Neighborhood Mitigation Plan
The Retreat

The Retreat is one of several neighborhoods within the City of Castle Pines that manages open space and therefore is able to contribute actively to reducing the risk from wildfires for the entire city. While the City of Castle Pines (previously known as Castle Pines North) earned a low hazard rating in the South Metro Fire Rescue Authority's Community Wildfire Protection Plan (CWPP) because of its road network, fire-resistant homes, general lack of continuous vegetation and close proximity of commercial infrastructure, the Retreat faces a higher risk because of the vegetation growing in its open space.

As Attachment 1 illustrates, this open space is between Monarch Boulevard and the homes along Tangleoak Lane, Summerwood Lane, Woodstock Lane and the western spur of Berkshire Lane. Because of its proximity to The Retreat, a parcel of the CPNMD's land is part of this management area in the CWPP but omitted from this neighborhood mitigation plan because CPNMD is unable to participate in mitigation in 2014.

This open space is a priority for management because it poses a significant threat to homes in the Retreat. Embers from a distant fire can land in this open space and grow quickly into spot fires capable of burning through backyards and along fences to homes, many of which have wood decking, wood siding and/or wood roofing and are surrounded by flammable vegetation. Burning groves of Gambel oak also are capable of producing additional embers that would threaten homes in the Retreat and other residential and commercial areas downwind.

This neighborhood mitigation plan addresses that risk. In 2012 South Metro Fire Rescue Authority applied for a grant through FEMA's Hazard Mitigation program on behalf of the Retreat HOA to treat the ten acres of open space based on the standards of the Colorado State Forest Service for Gambel Oak Management (See Attachment 3). FEMA awarded the grant in 2014, but the amount was short of the project cost. The Coalition for the Upper South Platte and State of Colorado agreed to join the project and provide the remaining funding to complete this mitigation effort. The contract to complete the scope of work was awarded to Twisted Timber based on a competitive bidding process. The scope of work is included as Attachment 2.

Because the idea of reducing wildfire risk mistakenly conjures images of clear-cutting, project stakeholders believe this project will become a demonstration site to illustrate how wildfire mitigation balances aesthetic values with ecological health. It also will:

- Raise awareness of the local level of wildfire risk
- Raise awareness of local hazardous fuels
- Illustrate different levels of fuels reduction appropriate for open space proximal to homes
- Gain community support for hazardous fuels reduction/wildfire mitigation

