Defensible Space & Home Hardening SELF-ASSESSMENT

Grand County Wildfire Council (GCWC) credits (and THANKS) CalFire (and its Ready for Wildfire program) as the original creator of this survey. All photos are credited to CalFire except where specifically noted. GCWC has modified the original survey to suit Grand County, CO.

This survey is meant to be a SELF-ASSESSMENT. Responses to this survey are NOT reviewed as no personal contact information is collected. It is strictly for your informational purposes.

If you have questions or you want a personalized home assessment performed by a local fire professional, please reach out to your local fire department or the Grand County Wildfire Council.

East Grand Fire (Fraser Valley): 970-726-5824, www.eastgrandfire.com
Grand Fire (Granby area): 970-887-3380, www.grandfire.org
Grand Lake Fire: 970-627-8428, www.grandlakefire.org
Hot Sulphur Springs/Parshall Fire: 970-725-3414, www.hotsulphurfire.com
Kremmling Fire: 970-724-3795, www.kremmlingfire.org
Grand County Wildfire Council: 970-627-7121, www.bewildfireready.org

What is this survey all about?
Being Wildfire Ready starts with maintaining an adequate defensible space, using fire-resistant landscaping, and hardening your home by using fire-resistant building materials.

Defensible space is the buffer you create by removing dead plants, grass and weeds. This buffer helps to keep the fire away from your home. Fire-resistant vegetation contributes to making defensible space effective by surrounding your home with plants unlikely to catch fire.

Home hardening means using construction materials that can help your home withstand flying embers that can find weak spots in the construction, which can result in your house catching fire. It takes the combination of both defensible space and home hardening to give your house the best chance of surviving a wildfire.

Use this survey to:
-- Determine how prepared your home is for wildfire;
-- Learn what steps you can take to better prepare your home for wildfire.

For additional wildfire preparedness info specific to Grand County Colorado, check out our Ultimate Guide to Wildfire Prevention, Preparedness, and Survival: https://bewildfireready.org/wp-content/uploads/2022/06/Wildfires_white_FINAL_web.pdf

Five Sections of Survey
This survey is divided into six (6) sections. Each section is on a separate page. Go to the next page by selecting "Next" at the bottom of the page.

You do not have to answer questions on any given page to proceed to the next page. Furthermore, you may go back to a previous page if needed.

Section 1. Home Hardening
Section 2. Defensible Space Zones 1 and 2
Section 3. Defensible Space Zone 3

Section 4. Other Defensible Space Considerations
Section 5. Landscaping and Vegetation Management with Zones 1 thru 3
Section 6. Beyond Zone 3 (100 feet +)

Quiz Format
This survey is formatted as a quiz.

Each question has a value of 10 points. If you answer questions as you go and click "Submit" at the end of the quiz (on the last page...end of Section 6), you will be able to "View Score" and see how you did (with answers to each question).

Answers scored as 10 points are Proper Wildfire Mitigation Measures.
Answers scored as 0 points are NOT Proper Wildfire Mitigation Measures.

SURVEY -- SECTION 1

Home Hardening
Flying embers from a wildfire can destroy homes up to a mile away. Taking the necessary measures to harden (prepare) your home can help increase its chance of survival when wildfire strikes.

* Ignition-resistant building materials are those that resist ignition or sustained burning when exposed to embers and small flames from wildfires. Examples of ignition-resistant materials include "noncombustible materials" that don't burn, exterior grade fire-retardant-treated wood lumber, fire-retardant-treated wood shakes and shingles.

What roof material do you have on your home?

10 points

- ○ Wood
- ○ Asphalt, concrete, tile or metal

The roof is the most vulnerable part of your home. Homes with wood or wood shingle roofs are at high risk of being destroyed during a wildfire. Build your roof or re-roof with materials such as composition, metal or tile. Block any spaces between roof decking and covering to prevent embers from catching. For more information on roof ratings visit this website.

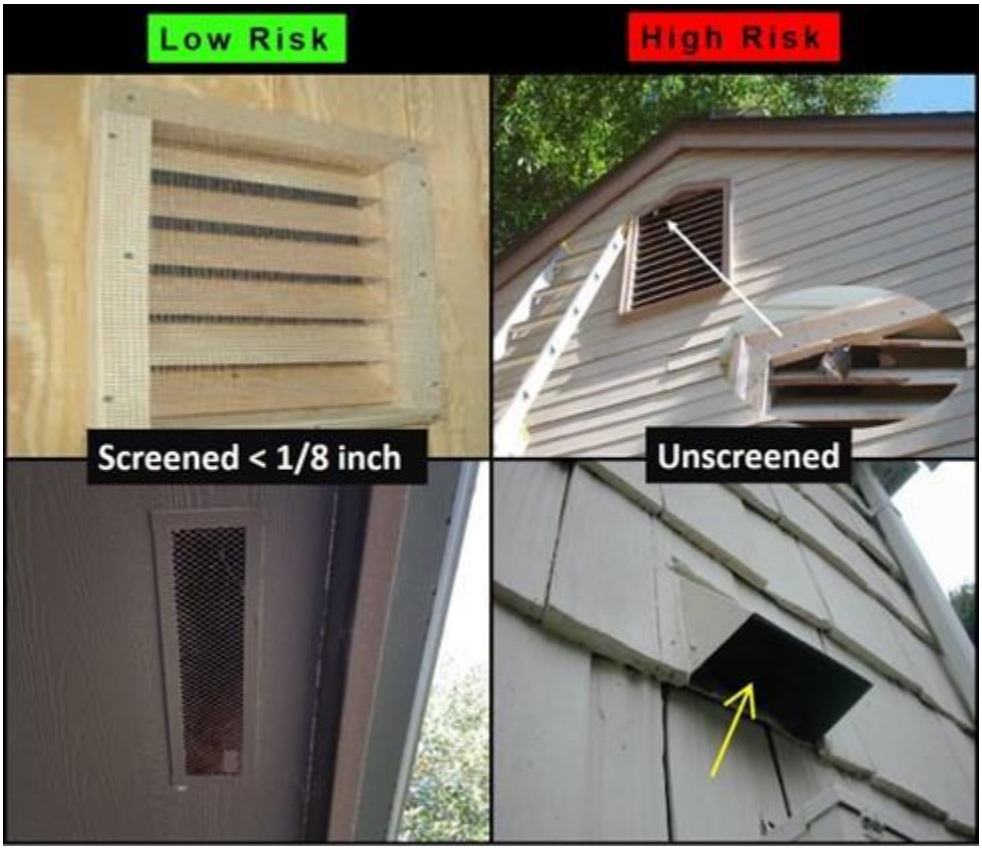
What type of vents were installed on your home?

