event of a wildfire. Reduces the risk of a road failure that leads to the isolation of people or the limitation of emergency vehicle and personnel access during an emergency.</p>	<p><b>County Roads and Bridges Department</b> in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), industrial forestland owners, ranchers, and private landowners.</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Update existing assessment of travel surfaces, bridges, and cattle guards in Gem County as to location. Secure funding for implementation of this project (grants)</li> <li>• <b>Year 2 (2005):</b> Conduct engineering assessment of limiting weight restrictions for all surfaces (e.g., bridge weight load maximums). Estimate cost of \$35,000 which might be shared between County, USFS, BLM, State, and private based on landownership associated with road locations.</li> <li>• <b>Year 2 (2005):</b> Post weight restriction signs on all crossings, copy information to rural fire districts and wildland fire protection agencies in affected areas. Estimate cost at roughly \$5-\$10,000 for signs and posting.</li> <li>• <b>Year 3 (2006):</b> Identify limiting road surfaces in need of improvements to support wildland fire fighting vehicles and other emergency equipment. Develop plan for improving limiting surfaces including budgets, timing, and resources to be protected for prioritization of projects (benefit/cost ratio analysis). Create budget based on full assessment.</li> </ul>
<p><b>4.4.h: Access Improvements for private property with one-way-in and one-way-out.</b> Identify key private roads that access larger areas.</p>	<p><b>Protection of people, structures, infrastructure, and economy</b> by improving access for residents and fire fighting personnel in the event of a wildfire. Allows for alternative escape routes when a primary access is compromised.</p>	<p><b>County Roads and Bridges Department</b> in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), and industrial forestland owners (e.g., Boise Corp.).</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Update existing assessment of roads in Gem County as to location. Secure funding for implementation of this project (grants).</li> <li>• <b>Year 2 (2005):</b> Specifically address access issues in Gross, Ola, Pearl, and others identified in assessment. Develop alternatives for improving access limitations. Landowners and agencies to play significant role in alternative development.</li> <li>• <b>Year 3 (2006):</b> Secure funding and implement projects to improve limiting access. No way to estimate costs until priorities are set and options identified.</li> </ul>
<p><b>4.4.i: Access Improvements through road-side fuels management</b></p>	<p><b>Protection of people, structures, infrastructure, and economy</b> by improving access for residents and fire fighting personnel in the event of a wildfire. Allows for a road based defensible area that can be linked to a terrain based</p>	<p><b>County Roads and Bridges Department</b> in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), and industrial forestland owners.</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Update existing assessment of roads in Gem County as to location. Secure funding for implementation of this project (grants).</li> <li>• <b>Year 2 (2005):</b> Specifically address access issues to Gross, Ola, Pearl, the Sweet-Montour Corridor, recreation areas in the extreme north end of the County, and others identified in assessment. Target 100' on downhill side of roads and 75' on uphill side for estimated cost of \$15,000 per mile of road treated. If 10 miles of roadway are prioritized for treatment (est.) <b>B/C Ratio of 14.3:1 is achieved.</b> This B/C ratio may be</li> </ul>

---

**Table 4.2. WUI Action Items for People and Structures.**

<b>Action Item</b>	<b>Goals and Objectives</b>	<b>Responsible Organization</b>	<b>Action Items, Planning Horizon and Estimated Costs</b>
	defensible areas.		maintained in many rural treatment areas of the county. <ul style="list-style-type: none"><li>• <b>Year 3 (2006):</b> Secure funding and implement projects to treat road-side fuels.</li></ul>

---

## 4.5 Infrastructure

Significant infrastructure refers to the communications, transportation (road and rail networks), energy transport supply systems (gas and power lines), and water supply that service a region or a surrounding area. All of these components are important to the West Central Highlands, and to Gem County specifically. These networks are by definition a part of the Wildland-Urban Interface in the protection of people, structures, **infrastructure**, and unique ecosystems. Without supporting infrastructure a community's structures may be protected, but the economy and way of life lost. As such, a variety of components will be considered here in terms of management philosophy, potential policy recommendations, and on-the-ground activities.

**Communication Infrastructure:** This component of the WUI seems to be diversified across the county with multiple source and destination points, and a spread-out support network. Although site specific treatments will impact directly local networks, little needs done to insure the system's viability.

**Transportation Infrastructure (road and rail networks):** This component of the WUI has some potential limitations in Gem County. The hub of Gem County's transportation network is located in Emmett (as is the County Seat). Highway 16 and Highway 52 cross paths in Emmett to provide access to and from Eagle (and points south), Payette (and points west), Montour (and points north and east). Literally dozens of other surface streets and gravel roads provide access to many points across the County and surrounding Counties. For the most part, these roads cross over rangelands and agricultural lands.