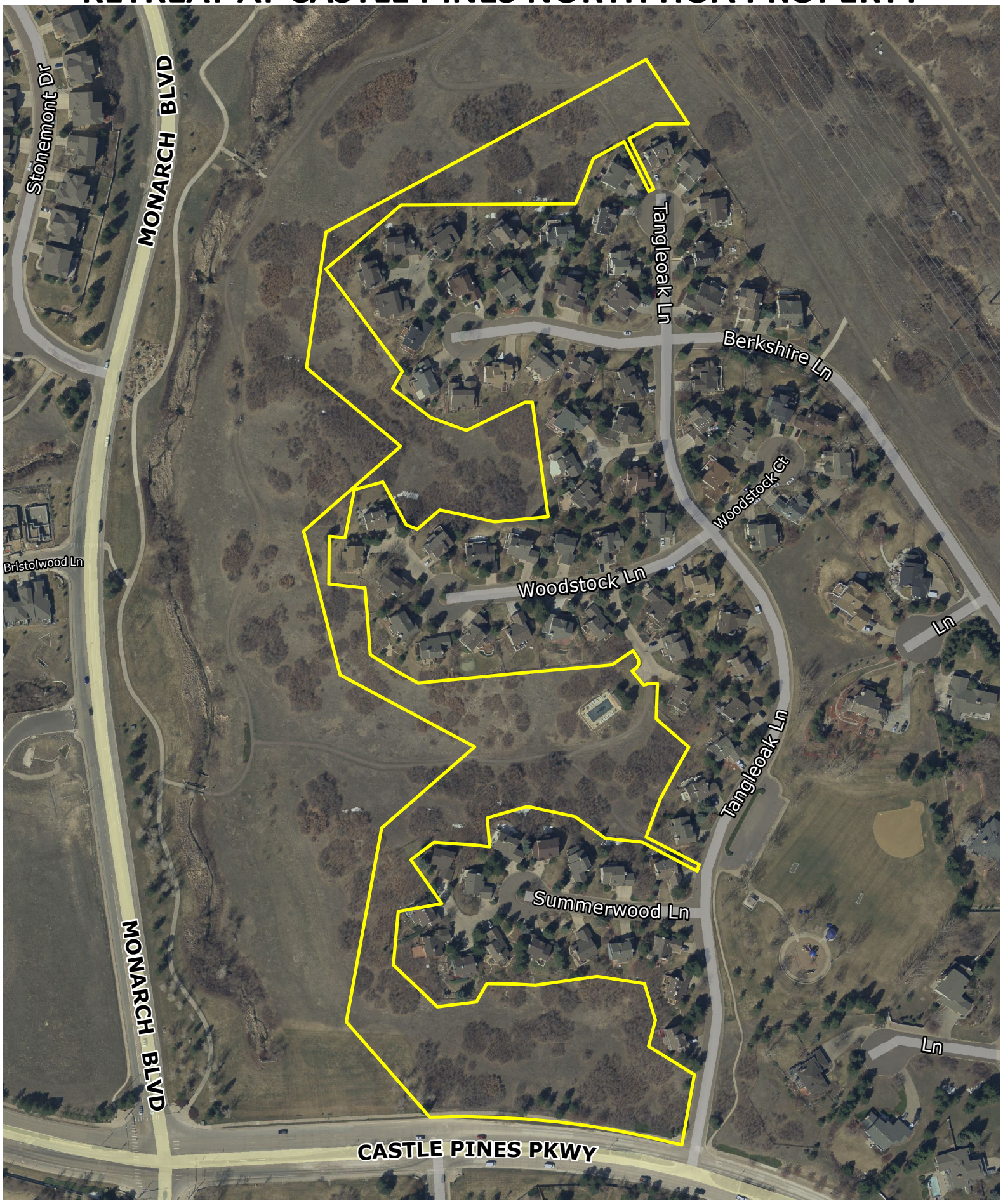
This neighborhood mitigation plan, initially created in 2014, will expand in the future as homeowners and community stakeholders identify other priorities for risk reduction within

their community such as additional wildfire fuel treatments or evacuation plans.

We, the undersigned, recognize the importance of collaborating now and in the future to share the responsibility for reducing our wildfire risk.

President, Retreat Homeowners Association	Date
Assistant Chief, South Metro Fire Rescue Authority	Date
District Forester, Colorado State Forest Service	Date

RETREAT AT CASTLE PINES NORTH HOA PROPERTY



Retreat HOA Gambel Oak Thinning Scope of Work

Purpose:

- Reduce wildfire hazards by reducing the amount of contiguous oak.
- Develop a more open and mosaic stand structure in the oak.

Location and General Description of Work:

The Retreat HOA property is located in Castle Pines North, Douglas County, Colorado. The treatment area is located north of Castle Pines Parkway and west of Tangleoak Lane.

Work involves fuel mitigation via mechanical mastication with some hand thinning in a predominantly Gambel oak area.

Project Area Description:

The treatment area has a gross acreage of approximately 10 acres and consists of Gambel oak and mountain mahogany. Treatment unit boundaries are shown on the attached map and represented by different levels of mowing on site.

General Treatment Information:

- The project will involve thinning of Gambel oak accomplished via mechanical mastication and limited hand thinning.

- Use of equipment that is comparable to a rubber tired Bobcat with a Fecon head mulching attachment for mastication is specified for this project. Other equipment such as a chainsaw is also required.

- Oak will be thoroughly mulched/masticated. Chips and chunks will be well distributed across the project area with a desired average of 3-inches or less.

- Vegetation will be thoroughly mulched to reduce the amount of large woody fuels as possible. Any material left following the mulching must be less than 12" in height. ***If necessary, such material may need to be lopped with chainsaws and scattered by hand.*** In handwork areas vegetation that is removed will be moved to an area where it can be masticated.

Prescriptions:

- Guidelines for treating oak:
    - Priority is to remove all oak within 15-20 feet of the fence line. Oak may need to be removed by hand close to the fence to avoid damaging the fence with machines.
    - Target old, dead, decadent patches, especially those with significant top kill.
    - Focus on leaving clumps containing oak greater than 4 inches in diameter. There are larger stems in the treatment area and if healthy should be retained if located outside of the fence treatment area.
    - Small openings should be created to separate healthy clumps of oak. The intention is to create a mosaic of oak and openings within the treatment unit. Spacing between clumps of oak should be approximately 2.5 times the height of remaining oak. *For*

example: Spacing between clumps 6 feet in height is 15 feet or more. This would result in average spacing between remaining clumps of 20 feet. A variety of oak heights should be chosen for the remaining clumps.