10 points

- Mesh screen less than or equal to 1/8 inch
- Mesh screen greater than 1/8 inch
- Unscreened
- No vents

Vents on homes create openings for flying embers.

Cover all vent openings with 1/16-inch to 1/8-inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn. For an extra layer of protection, install vents that protect against both embers and flame.



What material covers the exterior siding of your home?

10 points

- Wood or Vinyl
- Asphalt, cement fiber board, stucco, tile or metal

Wood products, such as boards, panels or shingles, are common siding materials. However, they are flammable and not good choices for fire-prone areas.

Build or remodel your walls with ignition-resistant* building materials, such as stucco, fiber cement wall siding, fire-retardant-treated wood, or other approved materials. Be sure to extend materials from the foundation to the roof.

Vinyl has a higher melting point but it melts and exposes the wood. For this reason, Vinyl is not consider ignition-resistant* building material.

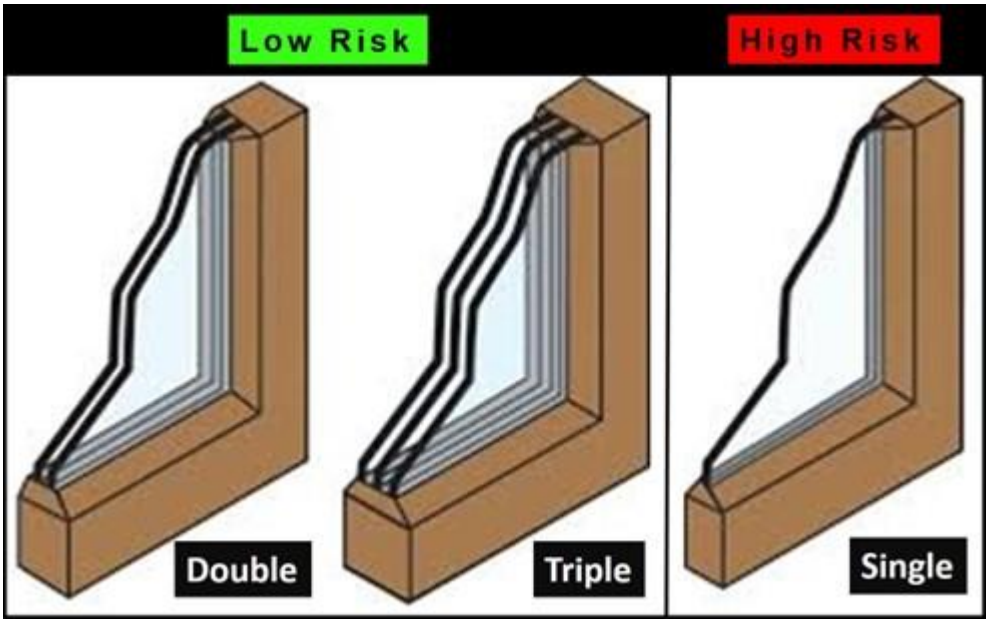
What type of windows do you have?

10 points

- Single pane
- Double or triple pane
- No windows

Heat from a wildfire can cause windows to break even before the home is on fire. This allows burning embers to enter and start fires inside. Single-paned and large windows are particularly vulnerable.

Install dual-paned windows with one pane of tempered glass to reduce the chance of breakage in a fire. Consider limiting the size and number of windows that face large areas of vegetation and nearby structures.



What material was used when the deck/porch was constructed?

10 points

- Composite or Masonry/Concrete
- Wood
- No deck/porch

Surfaces within 10 feet of the building should be built with ignition-resistant*, noncombustible, or other approved materials.

Ensure all combustible items are removed from underneath and next to your deck. Limit the number of combustible items on top of the deck.

Do you have a fence attached to the structure?

10 points

- Wood or Vinyl
- Metal
- No fence

Wildfires have been known to travel along flammable fence lines (wood and vinyl) to the junction of the fence and the house, thereby causing ignition of the structure.

If you have a fence that abuts the home, have the first 5 ft of the fence from the structure be metal, ignition-resistant, or other noncombustible fence material.

Photo from Google Images.

SURVEY -- SECTION 2

Defensible Space Zones 1 and 2

Zone 1: 0-5 feet from structures. If you have a deck, the deck is considered part of the structure itself.

Zone 2: 5-30 feet of all structures or to the property line (if property line is less than 30 feet from structures)

Illustration adapted by GCWC.

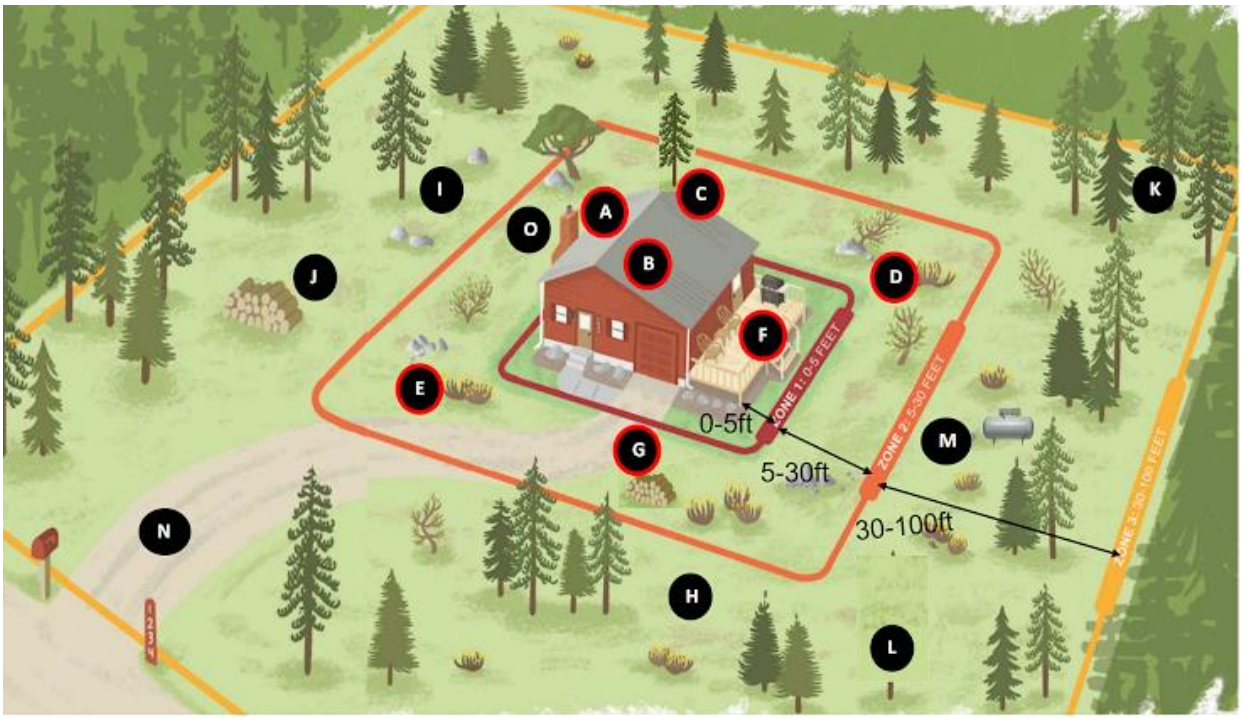


Illustration adapted from original artwork by Bonnie Palmatory, Colorado State University

NOTE: Each question below starts with a letter. That letter corresponds to letter encircled in RED above!

