Elk Valley Estates Homeowners Association

Community Wildfire Protection Plan Update

January, 2011

Elk Valley Estates Home Owners Association CWPP Update January 27, 2011

Note: This document was prepared in good faith by the Elk Valley Estates Home Owner's Association CWPP committee for the benefit of the Elk Valley Estates. The CWPP committee assumes no liability in the preparation of this document. This document is intended only as a guide for the Elk Valley Estates Home Owner's Association to continue to reduce fire risk, improve forest conditions, and maintain wildlife habitats for the next five years. The information provided has been obtained from local forest professionals, homeowners participating in this project and from past knowledge and history of projects in the community.

This update of the Elk Valley Estates Homeowner's Association CWPP has been reviewed and approved by the Directors of the Association.

Elk Valley HOA Date 01 / 13 / 11

Kevin Sterling, President

Vince Scarlata, Vice President

Approved and/or Concurred:

Divide Fire Protection District _____ date 01 / 13 / 11

Teller County Commissioners _____ date 1 / 27 / 2011

for Colorado State Forest Service _____ date 1 / 6 / 11

Cover photos courtesy of V. Scarlata, Elk Valley Estates

Elk Valley Community Wildfire Protection Plan Update Jan 2011

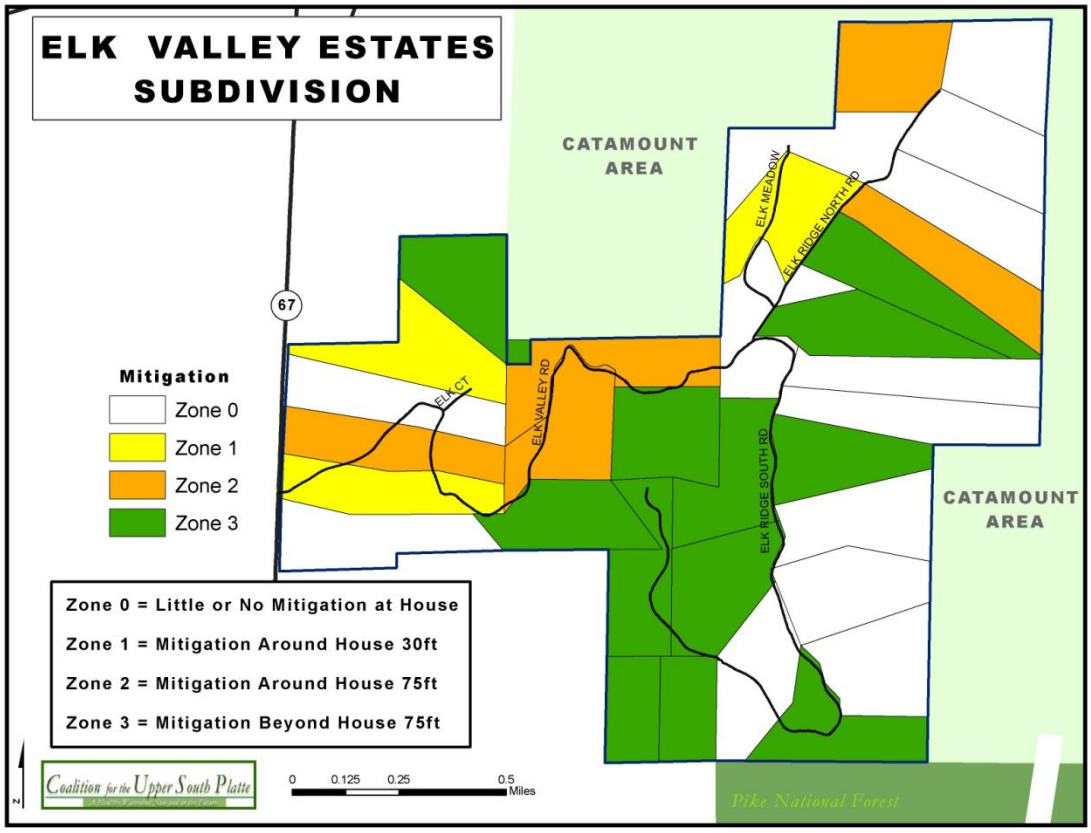
Introduction

On the northwest "skirt" of Pikes Peak, the Elk Valley subdivision is located in an area with a high risk of catastrophic wildfire with potential to have far reaching effects. The intersection of Hwy 67S and Hwy 24 West is just a few miles northwest of Elk Valley and is a critical access route for many residents of western Teller County. A fire in this area could seriously affect traffic and the safety of many. The Elk Valley name is appropriate for this special elk habitat and the community participates in a Conservation Easement with Colorado Division of Wildlife to protect and maintain this elk calving area.

Progress – Improved Safety

The original Elk Valley CWPP, Aug. 2007, outlined a plan of action for the subdivision to begin reducing the risk of catastrophic wildfire within the community. Many changes have occurred since that time and much has been accomplished.

Through educational efforts, many residents have undertaken the responsibility of defensible space in the zone nearest to their structures. The restrictions of the conservation easement limited these projects to the 2 acre envelope around the buildings.



Progress – Improved Forest Health

Efforts to quickly remove any insect infested tree before the problem spreads have been successful. The insect and disease impact on Elk Valley had been minimal, but vigilance is still necessary. (See Appendix A)

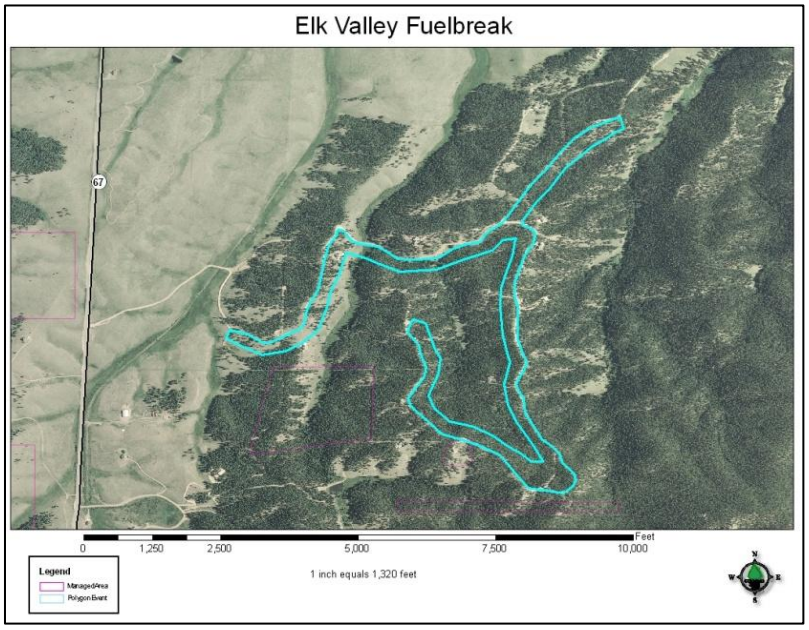
By thinning to reduce the forest crown closure and allowing more sunlight to reach the soil, the native plants will come back. These plants provide ground cover to reduce erosion and are a food source for wildlife of many types. See Appendix B for general fuel break guidelines. For more specific information, contact Colorado State Forest Service (Appendix D).