Near Montour, State Highway 52 continues eastward. The Sweet-Ola Highway begins here running northward to access Sweet, Ola, and then splitting to the Third Fork Road to access Gross. These roads cross through a variety of rangeland and forestland vegetation types. In most locale, these roads are adequate to serve local access, recreation use, and fire fighting access. Short stretches of these roads, however, are very narrow or have dense vegetation on steep slopes crowding the roadways. In addition, as has been pointed out earlier in this document, there are scattered bridges in the roadways, especially on private lands, that are not suitable to support water laden trucks, or at least have not been rated as to the maximum weight they will support. Brush cutting, tree thinning and pruning, targeted herbicide treatments, and grass mowing should be maintained along these major access roads during the spring and summer seasons. The bridges and cattle guards should be rated for maximum load allowances and posted with the data.

A few roads in the county have limiting characteristics, such as steep grades, narrow travel surfaces, sharp turning radii, low load limit bridges and cattle guards, and heavy accumulations of fuels adjacent to, and overtopping some roads. Some of these road surfaces access remote forestland and rangeland areas. While their improvements will facilitate access in the case of a wildfire, they are not necessarily the priority for treatments in the county.

Roads that have these inferior characteristics and access homes and businesses are the priority for improvements in the county. Specific recommendations for these roads are enumerated in Table 4.4.

**Energy Transport Supply Systems (gas and power lines):** During the Hall Fire in nearby Adams County, the high tension power lines maintained by Idaho Power that cross the region from the Snake River to McCall and then to Riggins were threatened by heat, smoke and particulate matter in the smoke. The power lines were at risk to arcing and potentially failure. Fortunately, power was not lost to the communities of Adams and Valley counties as a result of the fire, but it did point to the need for an increased focus on fuels management under and immediately adjacent to the high tension power lines in this region (Appendix I).

A number of power lines crisscross Gem County from the Black Canyon Hydroelectric Dam supply, to supplies located along the Snake River. Because of the location, Gem County's land surfaces provide access to power supplies and population centers in Idaho and parts of Oregon. Most of these power lines cross over rangeland ecosystems. When fires ignite in these vegetation types, the fires tend to be fast moving and burn at lower intensities than those in forestland fires. However, when these sagebrush communities become very mature and thick, there is a potential for high temperatures and low humidity with high winds to produce enough heat and smoke to threaten power line stability. Observations across the county of these high tension power lines lead to the conclusion that current agricultural uses coupled with livestock grazing and urban developments have mitigated this potential substantially. It is the recommendation of this Wildfire Mitigation Plan that this situation be evaluated annually and monitored and treatments be targeted where the need is the greatest. Local ranchers and land managers will be the greatest resource for identifying these opportunities.

**Water Supply:** In many of Idaho's communities, water is derived from surface flow that is treated and piped to homes and businesses. When wildfires burn a region, they threaten these watersheds by the removal of vegetation, creation of ash and sediment. As such, watersheds should be afforded the highest level of protection from catastrophic wildfire impacts. In Gem County, water is supplied to the majority of homes from single home or multiple home wells.

Agricultural water supply from the region's rivers and lakes is an important component of the viability of the regional economy (agriculture and ranching). These resources are at-risk to wildland fires. Their protection comes from the limiting of the extent and frequency of wildfires in any given watershed. Based on the analysis of past fires in Gem County and the current status of wildland fire protection in the region, this component of the economy seems to be stable and reasonably protected. Changes to the status quo are not recommended at this time, in light of the other recommendations in this plan.

## **4.6 Resource and Capability Enhancements**

There are a number of resource and capability enhancements identified by the rural and wildland fire fighting districts in Gem County. For specific details on these comments, refer to sections 3.4.1 and 3.4.2. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies in the WUI and are fully supported by the planning committee.

Specific reoccurring themes of needed resources and capabilities include:

- More water tenders for Rural Fire Districts
- Improved radio capabilities within each district and for mutual aid operations (including digital capability and improved coverage)
- Retention and recruitment of volunteers
- Training and development of rural firefighters in structure and wildland fire
- New Volunteer Fire District servicing Pearl. This should only be done with the concurrence of the local residents who will serve as the volunteer base, assisted by the other Fire District's personnel in the county.

The implementation of each issue will rely on either the isolated efforts of the fire districts or a concerted effort by the county to achieve equitable enhancements across all of the districts. Given historic trends, individual departments competing against neighboring departments for grant monies and equipment will not necessarily achieve county wide equity. However, the West Central Highlands Resource Conservation and Development Council may be an organization

uniquely suited to work with all of the districts in Gem County and adjacent counties to assist in the prioritization of needs across district and even county lines. Once prioritized, the WCH RC&D is in a position to assist these districts with identifying, competing for, and obtaining grants and equipment to meet these needs. The BLM and the US Forest Service will be integral partners in this process.