A. Do you have branches (dead or alive) within 10 feet of any chimney or stovepipe outlet?

10 points

- Yes
- No

A chimney/stovepipe is a vertical channel or pipe that conducts smoke and combustion gases up from a fire or furnace and typically through the roof of a building.

Remove overhanging branches/trees within 10 ft of chimney.

B. Do you have leaves, needles or other vegetation on roofs, gutters, decks, porches, stairways, etc.?

10 points

- Yes
- No

Embers can land on accumulated flammable material found on roofs, gutters, decks, porches and stairways and start the house on fire.

Remove needles and leaf litter.

C. Do you have any dead or dying grasses, trees, branches, shrubs or other plants within 30' of the home/structure?

10 points

- Yes
- No

Zone 1: There should be no vegetation (alive or dead) in Zone 1 (0-5 ft from structure)

Zone 2: (5-30 ft from structure) Remove stressed, diseased, dead or dying trees and shrubs. Remove dead limbs and ladder fuels within 6-10' of the ground (or one-third the height of the tree).

Mow grasses to four inches tall or less. Avoid large accumulations of surface fuels such as logs, branches, leaf litter, slash and mulch. Grass that is mowed but not removed may not stop the spread of fire to or from the structure. Rake away from structure.

D. Do you have live grass, plants, shrubs, trees, branches, leaves, weeds and needles within 30 feet of your home?

10 points

- Yes
- No

Zone 1: From 0-5 ft of structure, clear vegetation, from all sides of the house and decks. Use nonflammable, hard surface materials in this zone, such as rock, gravel, sand, cement, bare earth or stone/concrete pavers.

Zone 2: 5-30 ft. Mow grasses to four inches tall or less. Avoid large accumulations of surface fuels such as logs, branches, leaf litter, slash and mulch. Grass that is mowed but not removed may not stop the spread of fire to or from the structure. Rake away from structure.

Live trees and shrubs all allowed in Zone 2 if they are properly spaced and pruned. See next question for more details.

Properly prune live trees near structure, especially when they overhang or are near the roof. Distance from tree to structure should be at least 10 ft.

Remove all common juniper shrubs (alive or dead) within at least 30 feet of the home as they are extremely flammable. **Catchy reminder: "Junk the Junipers".** Photo from Google Images.

E. Do live trees, shrubs, and/or live flammable plants have appropriate separation within 30 feet of all structures?

Highly flammable plants have:
--Flammable oils, or gummy, pitchy, resinous sap.
--Large amount of fine, dead, twiggy, leafy, thatch material or loose papery bark.
--Not maintained (dead material removed) or appropriately irrigated.
--Juniper, lavender and rosemary are highly flammable when not properly maintained.

10 points

- Yes
- No

It is important to have separation between these plants to limit fire spread when they are close to structures because of these factors.

It's best to have NO plants next to homes (0-5 ft), but thin, airy and well-spaced plants are better than dense shrubs. Low growing plants are better than tall ones.

Remove enough trees to create at least 10 feet* of space between crowns. Measure from the outermost branch of one tree to the nearest branch on the next tree. Small groups of two or three trees may be left in some areas of Zone 2. Spacing of 30 feet* should be maintained between remaining tree groups to ensure fire doesn't jump from one group to another.

Prune tree branches to a height of 6-10 feet from the ground or a third of the total height of the tree,

whichever is less. You can keep isolated shrubs and baby trees in Zone 2, as long as they are not growing under trees. Keep shrubs at least 10 feet* away from the edge of tree branches.

Periodically prune and maintain shrubs to prevent excessive growth. Remove dead stems annually. Spacing between clumps of shrubs should be at least 2 1/2 times* their mature height. Each clump should have a diameter no more than twice the mature height of the vegetation. Example: For shrubs that grow 6 feet tall, space clumps 15 feet apart or more (measured from the edge of the crowns of vegetation clumps). Each clump of these shrubs should not exceed 12 feet in diameter.

Prune lower limbs, separate plants, and remove leaf litter beneath bushes to interrupt the fire's path through landscape.

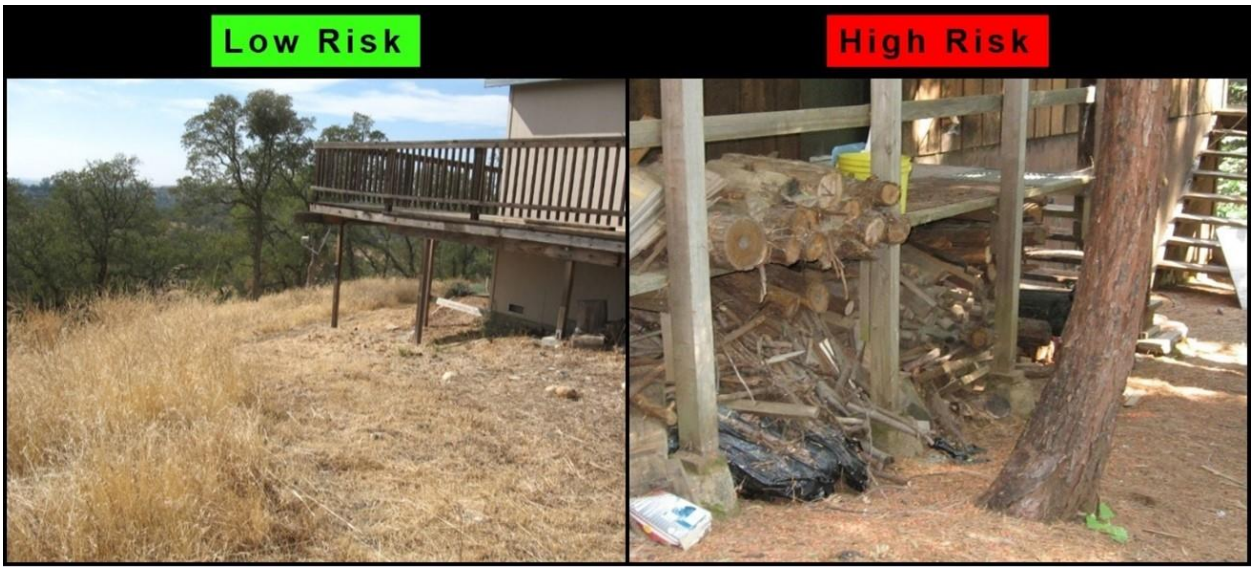
Sometimes we have to compromise. The compromise between fire safety and structural safety can include removing dead branches on the slope, limbing trees, removing flammable shrubs, and trimming and maintaining the ground cover to the lowest possible height.