Progress - Fire Suppression

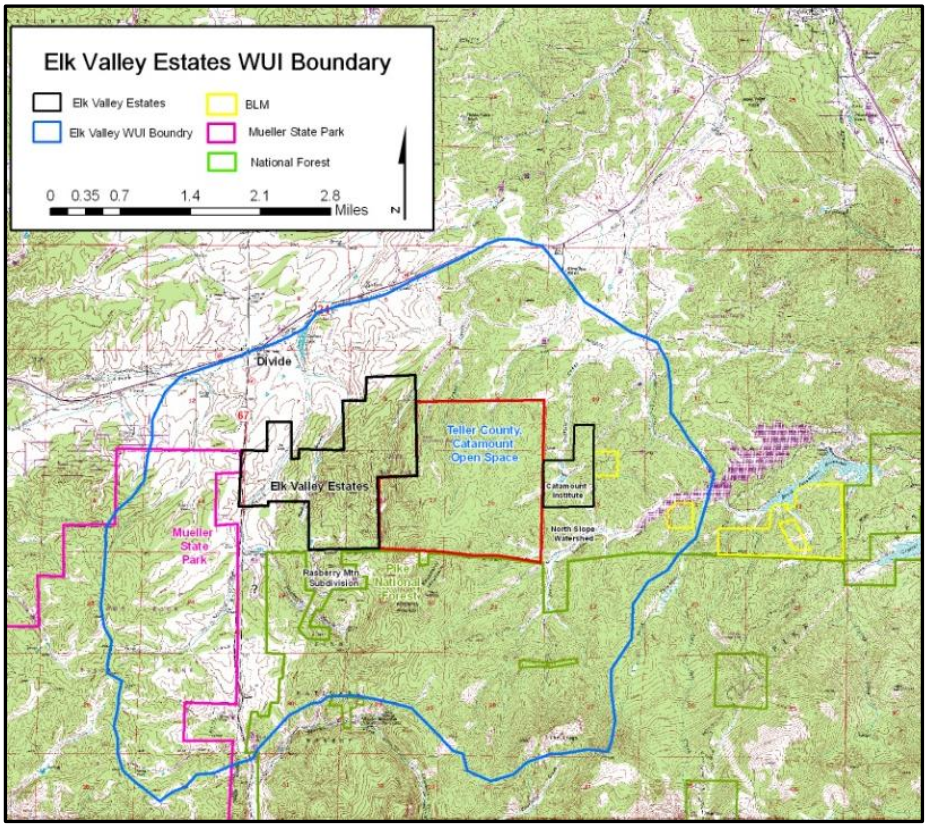
The Elk Valley community expects prompt initial attack response from Federal, State and local fire suppression resources in the event of a wildland fire start that threatens the community. When possible, aggressive initial attack, including the use of aircraft, has been shown to be the most cost effective approach for dealing with wildfires. The Elk Valley community does understand that occasionally, due to reasons such as lack of resources, multiple fire starts, extreme burning conditions, or firefighter safety issues, initial attack will not be successful; however, the community expects that each party with a role in suppression will take aggressive actions to contain, control, and fully extinguish wildfires during the initial attack period and thereafter, and agrees the primary concern is the extinguishing of wildland fires.

To assist in that effort, Elk Valley residents have installed three 1500 gal. cisterns at various locations on private properties. These cisterns are to supply water in the event of a fire start within the subdivision to allow fire suppression personnel to aggressively fight even the smallest fire before it becomes a larger emergency.

Fuel reduction along Elk Valley's major roads has been an ongoing project. Through volunteer effort, contracted work, resident and grant funding, the project as originally designed has been completed. The final piece of the project was completed in 2010 with assistance from the Coalition for the Upper South Platte, Colorado State Forest Service and a grant from the American Recovery and Reinvestment Act.



Partnerships And Collaboration



Community members have met with the US Forest Service to discuss future projects to reduce the risk of a fire moving from USFS lands into Elk Valley. Contact has also been made with neighboring subdivisions and land owners to discuss joint projects of benefit to all. The Division of Wildlife continues to provide information and recommendations to maintain or improve the wildlife habitats that are part of our forested lands.

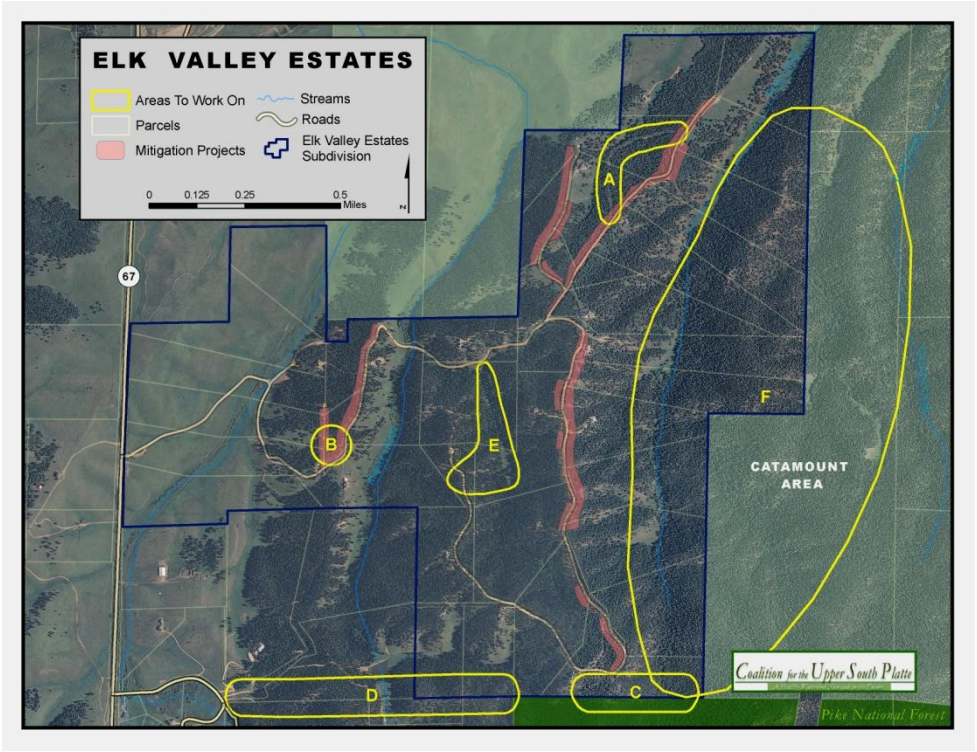
The Elk Valley Wildland Urban Interface (WUI) Boundary was established in consultation between the USDA Forest Service, Elk Valley and the CSFS. The WUI, as used in CWPP's is the area surrounding the community where a wildfire would pose the greatest threat to the community. Landowners within this WUI boundary with active mitigation programs in place include Mueller State Park, Teller County open space, Colorado Springs Utilities, Ranch Estates subdivision, and several individual landowners.