- Maintain healthy clumps of mountain mahogany.
- Maintain oak where visible birds nests are located.
- All stumps will be cut flush with the ground.

Contract Period and Operational Period:

- Hours of operation are limited to daylight hours of X a.m.-X p.m.; X days a week.
- Work is to be completed between date to date.

Additional Performance Standards:

- Oak clumps that extend into backyards will be treated with a mosaic tactic rather than "buzz-cutting" along fencelines.
- Oak surrounding the swimming pool will be treated lightly with removal of dead trunks and branches, but the oak will remain to maintain a visual screen for residents using the pool and to minimize dirt landing on the pool from mitigation activities
- A visual barrier of oak will be maintained along Castle Pines Parkway.
- Contractor will contact HOA representative **prior** to mobilizing equipment to coordinate start date and will meet with HOA representative prior to work commencing.
- Fences damaged by the Contractor will be repaired to a like or better condition, or replaced by the Contractor, at the discretion of the HOA representative.
- The HOA representative may suspend or limit operations if excess damage is occurring due to mud, snow, extreme fire danger, etc. or due to the following situation(s): failure to meet scope of work specifications.
- The Contractor will wash the undercarriage of all trucks and equipment before entering the unit to reduce the spread of noxious weeds from other projects.
- The work site will be left in a safe manner at the end of every work day:
    - Equipment properly and safely stored, ignition keys removed from machinery.
    - All vehicles and equipment left on site will be safely parked on level ground with the wheels chocked.
    - Chainsaws, gasoline, and oil will be stored and locked inside a vehicle or secured in a locked metal box at the end of each work day.

FORESTRY

Gambel Oak Management

no. 6.311

by N. Jester, K. Rogers, and F.C. Dennis[1] *(7/08)*

Quick Facts...

Gambel oak is commonly found throughout western Colorado between 6,000 and 9,000 feet in elevation.

Recurring fires often cause oak stands to develop into large thickets; younger thickets created in this way can become exceptionally dense and almost impenetrable for livestock and wildlife.

Control, or eradication, of Gambel oak requires physically removing the stem and as much of the root system as possible.

Gambel Oak Ecology

Gambel oak (*Quercus gambelii*), commonly found throughout western Colorado between 6,000 and 9,000 feet in elevation, generally dominates the region between the lower piñon-juniper zone and the aspen or ponderosa pine zone above. This shrub can be found throughout southern Colorado and along the Front Range almost to Denver. Gambel oak is usually found in conjunction with serviceberry (*Amelanchier alnifolia*), snowberry *(Symphoricarpus oreophilus)*, mountain mahogany (*Cercocarpus montanus*), chokecherry *(Prunus virginiana)* and a variety of forbs and grasses. In south-central Colorado, oak brush is often associated with sumac and New Mexico locust.

Figure 1. Typical oak brush growth in Colorado.

Gambel oak rarely reproduces from acorns; most reproduction is vegetative with sprouts occurring from a deep, extensive root system. Clones of oak brush spread slowly but stubbornly persist in previously colonized areas.

Figure 2. Oak brush sprouting after fire.

Recurring fires often cause oak stands to develop into large thickets; younger thickets created in this way can become exceptionally dense and almost impenetrable for livestock and wildlife. Older stands tend to form clumps with a lush understory of grass and forbs, often attaining tree-like form with heights up to 20 feet.

Oak brush provides cover and nesting habitat for many forms of wildlife (birds, mammals, amphibians, etc.). The foliage and acorns offer valuable food for many of these wildlife species, such as wild turkey, mule deer, and black bear. Acorns produced by the larger stands of oak brush are critical for turkey.

Although not highly palatable, the availability and abundance of Gambel oak, particularly on winter ranges, make this an important wildlife plant. Oak brush is especially important to mule deer; on some summer ranges it reportedly provides more deer forage than all other species combined. Elk generally rely on

Gambel oak during the spring and winter. Acorns of Gambel oak are an important mast crop in many areas, particularly for black bears in the fall.

Oak brush makes excellent firewood and is used extensively for this purpose. Occasionally, this species is used for fence posts but, as a rule, does not grow to the size necessary to produce sawn wood products.