F. Do you have flammable vegetation or items that could catch fire adjacent to or below combustible decks, balconies, and stairs?

10 points

- Yes
- No

Remove flammables from under all structures. **Do not use space under decks for storage.**



G. Are all woodpiles located at least 30 feet from any structure unless completely covered in a fire-resistant material?

10 points

- Yes
- No
- No Woodpiles

It is best to always have woodpiles away from the home and not under or on the porch. However, if you must compromise, then...

During the summer, keep woodpiles away from the home and/or covered in fire-resistant material. In the winter (when snow is present), you may bring it closer to the home. However, you need to move it away from the home again the following spring.

In the photo on the left below, "Zone 1" represents Zones 1 and 2 (at least 30 feet from the home).

SURVEY -- SECTION 3

Defensible Space Zone 3 (30-100 feet of all structures or to the property line.)

Illustration adapted by GCWC.

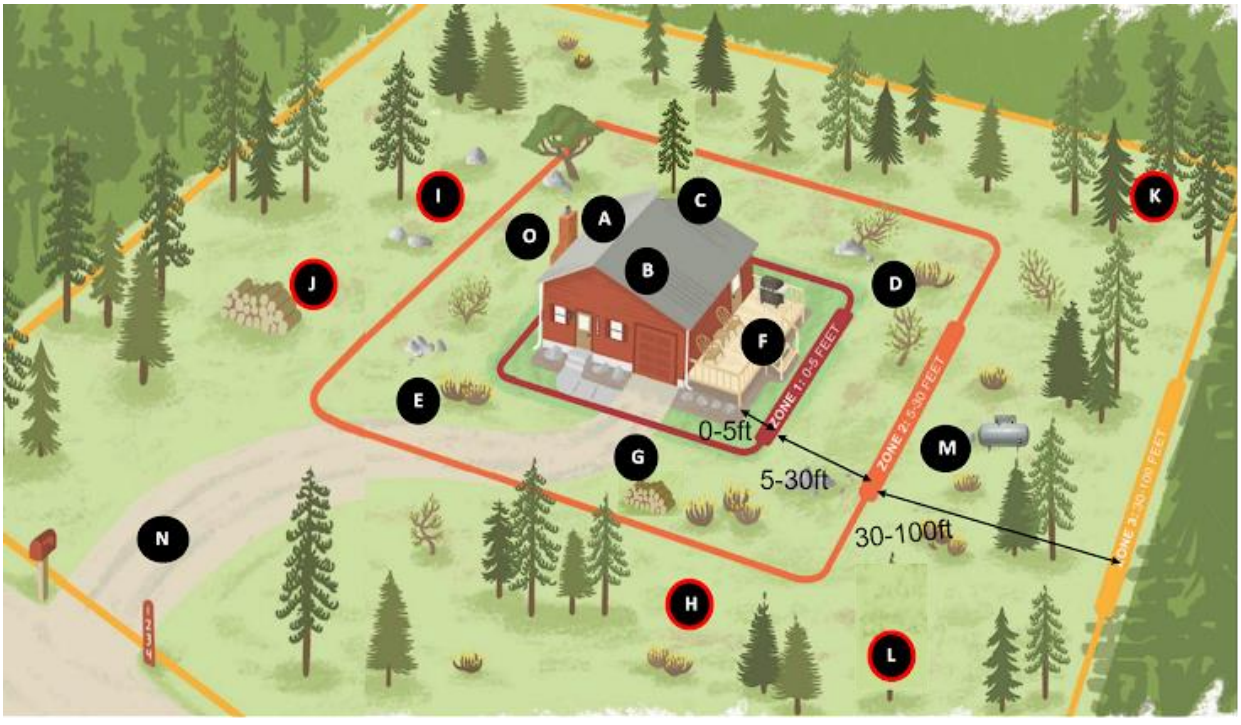


Illustration adapted from original artwork by Bonnie Palmatory, Colorado State University

NOTE: Each question below starts with a letter. That letter corresponds to a circled letter in the picture above!

H. Do you have annual grass and forbs* that exceed 4 inches in height?*

10 points

- Yes
- No

Cut grasses and forbs down to a maximum of 4 inches in height. Grass may be kept up to 18 inches in height where necessary to prevent erosion.