Other Values At Risk

Initially, Elk Valley's primary concern was reducing the risk of catastrophic wildfire. However, we are realizing there are many other values we need to include to avoid "unintended consequences" caused by fuel reduction. Among these are watershed protection, wildlife habitat maintenance and general forest health.

The aftermath of wildfire can result in other delayed environmental effects. Elk Valley lies at the edge of both the Upper South Platte and Arkansas watersheds. A large fast moving fire would likely result in soil erosion (See Appendix C), impacting water supplies to El Paso, Teller and Douglas counties and others downstream. The aftereffects and recovery in this area could be very similar that which is occurring in the Hayman burn area.

Updated Priorities



With the progress to date, Elk Valley now has the opportunity to look at other fuel reduction and forest health projects that would be beneficial and continue to modify the wildfire hazards. This map illustrates the priority areas for future mitigation projects. Areas C, D, and F will be cross-boundary projects with other partners.

Priorities for the next five years can be summarized in four categories:

A. Leadership
    a. The Elk Valley HOA Advisory group will be maintained and will continue to collaborate with Colorado Division of Wildlife and Colorado State Forest Service to maintain and improve both the wildlife habitats and health of the forested areas.
    b. This group will continue to evaluate the CWPP goals on an annual basis and develop and initiate short term goals for each year.
    c. Continue to search and pursue funding opportunities for CWPP projects.
    d. Establish partnerships with adjacent landowners and US Forest Service to facilitate cross boundary fuel mitigation projects.
B. Fuel Mitigation and Forest Health
    a. Continue the process of removing dead, fallen and unhealthy trees along road easements. Evaluate policy on removal of diseased trees and make changes as needed.
    b. Inspect previous mitigation projects for maintenance needs and include in annual goals as necessary.
    c. Continue to organize slash removal and chipping program for the benefit of all .
    d. Design and create fuel or fire breaks or other fuel mitigation projects in priority areas throughout subdivision where possible and effective.

C. Education
    a. Provide information for property owners regarding development of defensible space in the three primary zones around their home site through handouts, community meetings, and website.
    b. Notify owners of any increasing forest insect or disease threat to community.
    c. Schedule additional educational opportunities by inviting appropriate speakers to community meetings.
    d. Contact absentee landowners to provide information regarding reducing the fire risk, improving the forest health and maintenance of wildlife habitats.
D. Life Safety and Fire Suppression
    a. Meet with representatives of local fire suppression authorities to evaluate current conditions and include their recommendations in future priorities.
    b. Purchase and place additional 4500 gal cistern at northern edge of subdivision.
    c. Establish both a north and south emergency egress routes with permission of adjacent landowners mark these routes with appropriate signage and inform residents of emergency procedures.

The CWPP cannot compel any homeowner to take action. The key to success or failure in reducing fuel hazards and increasing community safety is in the hands of the homeowners. As we move forward, it will be important to continue to provide the Elk Valley residents with the necessary information and resources to protect their own property and reduce the wildfire risk to neighboring properties as well. Working together we can take responsibility for important fuel reduction and thinning as this is the key to the health of our forest, maintaining watershed quality and protecting important wildlife habitats.

Appendices

Elk Valley
CWPP Update

January 2011

APPENDIX A – ELK VALLEY INSECT AND DISEASE CONDITIONS

Literally thousands of insect and diseases are present in the forests surrounding Elk Valley--or any other forested area. Fortunately, like the common cold, most do no serious or lasting damage. But when in poor health, trees, like humans, are more prone to infection from other causes; the concept of preventive medicine applies to forests, as well. Maintaining forests in good health will prevent problems in the future. For the most part, forest insect and disease issues in Elk Valley are typical for the region.

Every summer, insect and disease specialists from the USDA Forest Service and Colorado State Forest Service (CSFS) survey Colorado's forests from the air to monitor insect and disease outbreaks. These flights are an excellent means of finding new areas of insect and disease activity and monitoring trends in existing outbreaks. Maps of the previous year's findings are published in January and can be found on the CSFS website at http://csfs.colostate.edu/pages/common-insects.html.This link also contains more detailed information on the insect and disease issues presented here.

The unnaturally dense forest conditions that cause the potential for hazardous fire in Elk Valley also create the potential for cyclical insect and disease outbreaks. Trees weakened by overcrowding and severe competition for water and sunlight are susceptible to invasion by insects and disease. When planning wildfire hazard mitigation projects, it is important to address current insect or disease issues and prevent those that are likely to become a problem. Following is information on some of the common forest insect and disease problems that have been identified locally.

Western Spruce Budworm

The western spruce budworm (WSBW), a defoliating insect of Douglas-fir and spruce, is a growing threat in Teller County. Currently the most active areas of budworm defoliation are in northern Teller County near the Douglas County line. The current outbreak in the north may expand or remain static depending on weather and climate conditions.

A severe outbreak of WSBW in the late 1980s damaged or killed large areas of Douglas-fir throughout the region. Trees with dead branch tips or those with forked or dead tops are legacies of the previous epidemic. Many of the dead Douglas-fir were first weakened by budworm and then killed by Douglas-fir beetles. (See the section on Douglas-fir beetle).