Standard Treatment Methods for Oak Brush

Various treatment methods have been used to control oak brush in western Colorado, including herbicide, mechanical treatment, and prescribed burning. In many cases, the objective of these treatments is to increase available forage for wildlife or livestock. Managed grazing of goats is also an effective treatment to reduce or eradicate oak.

Appropriate treatment is tied directly to land management objectives. As a general rule, a diversity (mosaic) of brush species, size, and densities can often accomplish multiple objectives (i.e., reducing wildfire hazards, enhancing aesthetics, screening, stabilizing soil and watershed outputs, increasing forage production, and enhancing various elements of wildlife habitat, food, cover, etc.).

Control, or eradication, of Gambel oak requires either physically removing the stem and as much of the root system as possible (typically not practical or desired) or continued top-killing of the plant so that stored energy in the root system is depleted to a greater degree than energy is restored through photosynthesis. The second option requires commitment and persistence.

Chemical Treatment

Most studies using herbicides report significant above-ground stem kill, but subsequent sprouting. In recent years, applications with Garlon have shown to be effective at completely killing oak brush when applied as either a foliar spray or as a stump treatment. For greatest effectiveness, stump treatments must be applied before the wood dries, usually within one hour of cutting.

Mechanical Treatment

Thinning oak brush by hand can be time consuming and labor-intensive due to the density of the vegetation. Prolific sprouting follows cutting unless herbicides are applied to the cut stumps. Mechanical treatments such as chaining, root plowing, dozing, and roller-chopping are somewhat expensive and cannot be used on steep slopes. Various forms of mastication equipment can also be used on oak brush such as a Hydroaxes©, Bull Hog© mowers, timberaxes, or Fecon© rotary cutting heads. Sprouting also follows these mechanical treatments even when the overstory is completely removed and additional action is needed if oak control is desired. Mechanical treatment can also make the site susceptible to weed invasion.

Figure 3. Mechanical treatment using a Hydroaxe©.

Figure 4. Mechanical treatment using a timberaxe.

Figure 5. Oak brush resprouting after fire.

Prescribed Burning

Fire readily kills the above-ground portions of oak brush. However, intense sprouting follows almost immediately and usually causes the stands to become even denser. With prescribed burning, a commitment to repeated burning on the same site is necessary to effectively reduce the oak brush over the long term.

However, prescribed fire also can be an effective tool to produce younger plants that are more palatable to wildlife.

Treating Gambel Oak for Wildfire Safety

Gambel oak does not burn readily except under favorable conditions such as during continued drought or in the fall or early spring when vegetation dries out. Late spring frosts that kill the leaves can cause extreme fire behavior later in the summer; the dead leaves have a tendency to cling to the stem and act as dry aerial fuels. Under certain conditions, fires in oak brush can spread quickly and fire behavior can be similar to fuel models in southern California (e.g., the Battlement Creek and South Canyon fires in western Colorado where a number of firefighter fatalities occurred in the oak brush fuel type).

Fuel Hazards

Fuel hazard measures refer to the **continuity**, both horizontal (across the ground) and vertical (from the ground up into the vegetation crown). Fuels with a high degree of vertical and horizontal continuity are the most hazardous, particularly when they occur on slopes. Heavier fuels (brush and trees) are more hazardous, producing more intense fires than light fuels (grass). Mitigation of wildfire fuel hazards focuses on breaking up the continuity of fuels. Increasing distances between fuels is necessary on slopes.

Standards for Fuel Mitigation

Trees: woody perennials, usually having one dominant vertical trunk and a height greater than 15 feet at maturity. Spacing requirements between trees are a *minimum* of 10 feet from the edges of the crowns. (This does not apply to mature stands of aspen trees where ladder fuels have been removed as described below. Follow the spacing requirements in areas with young aspen.)

Brush and Shrubs: woody plants, smaller than trees, often formed by a number of vertical or semi-upright branches arising close to the ground. Brush is smaller than shrubs and can be either woody or herbaceous vegetation. Thinning of brush and shrubs can often be accomplished by separating clumps rather than individual stems. *Spacing requirements* between clumps of brush and/or shrubs are 2½ times (2½X) the height of the vegetation. The maximum diameter of clumps is 2 times (2X) the height of the vegetation. (Make all measurements from the edges of vegetation crowns.)