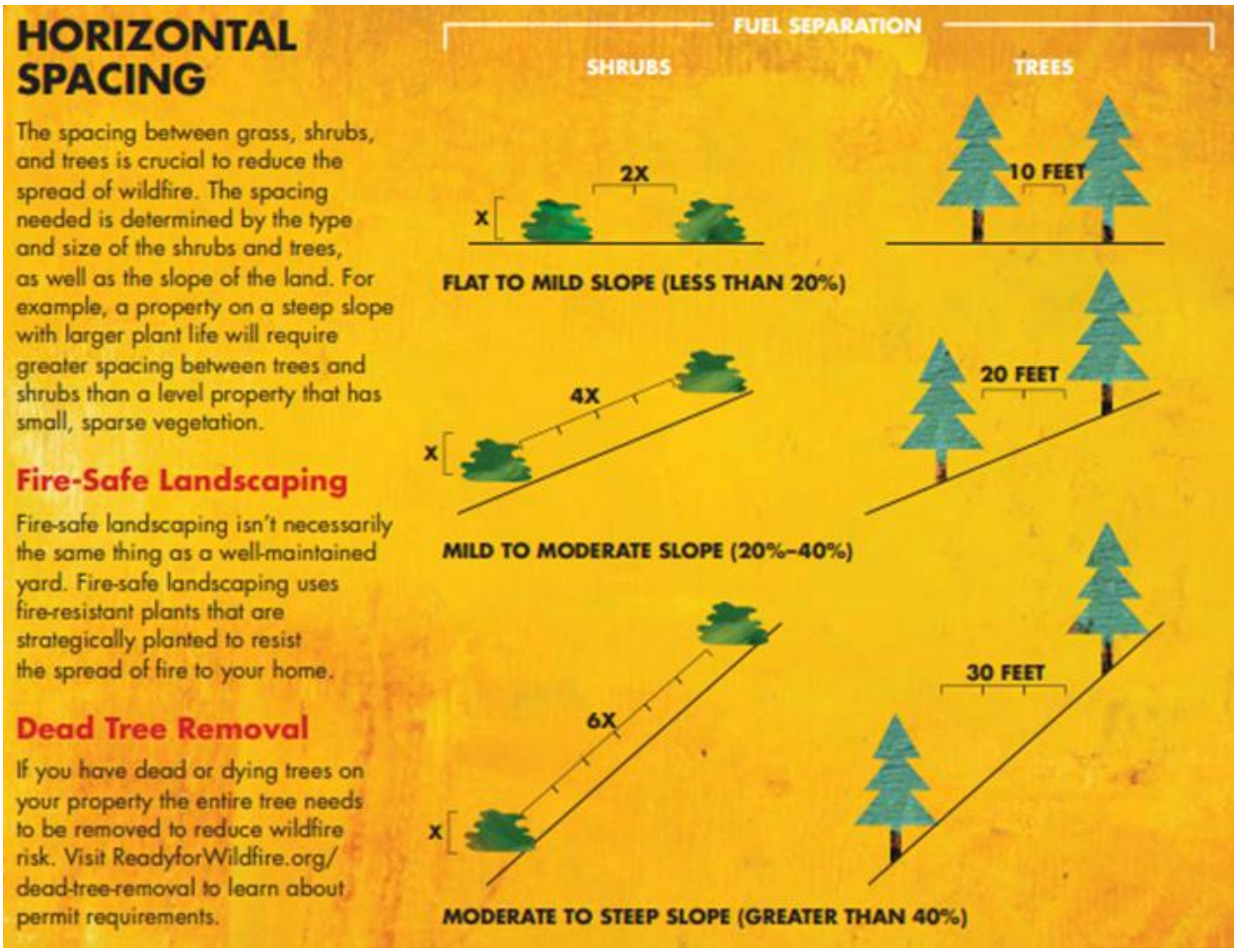
* Forbs are herbaceous flowering plants that are not a grasses.

Answer questions below about horizontal or vertical clearance between grass, shrubs, and trees and canopies touching.

<u>Vertical Spacing</u>
Allow extra vertical space between shrubs and trees. Lack of vertical space can allow a fire to move from the ground to the brush to the treetops like a ladder.

To determine the proper vertical spacing between shrubs and the lowest branches of trees, use the formula below.

<u>Horizontal Spacing</u>
Horizontal spacing depends on the slope of the land and the height of the shrubs or trees. Check the chart below to determine spacing distance.



Ia. Are all tree branches at least 6 feet from the ground?

10 points

- Yes
- No

Ib. Do you have extra vertical spacing (3x height of shrub) between shrubs and trees?

10 points

- Yes
- No

Ic. Do the trees and shrubs on your property have effective horizontal spacing as indicated in the image above?

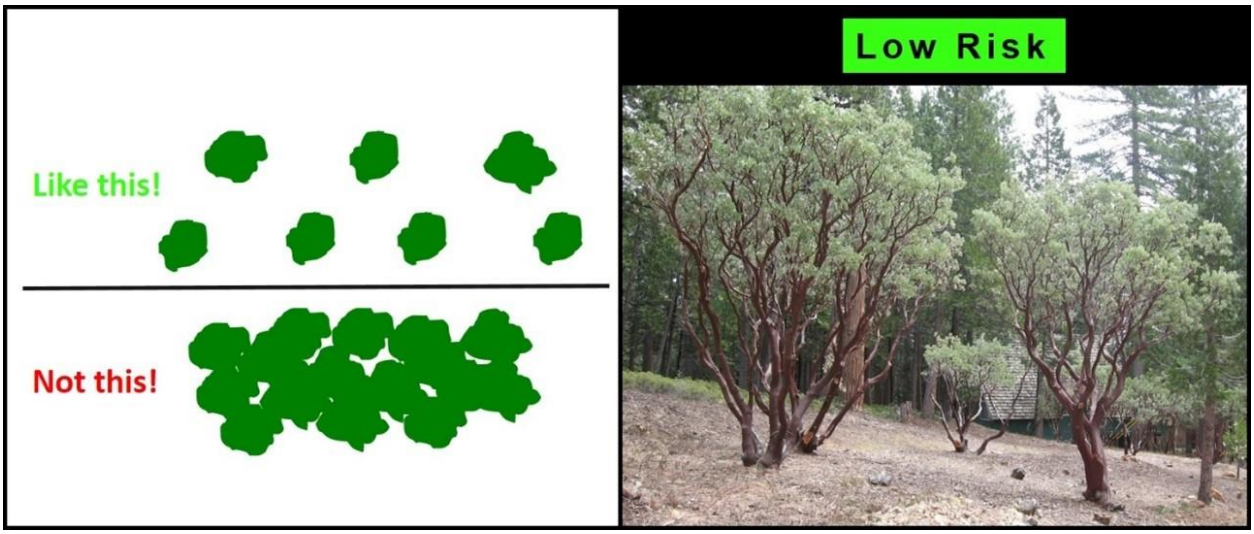
10 points

- Yes
- No

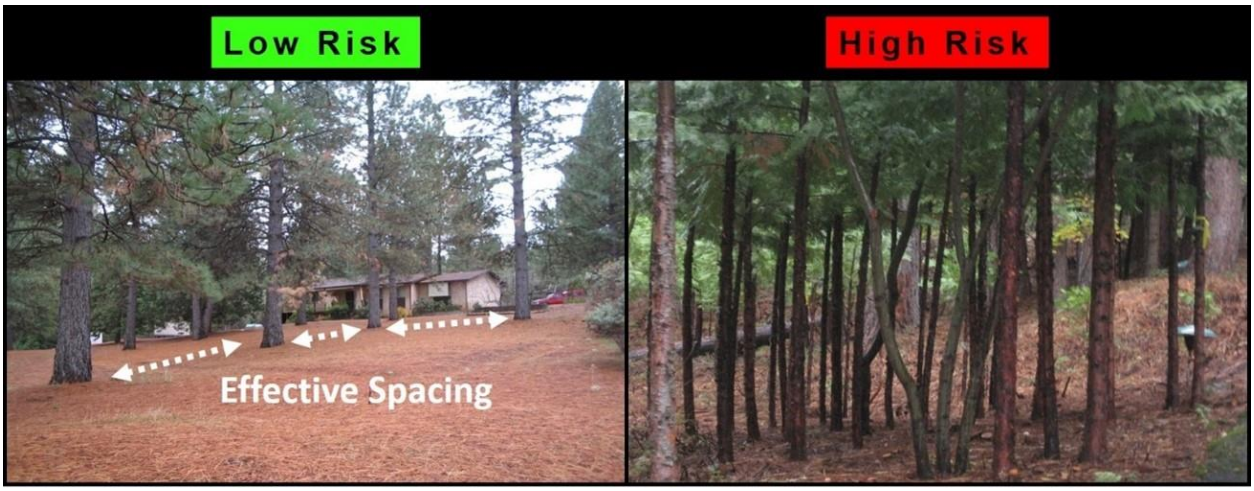
The spacing between grass, shrubs, and trees is crucial to reduce the spread of wildfires. The spacing needed is determined by the type and size of brush and trees, as well as the slope of the land. For example, a property on a steep slope with larger vegetation requires greater spacing between trees and shrubs than a level property that has small, sparse vegetation.