Figure A-1: WSBW larva feeding on the needles of Douglas-fir. Note the typical webbing in the bottom of the photo. (Colorado State Forest Service photo by David Leatherman.)

Depending on the intensity of defoliation, budworm may damage or kill the host tree. The

grayish, mottled adult moths are active in July and August when females lay eggs on the underside of needles. Eggs hatch within days and the larvae migrate to bark scales where they overwinter. The following spring, larvae invade the new buds and feed on the emerging needles. Webbing around the new growth is an obvious sign of budworm activity and if heavy defoliation continues for three to five years, the tree will die. If shorter-term defoliation occurs, the branch tips or the entire top of the tree could die.

Natural predators or severe winter weather helps control budworm populations, which keeps them at non-threatening levels. Spraying with *Bacillus thuringensis* may be useful to protect high value trees, but is not practical on a large scale. No spraying is recommended in Elk Valley at this time.

Mountain Pine Beetle

Unlike the Western Slope, mountain pine beetle (MPB) is at normal levels in the Elk Valley area. The beetles have crossed the Continental Divide in northern Park County and northern Larimer County, and activity currently is confined mostly to higher altitude lodgepole pine. It presently is not known if or when the beetles will reach into the lower-elevation ponderosa forests, but where they have reached ponderosa, heavy mortality has occurred.

Fortunately there is a diversity of species in Elk Valley so that all the trees are not susceptible to MPB as are the lodgepole pine monocultures of the western slope. Elk Valley has an active bark beetle control program that has effectively removed infested trees from the forests before the insects mature and infest new trees. By far, the best preventative measure will be the continued thinning of forest stands to reduce fire hazard restore forest health, and promote ages and species diversity in the forest.

Figure A-2: Mountain pine beetle galleries under the bark. The maternal beetle burrowed straight up the tree, creating the darker central gallery. Larval beetles feed horizontally, creating the smaller galleries. A larva is in the upper right and pupae in the lower left. Note the bluestain in the wood. (Colorado State Forest Service photo by David Leatherman.)

Adult beetles fly from midsummer through the first frost, although the vast majority fly between mid-July through the middle of September. Females seek a large, weak tree in which to mate and lay eggs. Vigorous trees generate enough pitch to prevent the female from burrowing through the bark, and this attempt by the tree to prevent entry creates the pitch tubes symptomatic of beetle attack. Pitch tubes are **not** a particularly reliable indicator of a successful attack. If pitch tubes are seen, check for reddish boring dust (fine sawdust) at the base of the tree and in the bark crevices. Boring dust is a more reliable

indicator of successful attack.

Once a female penetrates the bark, she hollows out a circular mating chamber between the bark and the wood, releasing a pheromone (scent) to attract a mate. The pheromone also attracts additional females to the tree and the tree is attacked en masse. After mating, the female burrows up the trunk between the bark and wood laying eggs. She inoculates the tree with spores of bluestain fungus, which provides food for the larvae. The fungus clogs the tissues that conduct water throughout the tree, leading to death within a few weeks.

Eggs hatch within a few days. The developing larvae feed horizontally from the maternal gallery over winter. The vertical maternal gallery and horizontal larval galleries are characteristic of the mountain pine beetle. The feeding larvae spread the bluestain fungus horizontally through the tree, and it becomes visible in the wood around February. The presence of bluestain is absolute confirmation that beetles have successfully attacked a tree.

Woodpeckers feed on the larvae through the fall and winter. The holes made by the woodpeckers are a visual clue to an infested tree. Untrained observers often are confused by the holes woodpeckers make when they feed on beetle larvae and sapsuckers feed on the sap. Woodpecker feeding is characterized by random holes about one-half inch in diameter that make it appear as though the tree was peppered with a shotgun. Sapsuckers, on the other hand, make a small hole about one-eighth inch in diameter, and the holes are in straight lines or a grid pattern. Sapsuckers do not indicate the presence of beetles in the tree.

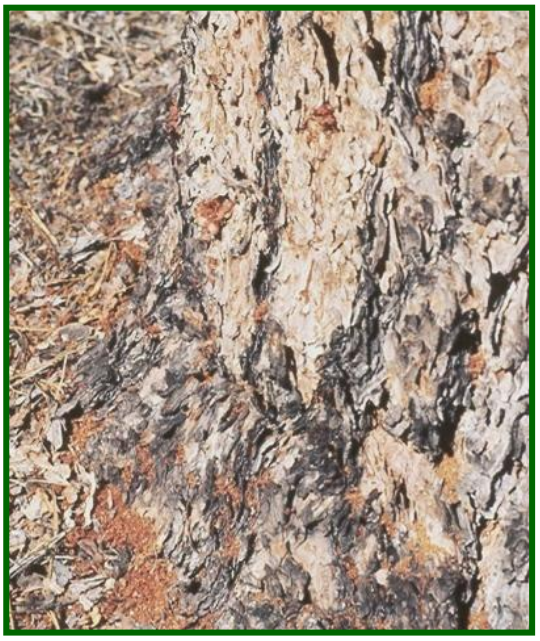


Figure A-3: Boring dust on a ponderosa pine after bark beetle attack. The reddish brown sawdust at the base of the tree and in the bark crevasses is a strong indication of successful beetle attack. Colorado State Forest Service photo by David Leatherman.

Although the tree is dead within a few weeks of successful attack, needles remain green until the following spring. Within the space of a few weeks, in late May or early June the tree will turn straw-yellow and then reddish-brown. Once beetles invade a tree, nothing can be done to save it; the tree must be cut and disposed of in a way that will kill the beetles. No insecticide is available to kill beetles under the bark; thus, some sort of mechanical treatment is necessary. Any wood greater than four inches in diameter may harbor beetles and must be treated.

Following are treatment options for beetle-infested trees:

- Cut the tree and move all wood greater than four inches in diameter to a designated mountain pine beetle-safe site – usually an area at least one mile away from the nearest pine tree.
- Move all wood to a landfill or bury it under at least eight inches of dirt.
- Completely debark any wood that is larger than four inches in diameter.
- Chip the tree. Many tree services have chippers capable of chipping large diameter trees. The beetles are killed when the wood is chipped.
- Cover wood with at least six-mill clear plastic. This method, known as solar treatment, warms the wood to lethal temperatures and increases moisture, encouraging mold growth in the logs, which kills the beetles. Treat the wood properly for successful control. Cut into firewood lengths and stack no more than two logs high. Be sure there are no exposed stubs or sharp edges that might tear the plastic. Trench around the pile and, if possible, wet down the pile to encourage mold growth. Cover the pile with plastic, push the edges of the plastic into the trenches, and seal the edges with dirt. Check periodically to be sure the plastic has not torn. If torn, it can be repaired with duct tape.

