

FIRE-RESISTANT LANDSCAPING

*A “how to” guide for
protecting your home*



LANDSCAPING
DEFENSIBLE SPACE

NON-COMBUSTIBLE
LANDSCAPE ZONE

TYPES OF
GROUND COVER

STRUCTURAL
ELEMENTS

LANDSCAPE
MAINTENANCE

PROPERTY
SELF ASSESSMENT



FIRE-RESISTANT LANDSCAPING

Vail is located in an ecosystem that has adapted to infrequent but severe wildfires. The wonderful views and abundant forests that brought us all to the valley can also be a major threat to our safety and property. Because embers are the leading cause of home ignition during wildfires, all areas of the community are at risk. Residents and property owners can take some simple but effective mitigation steps to ensure that their homes have a greater chance of surviving a wildfire.

During a wildfire everything on your property – landscaping, cars and the home itself – has the potential to become fuel for the fire. Fire-resistant landscaping is one step property owners can take to decrease these hazards. A home's defensible space zone starts at the foundation wall and extends out to the property line. If grasses, brush, trees and other common forest fuels are removed, reduced or modified to lessen a fire's intensity and keep fire away from the home, the probability that the home will survive a wildfire is increased. During a wildfire, a home with little or no defensible space may be hard to defend. Firefighters may be forced to choose defending other homes that have better defensible space.





Fire-resistant landscaping can be both attractive and offer additional protection from a wildfire.

LANDSCAPING DEFENSIBLE SPACE

A fire-resistant landscaping plan within the defensible space zone can yield a many-fold return of beauty, enjoyment and added property value. While use of native plant materials is generally best, a variety of adapted species will also thrive. Please refer to the *Fire-Resistant Landscaping Plant Recommendation Guide* to help you select the safest plants, shrubs and trees for your property.

Other considerations:

- Trees and shrubs nearest to your home should be widely spaced with lower heights than those farther away.
- Plant in small, irregular clusters or islands. Avoid planting in large masses.
- Use decorative rock, gravel and stepping stone pathways to break up the continuity of vegetation and fuels. This can slow the spread of fire across your property.
- Incorporate a diversity of plant types and species to minimize loss from pests and disease.
- In the event of drought and water rationing, focus on maintaining plants closest to your house.
- Use organic or inorganic mulches to conserve moisture and reduce weed growth. Do not use pine bark, thick layers of pine needles or other mulches that readily carry fire. Avoid large continuous mulched areas. Be creative! Vary your landscape by including bulbs, garden art and containers.



Optimal landscaping clearance from structure:

- GRASS - 5'
- SHRUBS - 5'
- TREES - 10'

Optimal placement of vegetation near a structure includes:

- Mow grasses short around trees and shrubs.
- The best tree species to plant generally are those naturally occurring on or near the site.
- Plant low-growing, deciduous shrubs closer to the structure and keep evergreen shrubs further away and well spaced.
- Plant flowers at least 5 feet away from the structure, ensure they are well irrigated and cut back during the dormant season.
- Keep grass mowed around structure to a maximum of 4 inches. However, avoid mowing ecologically sensitive areas around streams.
- Use gravel or short mowed grass next to the structure.



Shale rock and decomposed granite



Example of good non-combustible landscaping



Loose cobblestone



River rock



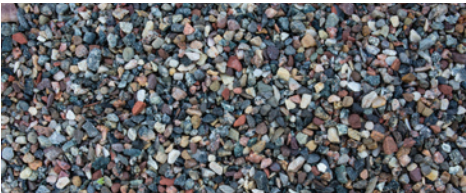
Shrubs should be kept at least 5' from structure

MULCH

- Mulch helps control erosion, conserve moisture and reduce weed growth. Inorganic non-combustible mulch, such as gravel, rock and decomposed granite is preferable for reducing wildfire hazards and will remain more effective if it is laid over a weed barrier.
- When using organic mulches, such as compost or bark chips, use just enough to reduce weed and grass growth. Avoid thick layers. These thick layers of mulch tend to smolder and are difficult to extinguish when ignited.
- Choose organic mulches that have a larger chip size such as screened wood chips. An alternative is to use dense finely ground materials such as a garden compost with incorporated woody material.
- Avoid using needles from your native pines or conifers. Rake, gather and dispose of them often within your defensible space. Never use mulches such as shredded tires around your home. These mulches, once ignited, are very difficult to extinguish and give off toxic fumes. The use of rubber tire mulches are prohibited by town code.