Also, **overcrowding of small trees create a fire hazard and form ladder fuels to carry fire from the ground into the larger trees.** Eliminate small trees and plants growing under trees. They allow ground fires to jump into tree crowns.

Separate plants using a diamond pattern to maintain privacy and fire safety.



Thin, **space**, and **prune** trees for fire safety.



J. If you have exposed woodpiles, do you have a minimum of 10 feet clearance, down to bare mineral soil, in all directions?

10 points

- Yes
- No
- No Woodpiles

Move woodpiles 30 feet away from the structure, maintain a minimum of 10 feet clearance down to bare mineral soil, and do not cover with a flammable tarp.

Ka. Are dead and dying woody surface and aerial fuels removed?

Aerial Fuel: Standing and supported live and dead combustibles not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines.

Surface Fuel: Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, cones, and low stature living plants.

10 points

- Yes
- No

Kb. Do you have surface litter that exceeds a depth of 3 inches, such as fallen leaves or needles, twigs, bark, cones, and small branches?

Surface Litter: needles, leaves, small twigs, cones, etc, on the forest floor. All parts of the litter are still recognizable and will ignite very quickly from sparks, embers, or flames.

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.organic material and it will burn.

10 points

- Yes
- No

L. Do you have logs or stumps embedded in the soil that are close to other vegetation?

10 points

- Yes
- No

Rotten logs are vulnerable to embers. Remove the logs or isolate them by removing surrounding leaves, needles and duff.

SURVEY -- SECTION 4

Other Defensible Space Suggestions in Zones 1 thru 3

Illustration adapted by GCWC.

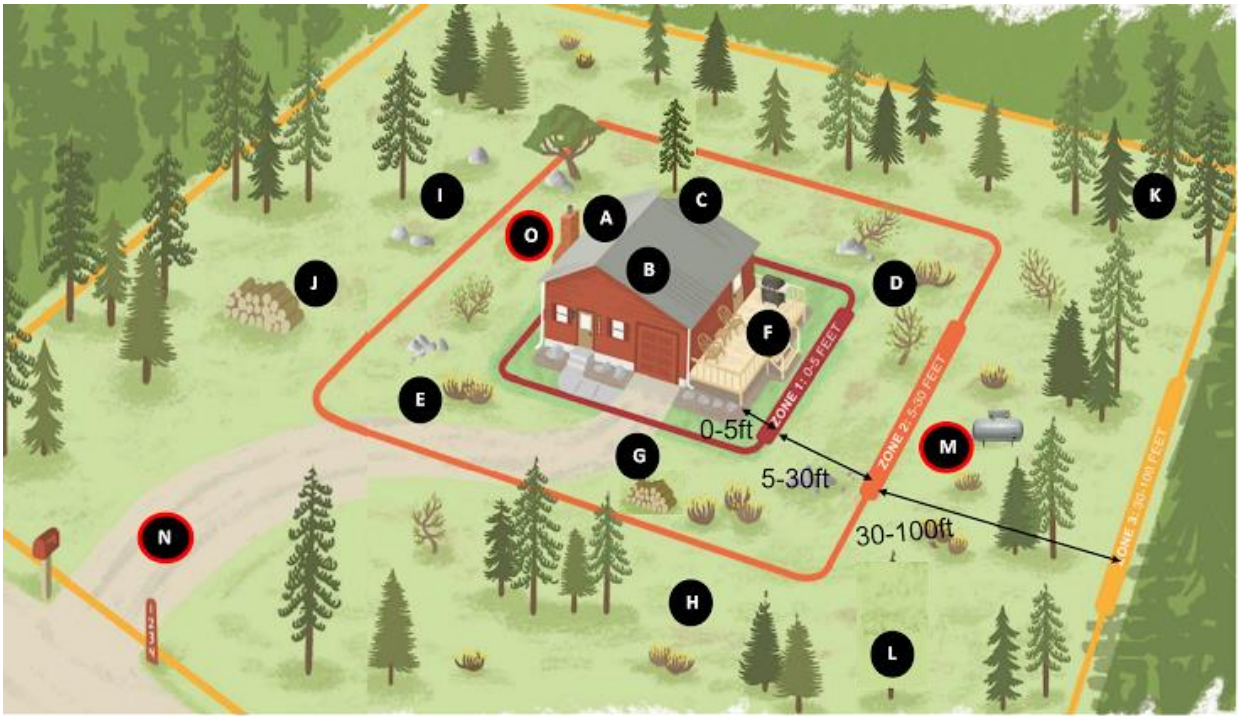


Illustration adapted from original artwork by Bonnie Palmatory, Colorado State University

NOTE: Each question below starts with a letter. That letter corresponds to letter encircled in RED above!

M. If you have a propane tank, is it located 30 feet or more from the home with no flammable vegetation within 10 feet around the exterior?

10 points

- Yes
- No
- No Propane Tanks

It is best to locate propane tanks and natural gas meters at least 30 feet from any structures.

Preferably, the tank should be on the same elevation as the house. The tank should not be located below your house because if it ignites, the fire would tend to burn uphill. Conversely, if the tank or meter is located above your house and it develops a leak, gas will flow downhill into your home.

Do not visibly screen propane tanks or natural gas meters with shrubs, vegetation or flammable fencing. Instead, install 5 feet of nonflammable ground cover around the tank or meter.

Na. Are address numbers at the end of your driveway displayed in contrasting colors (4" min. size) and readable from the street or access road?

10 points

- Yes
- No

Numbers that contrast with your background is easier to view from the street or access road in the event of an emergency.

Numbers should not be less than 4" high with a minimum stroke width of 1/2.