It is best to check for infested trees in October of each year – remember that infested trees, although dead, are still green at this time. Pitch tubes and boring dust will be the most obvious clues. If infested trees are located early, there is adequate time to treat them.

While no insecticide effectively treats infested trees, spraying with insecticides such as carbaryl or permethrine prevents attack. Preventive sprays will not kill beetles under the bark. Spray trees between May 1st and July 1st each year for maximum effectiveness. It is not practical to spray every tree on a large tract of land, so choosing which trees to spray depends on the landowner's budget and the value of individual trees to the landowner. It is advisable to solicit bids from several different spray companies, as prices can vary widely. It also is wise to request and check references.

Thinning forests for increased health and vigor by far is the best preventive measure for mountain pine beetle. Because trees require several years to respond to thinning, it is best done before beetles reach epidemic levels. Follow thinning guidelines for wildfire mitigation to reduce susceptibility to MPB.

Ips (engraver) Beetles

Ips beetles, relatives of the mountain pine beetle, usually attack trees less than four inches in diameter and, in such circumstances, may be useful in thinning dense stands of young trees. Thus, it usually is not considered as threatening as its larger cousin. Ips will attack larger trees if they are severely weakened by disease (most often dwarf mistletoe), or are damaged by construction, lightning strikes or in horse corrals where soil compaction injures the roots. Like the mountain pine beetle, ips burrow beneath the bark and inoculate the tree with bluestain fungus, often following mountain pine beetles into larger trees.

The differences between mountain pine beetle and ips are significant to anyone implementing a forest management program. In contrast to MPB, which produce one generation per year, ips may produce up to four. Ips become active in spring when the weather exceeds 50 degrees F, developing from egg to adult within eight weeks. They continue to attack trees until the first fall frosts.

Figure A-4: The reddish-brown sawdust on this freshly cut ponderosa pine slash indicates it has been invaded by ips beetles. Adult beetles will emerge in less than eight weeks if the slash is not properly treated. Colorado State Forest Service photo by Dave Root.

For this reason, preventive spraying should be done with permethrine or carbaryl in April and repeated in July. When spraying preventively for ips, it is important to spray the branches, as well as the trunk.

Ips attack causes no pitch tubes to form on live trees, so the only visual clue is boring dust or woodpecker holes in the trunk. Smaller trees quickly turn reddish-brown, but when they attack larger trees, ips often infest only the upper portion of the tree. The first symptom is browning of the top, but subsequent generations emerge and continue down the tree.

Ips will infest green slash and downed logs from forest management projects. If slash is not promptly treated, ips will emerge to attack living trees; treat slash within four to six weeks after cutting. If weather conditions permit, thinning trees in winter when ips are dormant will prevent problems with beetles in slash. However, slash cut after March 1 may still be green enough to attract ips when the weather warms.

Chipping slash will kill ips beetles. Lopping and scattering slash into lengths less than 24 inches promotes rapid drying and prevents infestation. Slash cut late in fall that is subsequently infested can be treated or piled and burned over the winter, but untreated slash left over the winter will produce live broods the following April. Due to their short lifecycle, solar treatment of ips-infested logs is ineffective. Bucking larger diameter logs and promptly splitting them into firewood accelerates the drying process and usually is effective in preventing ips infestations.

Many high value trees have been lost as a result of the common, and ultimately costly, practice of stacking firewood against green trees. Ips beetles will burrow out of infested firewood directly into standing trees.

Douglas-fir Beetle

Douglas-fir beetles also are present in the Elk Valley area, but are not killing large numbers of trees. If the current western spruce budworm defoliation seriously harms trees in the area, this will change. Some similarities exist between Douglas-fir beetle and MPB, but there are important differences that require different treatment strategies for infested trees.

Figure A-5: Pitch streamers on the bark of a beetle infested Douglas-fir. Not all infested trees will exhibit pitch. Threes should be checked for boring dust in the early fall. <Colorado State Forest Service Photo by Dave Root.

Both species burrow under the bark to lay eggs and both carry blue stain fungus that kills the tree within a few weeks of infestation. Each beetle prefers dense stands with large diameter, low vigor trees; thus, thinning Douglas-fir for wildfire mitigation also reduces susceptibility to beetles'.

Adult Douglas-fir beetles emerge in mid-June, and a few adults may overwinter in trees and emerge as early as April. There are no insecticides available for treatment of beetle infested trees. Infested trees should be treated prior to April of each year to prevent emergence of overwintering adults.

Effective treatments are whole tree chipping, debarking of all wood greater than four inches in diameter, transportation to a safe site or landfill, and burying under eight inches of dirt. Solar treatments should begin in the fall, preferably early fall.

Preventative spraying is an option for high value trees. Permethrine or carbaryl are effective as Douglas-fir beetle preventatives, but, because of the earlier emergence of overwintering adults, spraying should be done in April. Preventative sprays are not an effective treatment for infested wood.

Unlike MPB-infested trees, Douglas-fir trees do not form pitch tubes when attacked, so there may not be an obvious visual indication of infestation. Some Douglas-fir bleed sap when attacked, resulting in rivulets of sap on the trunk; however, this does not occur in all infested trees. Trees should be checked carefully for boring dust in early October. Later in the year, woodpecker holes may provide a visual clue that trees are infested.

Trees partially defoliated by western spruce budworm are particularly susceptible to attack by Douglas-fir beetles. Injury, overcrowding or any conditions that adversely affect the vigor of the tree will make it more susceptible. Managing the forest for open, vigorous stands of Douglas-fir is the best prevention.

Dwarf Mistletoe

Dwarf mistletoe is a parasitic plant that robs moisture and nutrients from the host tree. Over many years, it causes the tree to decline in vigor and eventually may cause death. More commonly, the tree declines to the point where bark beetles attack and kill it.

Three common species of dwarf mistletoe are found in the region, each named after its principle host – ponderosa pine, lodgepole pine and Douglas-fir. Locally, ponderosa and lodgepole varieties grow on any pine species, but Douglas-fir dwarf mistletoe is exclusive to Douglas-fir trees. Spruce, true firs and deciduous trees are immune to all three species of dwarf mistletoe.