Example: Spacing between shrub clumps 6 feet in height is 15 feet or more. The diameter of shrub clumps is less than 12 feet (measured from the edges of the crowns). Branches are pruned to a height of 3 feet. Certain brush species, such as Gambel oak, serviceberry, and snowberry re-sprout vigorously following cutting. Applying herbicide to stumps immediately following cutting may be necessary to effectively reduce long-term fire hazards. An alternative to herbicide treatment is to mow sprouts annually.

Ladder Fuels: vegetative materials with a vertical continuity that allows fire to burn from ground level up into the branches and crowns of trees. While potentially very hazardous, ladder fuels are relatively easy to mitigate. The first step in fuel mitigation is to remove all ladder fuels *beneath* tree canopies. In the remaining areas, prune all branches of shrubs or trees up to a height of 10 feet above ground (or one-half the height of the plant, whichever is least). Lastly, chip and/or remove pruned material from the site.

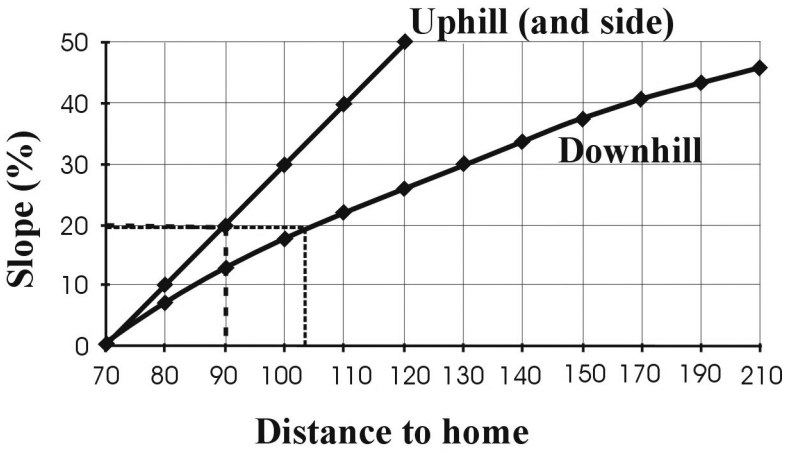
For More Information

From Colorado State Forest Service, Colorado State University, Fort Collins, CO 80523-5060; (970) 491-6303; csfs.colostate.edu:

- *FireWise Construction - Design and Materials*
- *Home Fire Protection in the Wildland Urban Interface*
- *Landowner Guide to Thinning*

From Colorado State University Extension, 115 General Services Building, Fort Collins, CO 80523-4061; (970) 491-6198; E-mail: resourcecenter@ucm.colostate.edu:

- *6.303,* Fire-Resistant Landscaping
- *6.304,* Forest Home Fire Safety
- *6.305,* FireWise Plant Materials
- *6.306,* Grass Seed Mixes to Reduce Wildfire Hazard



Grasses: mow dead, dry grass to a height of less than 6 inches.

Slope Adjustment Factors

The minimum distance from a structure for brush, shrub, and tree fuel treatment is **75 feet on *level ground***. (Where only grasses exist and no additional vegetative landscaping is planned, the minimum distance is 30 feet.)

On slopes *downhill* from structures, complete defensible space thinning according to the distances in Table 1. Uphill and side distances remain 75 feet, unless the property slopes in multiple directions.

Table 1. Defensible space thinning guidelines.

1 percent to 20 percent slopes =	
Brush/shrubs	75’ from structure; 3X height separation distance between vegetation.
Trees	75’ from structure; 10-foot crown separation distance between trees.
Grass	30’ from structure; mow dead, dry grass to 6 inches or less in height.

21 percent to 40 percent slopes =	
Brush/shrubs	150’ from structure; 4X height separation distance between vegetation.
Trees	150’ from structure; 20-foot crown separation distance between trees.
Grass	50’ from structure; mow dead, dry grass to 6 inches or less in height.

Greater than 40 percent slopes =	
Brush/shrubs	200’ from structure; 6X height separation distance between vegetation.
Trees	200’ from structure; 30-foot crown separation distance between trees.
Grass	75’ from structure; mow dead, dry grass to 6 inches or less in height.

For more information or professional assistance in managing your forest, contact your local Colorado State Forest Service district office.

Colorado State FOREST SERVICE

This fact sheet was produced in cooperation with the Colorado State Forest Service.

[1]*Colorado State Forest Service foresters.*