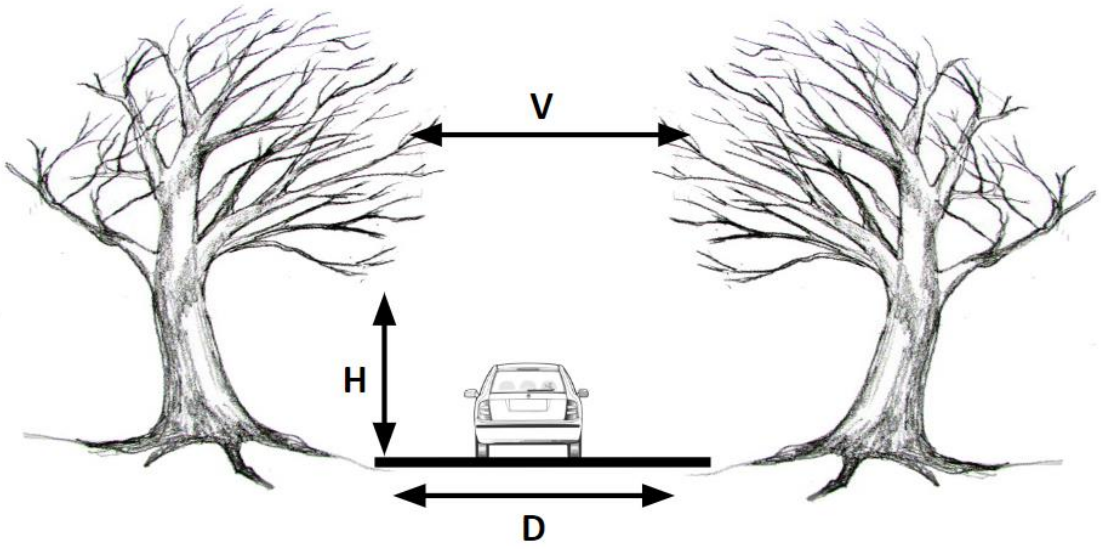
Numbers shall be legible and placed in a position that is visible from the street or road fronting your property.

If you cannot view your home from the public way, a monument pole or other sign or means should be used to identify there is a structure.

GCWC sells reflective address signs. Go to https://bewildfireready.org/9-1-1-reflective-address-signs/ to purchase one for your home.

Homeowners often forget about making driveways accessible to Fire, Rescue and EMS vehicles. However, when an emergency strikes, quickly getting a truck close to your home is CRITICAL.

To answer the driveway questions below (N), use this figure for reference. Photo by GCWC



Nb. Is your driveway width (D) at last 12 feet wide, taking into account the width of culverts and bridges?

10 points

- Yes
- No

Nc. Is your driveway height (H) at last 14 feet high, taking into consideration overhanging vegetation and low hanging utility lines?

10 points

- Yes
- No

Nd. Is the vegetation clearance (V) at least 10 feet either side of the driveway?

10 points

- Yes
- No

Ne. Does your driveway have a grade of less than 12%?

10 points

- Yes
- No

Ne. Can your driveway, including culverts and bridges, support at least 25 tons (50,000 lbs)?

This is the weight of some larger fire trucks.

10 points

- Yes
- No

Nf. Do you have a long, narrow driveway?

Long = more than 150 feet long. Narrow = less than 20 feet vegetation clearance.

10 points

- Long and narrow
- Long but not narrow
- Narrow but not long
- Neither long nor narrow

Long, narrow, and winding driveways present challenges for fire trucks and hazards to emergency responders during wildfires.

Long driveways should have turnarounds at both ends with an inside turning radii of at least 30 feet and an outside turning radii of at least 45 feet. Driveways longer than 200 feet should also have turnouts along the driveway in addition to turnarounds at the ends. Driveways that connect with a road are considered as having a turnaround if all changes of direction meet the radii requirements of driveways.

The entry to your driveway from the road should be as close to 90 degrees as possible. Gates should be far enough back as to not obstruct a fire truck's turn into your driveway. Consider a "KnoxBox" entry system on electronically operated gates.

O. Are your chimney and/or stovepipe openings covered with a 3/8 and 1/2 inch metal screen mesh respectively?

10 points

- Yes
- No
- No Chimney or Stovepipe

Do you have trees growing under or near power lines?

10 points

- Yes
- No

Avoid planting trees under or near electrical lines. They may grow into or make contact with overhead lines. Under windy conditions these instances may cause a fire.

Image from Google Images

SURVEY -- SECTION 5

LANDSCAPING & VEGETATION MANAGEMENT in Zones 1 thru 3

Is your landscaping within 100 feet of the home composed of "fire-safe" plants?

10 points

- Yes
- No
- No plants

While some plants are marketed and described as "fire-safe or fire-resistant", all plants will burn under the right conditions, regardless of how they are classified. **The environment the plant grows in and how it is maintained will generally have more influence on the flammability of the plant than how its characteristics.**

For example, a plant with a good water supply could have a greener growth and hold leaves longer, whereas a plant in a stressed or drought situation may have stunted growth and accumulated dead materials. This can create a situation where the same species may be fire-resistant in one environment and flammable in another. Some plants, such as a lavender, may initially have lush growth and then

several years later the growth may be woody and choked with dead materials. Other plants may develop a dead thatch layer, under a green surface, that is highly combustible.

For more information about fire-resistant landscaping please visit https://bewildfireready.org/wp-content/uploads/2018/07/Firewise-Plant-Material.pdf or visit Colorado State University Extension.

Characteristics and basic properties

Landscaping practices (or the pruning, maintenance, and cleanup) can have a greater impact on whether a plant ignites than the plant type alone. When bringing a fire-resistant perspective to plant selection, consider the following:

--Does the plant have a higher moisture content in the leaves (as these leaves will be less likely to ignite)?
--Does the plant contain a lot of waxes, oils, and resins?
--Does the plant have an open-growth structure?
--How fast does the plant grow
-- How tall will the plant grow
-- Does the plant shed bark?

Depending on where you want to locate the plant, a plant with more waxes, oils, and resins is likely to be more flammable and release more heat energy when it burns. A plant that is more densely structured can capture embers and may be more likely to ignite. A plant that sheds bark or branches is likely to need more regular maintenance-related cleanup to reduce fuel accumulations at its base. A plant that has a big leaf or needle drop will result in the need for more maintenance-related cleanup to manage in your defensible space and on your roof or in your gutters. A plant that grows quickly may exceed your expectations and challenge defensible space goals.

Native plants, pollinator friendly, or drought-tolerant plants can be good choices for those labelled qualities, but they may or may not be any more fire-resistant than other plants.

Plant placement

As described in the defensible space section of this publication, **placement is the most important criteria when it comes to fire-resistant plant selection.** Keep in mind that vegetation that touches the exterior siding, is located in front of windows, under eaves and vents, and/or under or near a deck will increase the likelihood that a home will be destroyed during a wildfire.