The most obvious symptom of dwarf mistletoe infection is the dense, distorted growth of the branches, called witch's brooms because they appear to be twisted or tied in knots. The shoots of ponderosa and lodgepole dwarf mistletoe are visible on the branch as thick fingerlike growths extending out of the branch or trunk. The shoots of ponderosa and lodgepole dwarf mistletoe are long and obvious to casual observation, but Douglas-fir dwarf mistletoe shoots are shorter than the needles and are not easy to see.

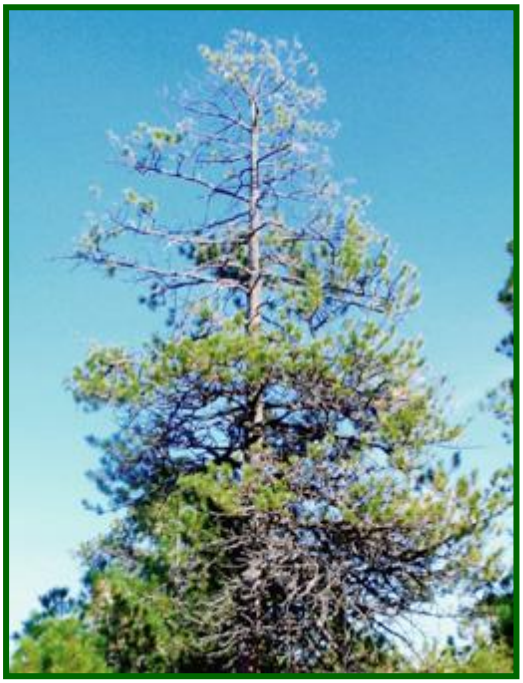


Figure A-6: A ponderosa pine with advanced dwarf mistletoe infection. Note the heavy contorted "witch's brooms" in the lower branches. After long periods of infection, the needles at the top of the tree become sparse and shorter. Colorado State Forest Service photo by Dave Root.

Mistletoe shoots are only reproductive structures with no photosynthetic function. Removing the shoots from a branch does not control dwarf mistletoe, except to temporarily halt seed production. Structures called sinkers, (analogous to roots in plants) embedded in the wood cause the damage, and the mistletoe plant continues to absorb the host tree's water and nutrients. Shoots that are removed grow back in two or three years.

During the growing season, dwarf mistletoe shoots develop berries containing a seed. In August, the berries fill with water and explode, shooting the seed as far as 40 feet. Most seeds strike branches of the host tree and do not travel the full 40 feet, so the expansion of dwarf mistletoe pockets averages two feet per year. When the seed strikes a branch, it germinates and the sinkers penetrate the bark into the tree's conductive tissues. The growing mistletoe begins to steal the tree's food and water. The first visible symptom of infection is swelling in the branch at the site of the growing mistletoe plant, but nubs of the emerging shoots won't be visible for three years and a shoot won't bear its first seeds until seven years after. As seeds spread, all susceptible trees in the vicinity may become infected; it is extremely rare to find an isolated infected tree in the forest.

The tendency of mistletoe to infect all trees in a stand makes eradication difficult. No effective chemical treatment exists for mistletoe, and the only way to kill the parasite is to kill the host. In stands where only the susceptible species of tree exists, total eradication of the mistletoe would require a clear-cut, which is unacceptable to most landowners. Fortunately, mistletoe kills trees slowly, so it is not necessary to eradicate the parasite. The disease can be controlled by a program of thinning to increase tree vigor. Pruning the more heavily infected branches also helps, even if not all the mistletoe is eliminated. The final step in the process is to replant with non-susceptible species so that new trees will grow before the mistletoe kills the remaining trees.

The spread of mistletoe can be halted by a minimum 40-foot buffer zone between infected and non-infected trees. In this situation, cut 20 feet into non-infected trees to remove any mistletoe that is not yet visible; cut the remaining 20 feet into the infected stand. Non- infected trees outside the buffer should be checked each spring for mistletoe and any infected branches should be immediately pruned before seeds develop.

In forest stands with mixed tree species, it may be possible to eliminate all mistletoe by retaining only non-susceptible trees if they are in good health. For example, in a mixed stand of ponderosa and Douglas-fir, if the ponderosa are infected, leave only Douglas-fir. Aspen are always desirable trees in situations where fire mitigation and mistletoe control are objectives, as aspen are not prone to crown fires and are immune to all species of dwarf mistletoe.

Dwarf mistletoe treatment is a complicated process that depends on the site conditions and the landowner's tolerance for cutting trees. In most cases, a combination of treatment methods will best suit the landowner's objectives. Consultation with a qualified forester is recommended to develop an effective and acceptable treatment plan.

Aspen Diseases

Many diseases affect aspen trees – far more than can be covered in the scope of a Community Wildfire Protection Plan. The common thread among aspen diseases is that landowners can do little about any of them. Treatments are always costly and usually ineffective.

A rather cynical forester once described aspen this way: "New aspen sprout from the roots. The tree grows. A deer rubs his antlers on the bark, and a fungus invades the wound. The tree dies. New sprouts come up from the roots."

The quote reflects aspen's role as a short-lived species that colonizes a site after fire or other disturbances remove existing conifers. Sun-loving aspen do not grow well in the shade. After a fire kills the existing trees, aspen roots re-sprout vigorously in the full sunlight. As aspen shade the site, shade-tolerant conifers sprout in the aspen understory. Eventually, the conifers will over-top and shade out the aspen; thus, disturbance – usually fire – is necessary to maintain pure aspen stands.

Aspen are prized by most landowners and, as noted earlier, are valuable trees for fuelbreaks and wildlife. Diseased aspen are a serious concern for most residents. The most logical way to consider aspen diseases within the scope of this plan is to divide them into diseases of the stem and diseases of the leaves.

Most fungal diseases of aspen stems are the result of wounds to the bark. The thin bark is easily wounded; when it is, several species of fungi may invade the tree. If the tree is healthy, it will tolerate the fungus for many years, but unhealthy trees usually will succumb within a short time. As noted earlier, little can be done to treat an aspen invaded by fungus. The tree will die and re-sprout. It is impossible to prevent deer and elk from wounding aspen, but it is possible to prevent human wounding of the tree. Avoid any practice that will injure the bark. Managing the forest to give aspen adequate sunlight will improve their vigor and tolerance to disease.