**Table 4.3. WUI Action Items in Fire Fighting Resources and Capabilities.**

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
<p><b>4.5.a: Obtain additional 3,000-5,000 gal water tenders for rural fire districts: 4 now, potentially one additional for Pearl Department if created.</b></p>	<p><b>Protection of people and structures</b> by direct fire fighting capability enhancements.</p>	<p><b>West Central Highlands Resource Conservation and Development Council</b> in cooperation with rural and wildland fire districts and the County Commissioners.</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Verify stated need still exists, develop budget, and locate funding or equipment (surplus) sources.</li> <li>• <b>Year 1 or 2 (2004-05):</b> Acquire and deliver needed equipment to districts based on prioritization by need and funding awards.</li> </ul>
<p><b>4.5.b: Enhance radio availability in each district, link in to existing dispatch, improve coverage and range within the region. Upgrade to digital capability if federal agencies are making that transition first. Emphasize the addition of a radio repeater located on Squaw Butte.</b></p>	<p><b>Protection of people and structures</b> by direct fire fighting capability enhancements.</p>	<p><b>BLM and the West Central Highlands Resource Conservation and Development Council</b> in cooperation with rural and wildland fire districts</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Summarize existing two-way radio capabilities and limitations. Identify costs to upgrade existing equipment and locate funding opportunities.</li> <li>• <b>Year 2-3 (2005-06):</b> Identify opportunities for radio repeater towers located in the region for multi-county benefits.</li> <li>• <b>Year 2 (2005):</b> Acquire and install upgrades as needed.</li> </ul>
<p><b>4.5.c: Structural facilities for existing districts or new one, expansion of a district or increasing storage of existing facilities.</b></p>	<p><b>Protection of people and structures</b> by direct fire fighting capability enhancements.</p>	<p><b>West Central Highlands Resource Conservation and Development Council</b> in cooperation with rural and wildland fire districts.</p>	<ul style="list-style-type: none"> <li>• Priority Districts:               <ul style="list-style-type: none"> <li>○ GCFP#2</li> <li>○ Pearl VFD</li> </ul> </li> <li>• <b>5 Year Planning Horizon</b></li> </ul>
<p><b>4.5.d: Retention of Volunteer Fire Fighters</b></p>	<p><b>Protection of people and structures</b> by direct fire fighting capability enhancements.</p>	<p><b>Rural and Wildland Fire Districts</b> working with broad base of county citizenry to identify options, determine plan of action, and implement it.</p>	<ul style="list-style-type: none"> <li>• 5 Year Planning Horizon, extended planning time frame</li> <li>• Target an increased recruitment (+10%) and retention (+20% longevity) of volunteers</li> <li>• <b>Year 1 (2004):</b> Develop incentives program and implement it.</li> </ul>

**Table 4.3. WUI Action Items in Fire Fighting Resources and Capabilities.**

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
<p><b>4.5.e: Increased training and capabilities of fire fighters for individual districts and as annual or periodic, countywide training opportunities to facilitate standardized level of training and cross district familiarization of people and resources.</b></p>	<p><b>Protection of people and structures</b> by direct fire fighting capability enhancements.</p>	<p><b>Rural and Wildland Fire Districts</b> working with the <b>BLM and USFS</b> for wildland training opportunities and with the <b>State Fire Marshall's Office</b> for structural fire fighting training.</p>	<ul style="list-style-type: none"> <li>• <b>Year 1 (2004):</b> Develop a multi-county training schedule that extends 2 or 3 years in advance (continuously).</li> <li>• Identify funding and resources needed to carry out training opportunities and sources of each to acquire.</li> <li>• <b>Year 1 (2004):</b> Begin implementing training opportunities for volunteers.</li> </ul>

## **4.7 Regional Land Management Recommendations**

In section 4.4 of this plan, reference was given to the role that forestry, grazing and agriculture have in promoting wildfire mitigation services through active management. Gem County is both a rural county (east and north sides) and an urban center (Emmett). It is dominated by wide expanses of forest and rangelands intermixed with communities and rural houses.

Wildfires will continue to ignite and burn fuels and homes depending on the weather conditions and other factors enumerated earlier. However, active land management that modifies fuels, promotes healthy range and forestland conditions, and promotes the use of these natural resources (consumptive and non-consumptive) will insure that these lands have value to society and the local region. We encourage the US Forest Service, the Bureau of Land Management, the Idaho Department of Lands, Industrial forestland owners, private forestland owners, and all other landowners in the region to actively manage their Wildland-Urban Interface lands in a manner consistent with the management of reducing fuels and risks in this zone.