By incorporating best management practices within 0-5 feet of a structure, thereby reducing combustible vegetation and eliminating other combustible materials that an ember can ignite the potential for direct flame contact to your house is reduced. **By following the ideas in Zone 2, where landscaping is separated into islands of vegetation and the continuity of plants is separated, the odds increase for home survival from direct flame exposure.** Additionally, all selected plants should be noninvasive.

Vegetation maintenance

From a fire resilience perspective, **vegetation management consists of good water management practices, appropriate fertilization, and a regular practice of plant pruning and cleanup.** With regular watering, plant health increases and plants that are green and lush, are more resistant to ignition. Drip irrigation can be helpful along with mulch for water conservation.

Unfortunately, combustible mulches near to the home create an additional fire risk (Quarles and Smith, 2008). **Eliminate combustible mulches within 0-5 feet from the home. Recognize that from 5-30 feet, combustible mulch can expose the home to greater flame and ember contact.** Rock mulch will have greater fire resistance.

SURVEY -- SECTION 6

BEYOND ZONE 3: 100 FT +

If your property extends beyond Zone 3 (more than 100 feet from your home), have you managed it for forest health and vigor?

10 points

- ○ Yes
- ○ No
- ○ My property line is less than 100 feet from my home

If your property extends beyond Zone 3, does it overlap with a neighbor's Zone 1, 2, or 3?

10 points

- ○ Yes
- ○ No

If your property overlaps with a neighbor's Zones 1, 2, or 3, you should work with said neighbor to foster good neighbor relations and protect both parties' lives, structures and assets.

PROPER FOREST MANAGEMENT BEYOND ZONE 3

(Information below from CSU Extension Factsheet 6.302)

This zone is of no specified size--it extends from the edge of zone 3 to the property line.

Any approved method of slash treatment is acceptable for this zone, including piling and burning, chipping, or lop-and-scatter.

A greater number of (dead) wildlife trees can remain in this zone, but generally only 2 or 3 per acre are necessary for good wildlife habitat. Make sure that dead trees and snags pose no threat to power lines, fire access roads, OR Zones 1-3 of neighboring properties.

Beyond 100 feet from the home is an area of traditional forest thinning. Typical management objectives for areas surrounding homesites or subdivisions are:

---to provide optimum recreational opportunities;
---enhance aesthetics; maintain tree health and vigor;
---provide barriers for wind, noise, dust, and visual intrusions
---support limited production of firewood, fence posts, and other forest commodities;

Specific thinning requirements are dictated by the landowner's objectives for his land. However, most thinnings are done from below (leaving the biggest and best trees) and on an individual tree selection basis. **Thinnings sanitize and improve the forest stand by removing trees that have been damaged, attacked by insects, infected by disease, or are of poor form or low vigor.** (For more information about thinning the trees on your property, see the CSFS publication Landowner Guide to Thinning.)

Tree spacing is usually dependent upon the species being managed and factors such as susceptibility to windthrow or damage from heavy snow loading. For ponderosa pine and Douglas-fir, a good rule of thumb for stem spacing is Diameter +7. For lodgepole pine and Engelmann spruce, the stem spacing guide is Diameter + 5. (Diameter is measured in inches and converted to feet. For example,

if the average tree to be left after thinning was a 5-inch diameter lodgepole pine, 5 + 5 = 10, for a spacing of 10 feet between trees, as measured between tree stems).

While pruning is generally not necessary in this area, it is a good idea from the standpoint of personal safety to prune those trees along trails and fire access roads. Or, if you prefer the aesthetics of a well-manicured forest, there is nothing wrong with pruning the entire area. In any case, any pruning helps reduce "ladder" fuels within the tree stand, thus enhancing fire safety.

Mowing is not necessary in areas beyond 100 feet from the home.

Recommendations for Specific Forest Types
(Information from CSU Extension Factsheet 6.302)

Aspen
Tree spacing and ladder fuel guidelines do not apply to mature stands of aspen trees. Generally, no thinning is recommended in aspen forests, regardless of tree size, because the thin bark is easily damaged, making the tree easily susceptible to fungal infections. However, in older stands, numerous dead trees may be on the ground and require removal. Conifer trees often start growing in older aspen stands. A buildup of these trees eventually will increase the fire hazard of the stand, so you should remove the young conifers. Brush also can increase the fire hazard and should be thinned to reduce flammability.

Lodgepole Pine
Lodgepole pine management in the WUI is much different than that for lodgepole pine forests located away from homes, communities and other developments. Normally, it is best to develop fuels management and wildfire mitigation strategies that are informed and guided by the ecology of the tree species. This is not the case with lodgepole pine.

Older lodgepole pine stands generally do not respond well to selective thinning, but instead respond better to the removal of all trees over a defined area to allow healthy forest regeneration. Selectively thinning lodgepole can open the stand to severe windthrow and stem breakage. However, if your home is located within a lodgepole pine forest, you may prefer selective thinning to the removal of all standing trees. To ensure a positive response to thinning throughout the life of a lodgepole pine stand, trees must be thinned early in their lives – no later than 20 to 30 years after germination. Thinning lodgepole pine forests to achieve low densities can best be accomplished by beginning when trees are small saplings, and maintaining those densities through time as the trees mature.

Thinning older stands of lodgepole pine to the extent recommended for defensible space may take several thinning operations spaced over a decade or more. When thinning mature stands of lodgepole pine, do not remove more than 30 percent of the trees in each thinning operation. Extensive thinning of dense, pole-sized and larger lodgepole pine often results in windthrow of the remaining trees.

Focus on removing trees that are obviously lower in height or suppressed in the forest canopy. Leaving the tallest trees will make the remaining trees less susceptible to windthrow. Another option is leaving clumps of 30-50 trees. Clumps are less susceptible to windthrow than solitary trees. Allow a minimum of 30-50 feet between tree crowns on the clump perimeter and any adjacent trees or clumps of trees. Wildfire tends to travel in the crowns of lodgepole pine. By separating clumps of trees with large spaces between crowns, the fire is less likely to sustain a crown fire.

Windthrow
In Colorado, some tree species, including lodgepole pine, Engelmann spruce and Douglas-fir, are

especially susceptible to damage and uprooting by high winds or windthrow. If you see evidence of this problem in or near your home, consider making adjustments to the defensible space guidelines. It is highly recommended that you contact a professional forester to help design your defensible space, especially if you have windthrow concerns.

END OF SURVEY

Again, Grand County Wildfire Council credits (and THANKS) CalFire (and its Ready for Wildfire program) as the original creator of this survey.