Fungal diseases of the leaves are a concern to landowners, but they rarely cause any real harm. Several fungi attack aspen leaves and usually are recognized by yellow or brown spots on the leaves. Leaf diseases are more common in wet years, as humid conditions are favorable for the fungi. Treatment is not necessary, but raking up dead leaves to reduce the number of fungal spores may reduce the infection of new leaves. If the following year is drier, there will be less fungus. The CSFS website at http://csfs.colostate.edu/pages/forest-types-aspen.html has detailed information about the many insect and disease problems of aspen.

A new phenomenon observed in recent years is “sudden aspen decline,” and several areas of this decline have been noted in the Elk Valley vicinity. Aspen stands that appear to be healthy undergo rapid dieback and decline. A lack of resprouting after the older aspen die is the most disconcerting aspect of sudden aspen decline.

The causes of sudden aspen decline are not completely understood and are a subject of debate among researchers studying the phenomenon. The stress of the recent drought followed by invasion of insects and disease are cited by most researchers as likely causes. Lack of aspen regeneration due to fire suppression also has been cited as a contributing cause by some scholars. Low elevation, open aspen stands on south and west facing slopes are most often affected. Tree age does not appear to be a factor.

Given the uncertain cause of sudden aspen decline, the best method of prevention also is unclear. Encouraging regeneration of aspen clones by clearcutting or burning while they are healthy seems to hold the most promise. Because sudden aspen decline is a landscape level phenomenon, landowners with small lots may not be able to address the problem. Currently, the best option is to manage for healthy aspen stands.

References

Furniss, R.L., and Carolin, V.M. (1977). *Western Forest Insects.* Miscellaneous Publication No. 1339 USDS Forest Service

Whitney Cranshaw, David Leatherman, Boris Kondratieff, Paul Opler, and Casey Sclar. Nd. *Insects and Diseases of Woody Plants of the Central Rockies.* Bulletin 506A, Colorado State University Cooperative Extension.

Johnson, Warren T., and Lyon, Howard H. 1991. *Insects that Feed on Trees and Shrubs.* Comstock Publishing Associates, Cornell University Press.

USDA Forest Service, Forest Health Management Rocky Mountain Region. 2009. *Sudden aspen Decline in Colorado.*

APPENDIX B - GENERALIZED PRESCRIPTION OF FUEL BREAKS:

GOALS:

- Create a fuel break adhering closely to CSFS guidelines as on the ground conditions will allow.
- Improve the safety of emergency ingress and egress routes during a wildfire.
- Reduce the fire hazard for the participating property owners and the community.
- Improve overall forest health by considering insect and disease conditions in the fuel break prescriptions.
- Include landowner objectives in the overall project design.

GENERAL FOREST STAND CONDITIONS:

The forest stands considered in this prescription are a mixed conifer stand along a steep north facing slope. The dominant conifer is Douglas-fir, and there are smaller components of ponderosa pine, Engelmann spruce, and small pockets of aspen. Canopy is closed and there is a large component of Douglas-fir regeneration ladder fuel. Some pockets of ponderosa pine DMT are known to exist, and there has been normal activity of mountain pine beetle. Aspen is declining in the project area as a result of competition from Douglas-fir.

Thinning and Fuel Reduction

Foresters use many methods of thinning depending on the specific objectives of the landowner. Fuel break thinning is most often accomplished by a process called thinning from below. This method usually retains the largest trees while removing the smaller trees in the lower forest stand.

For simplicity, trees can be divided in three levels in the forest canopy. The largest trees at the highest level of the canopy are called dominants. These are usually the most vigorous since they have the largest root systems, most leaf area and receive the most sunlight. Next are the co-dominant or intermediate trees. These trees occupy the middle level of the canopy, but tend to be crowded and of smaller diameter. They are less vigorous with smaller root systems and fewer leaves as the result of crowding by the dominant trees. At the lowest level of the forest canopy are the overtopped trees. These are completely shaded by the dominant and co-dominant trees.

Thinning from below removes all of the overtopped and most of the codominant trees. It is essential when thinning for fuel breaks to remove ladder fuels and create enough openings in the forest canopy to reduce the crown fire risk. Thinning from below is desirable in fuel reduction projects because it 1) leaves the most vigorous trees on the site, 2) creates openings in the forest canopy by removing the less vigorous co-dominants, and 3) eliminates ladder fuels by removing the overtopped trees, shrubs, and pruning lower limbs of remaining trees.

On flat terrain, a fuel break should have a minimum width of 300 feet. Wider fuel breaks are always superior, and where they are located on slopes, width should be increased. As the steepness of a slope increases, the width of the fuel break should also increase. On steeper slopes the distance between tree crowns should also increase.

One objective of any mitigation project should be to enhance the diversity of forest stands. Bitter experience has shown that when all trees are the same species and the same age, catastrophic losses to insects or disease are sure to follow. Most insects or diseases are specific to certain species of tree at a certain age. Thus diverse forest stands are less prone to complete mortality from one cause. If a forest stand consists of one species attempt to leave trees of different ages, or thin in such a way that regeneration of new trees is promoted.

In most areas the favored leave trees should be aspen and ponderosa pine of good form and vigor. Increased regeneration of aspen after thinning will improve browse for elk and deer. Elk Valley is under a conservation lease with The Division of Wildlife (DOW) to maintain quality habitat for especially for elk caving. In consultation with the DOW, the generalized prescriptions for fuel mitigation may be altered to maintain adequate hiding and thermal cover for elk. Adequate patches of denser trees should be maintained throughout the subdivision. As long as the patches are separated by an open forest canopy, there will be little loss of effective mitigation. Douglas-fir will remain to maintain the forested canopy but special attention should be paid to maintaining adequate space around Douglas-fir, and pruning lower branches to reduce ladder fuel.

Another consideration which will often modify the standard fuel break prescription is dwarf mistletoe in the ponderosa pine. The actual prescription should vary with conditions on the ground, and the following is a general modification. Where mistletoe is present in the ponderosa, aspen and Douglas-fir should be favored for retention. Aspen stands will not carry a fire through the crown, and is immune to the all species of dwarf mistletoe. Douglas-fir is somewhat less fire resistant than ponderosa but is also immune to the ponderosa pine dwarf mistletoe. When Douglas-fir is properly spaced and pruned the slightly increased fire risk is well worth the opportunity to control the ponderosa dwarf mistletoe.

When thinning for fuel breaks it is not necessary, or even desirable, to remove all dead trees or pick up all dead wood from the forest floor. Some standing dead trees, or snags, should remain as habitat for wildlife. The most desirable snags are trees larger than ten inches in diameter that are widely spaced. Avoid leaving more than three snags per acre. Do not leave dead trees in zones one and two of survivable space or where they might fall across roads, power lines, or other improvements.

Likewise, some down wood is desirable. Large concentrations of down woody material should be removed, but isolated down logs in varying degrees of decay can remain as cover and habitat for small mammals.

Maintenance

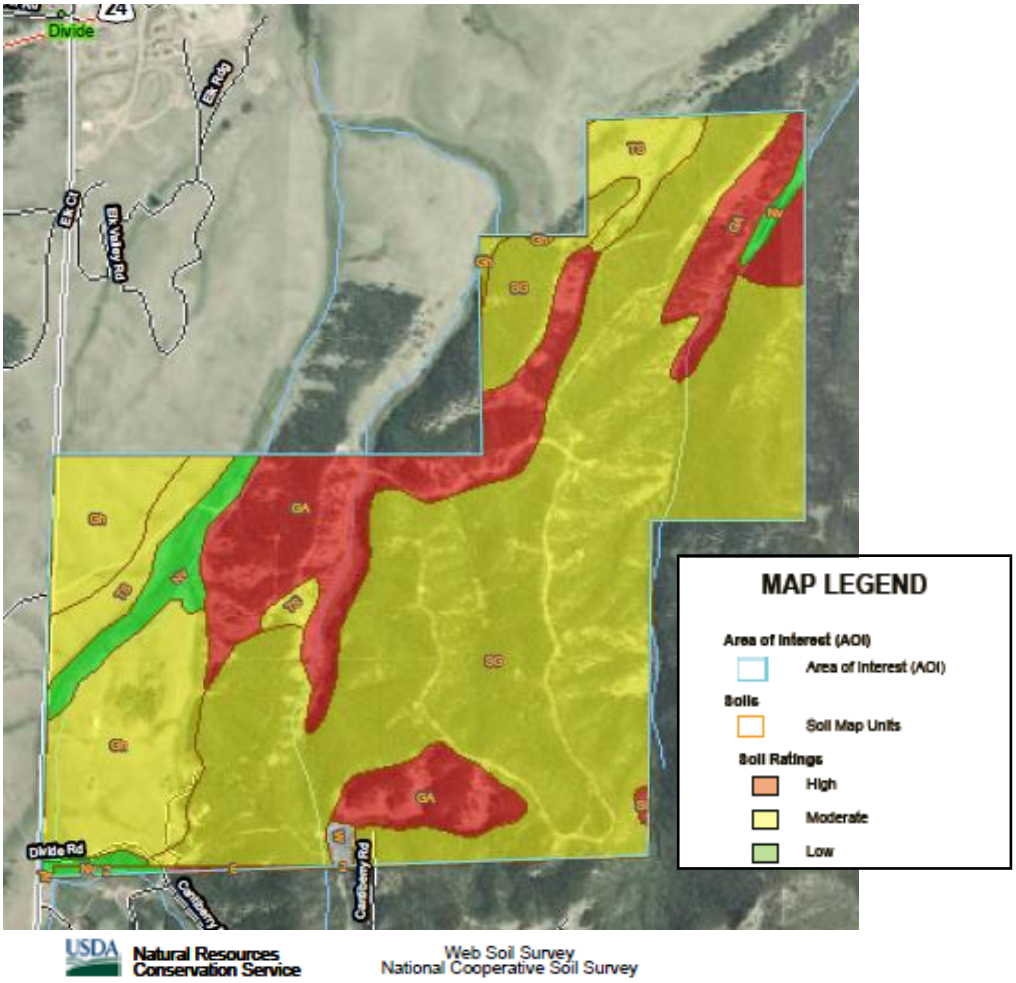
Any type of forest management does not end when the initial project is finished. Continual maintenance is an essential part of any forest management program. Even in well managed forests trees will die, storms and wind will damage trees, and new trees will germinate.

- Trees should be inspected every spring for any sign of damage from winter or spring snows or wind. Prune any broken branches if they are not too high in the tree, and trees bent by heavy winter snows should be removed. Check for any signs of insect activity or disease.

- Late October is the best time to inspect trees for attack by mountain pine beetles. Beetles have finished attacking trees at this time, and there is adequate time to cut and treat the tree before the adult beetles fly the next July.
- At five years check the canopy closure, especially in zones one and two. Remove any trees necessary to maintain openings in the canopy. Do any additional pruning or removal of trees and shrubs to eliminate ladder fuels.
- After ten years, dense thickets of young trees (regeneration) may have become established, and these will need to be thinned. Not all regeneration should be cut since trees of various ages are important for forest diversity. Young trees in openings with adequate room to grow should remain. Regeneration that is likely to become ladder fuel or crowded by other trees should be cut. Depending on their objectives, landowners may want to consider removing some of the larger trees to make room for the younger ones.

For more specific information, contact Colorado State Forest Service.

APPENDIX C -ELK VALLEY SOILS DATA



Elk Valley Estates: Potential Soil Damage by Fire—Summary Rating Value		
Rating	**Acres of Potential Damage**	**Percent of Area**
High	240.6	19.5%
Moderate	941.1	76.3%
Low	47.7	3.9 %
Null or Not Rated	3.7	0.3%
TOTALS	**1233.1**	**100.0 %**

APPENDIX D – WEBSITES AND CONTACT INFORMATION

Contacts For More information

Colorado State Forest Service, Woodland Park District Office
113 South Boundary St., (P.O. Box 9024)
Woodland Park, CO 80866
Phone: 719-687-2921
http://www.csfs.colostate.edu/pages/woodlandparkdist.html

Divide Volunteer Fire Department
103 Cedar Mountain Road (P.O.Box 941)
Divide, CO 80814
Phone: 719-687-8773 (*non-emergency only)*
http://dividefire.com/

USDA Forest Service, Pikes Peak Ranger District
601 S. Weber Ave.
Colorado Springs, CO 80903
Phone: 719-636-1602

Websites For More Information

Creating Wildfire Defensible Zones: www.csfs.colostate.edu/pdfs/6302.pdf

Firewise Construction : www.csfs.colostate.edu/pdfs/construction_booklet.pdf

Forest Home Fire Safety: www.csfs.colostate.edu/pdfs/6304.pdf

Firewise Plant Materials: www.csfs.colostate.edu/pdfs/6305.pdf

Other Forest and Wildfire Information: www.csfs.colostate.edu (*use search box at upper right)*

FireWise Communities USA: http://www.firewise.org