Organic shredded bark mulch



Non-combustible pea gravel

GRASSES

Maintenance of the grassy areas around your home is critical. Given Vail's extremely variable weather, wildfires can occur any time snow does not cover the ground. Tall grass will quickly carry fire to your house. Mow grasses within 30 feet of your home. Avoid mowing areas of ecological sensitivity such as near the riparian areas.

- Keep grasses short closest to the house and gradually increase height outward from the house, to a maximum of 4 inches. This is particularly important during fall, winter and before green-up in early spring, when grasses are dry, dormant and in a "cured" condition. Mow grasses low around the garage, decks, firewood piles, shrubs and specimen trees with low-growing branches.



Well maintained grass broken up with non-combustible river rock feature

GROUND COVER PLANTS

Replace bare, weedy or unsightly patches near your home with ground covers, rock gardens, vegetable gardens and mulches.

- Ground cover plants break up the monotony of grass and enhance the beauty of your landscape. They provide a variety of textures and color and help reduce soil erosion.
- Consider ground cover plants for areas where access for mowing or other maintenance is difficult, on steep slopes and on hot, dry exposures.
- Ground cover plants are usually low growing. They are succulent or have other fire resistant characteristics that make them useful, functional and attractive. When planted in beds surrounded by walkways and paths, in raised beds or as part of a rock garden, they decrease fire spread.
- The ideal ground cover plant is one which will spread, forming a dense mat of roots and foliage that reduces soil erosion and excludes weeds.



Blue Fescue

FLOWER BEDS

- Flowers bring variety to a landscape and provide color from May until frost. Plant flowers in widely separated beds within the defensible space. Keep beds at least 5 feet from the structures.
- Isolate flower beds from each other and from other fuels by using gravel walkways, rock retaining walls or irrigated grass areas mowed to a low height.



Columbine



Blue Salvia



Hens and Chicks

SHRUBS

- Shrubs lend color and variety to the landscape and provide cover and food for wildlife. However, shrubs can add to a property's fuel source by producing flying embers, the leading cause of home ignition during wildfires. Shrubs are a "ladder fuel" – they can carry a relatively easy-to-control fire burning along the ground into tree crowns. Once a wildfire starts to burn into the crowns of the trees, they are difficult, sometimes impossible, to control.
- To reduce the fire-spreading potential of shrubs, plant only widely separated low-growing, non-resinous shrubs around the property.
- Do not plant shrubs directly beneath windows or vents or where they might spread under wooden decks.
- Do not plant shrubs under tree crowns or use them to screen utilities, firewood piles or other flammable materials.
- Plant shrubs as individuals or in small clumps apart from each other and away from any trees. Do not plant clumps of shrubs within 5 feet of the building. Mow grasses low around shrubs. Prune dead or broken stems and remove dead material from shrubs annually. Remove the lower branches and suckers as the shrubs mature.



Native Chokecherry



Example of proper non-combustible surface separation



Example of unsafe separation between structure and vegetation

TREES

Trees provide a large amount of available fuel for a fire and can be a significant source of embers if they do burn.

- Heat from burning trees can ignite nearby shrubs, trees and structures.
- The best species to plant generally are those already growing on or near the property. If your property receives enough moisture, plant deciduous trees such as aspen or cottonwood. These species, even when planted in dense clumps, generally do not burn well, if at all. Remove accumulations of dead leaves close to structures as soon as possible after leaf drop.
- If evergreen trees are desired or required, take care in properly locating the trees. Do not plant evergreen trees near structures. Leave plenty of room between trees to allow for their growth. Spacing of trees within the defensible space should be at least 10 feet between the edges of crowns. On steep ground, allow even more space between crowns. Plant smaller trees initially on a 20- to 25-foot spacing to allow for tree growth. At some point, you will have to thin your trees to retain proper spacing.
- As the trees grow, prune branches to a height of 6-10 feet above the ground. Trees grown over irrigated and maintained turf grass only need to be limbed to a height of 2-3 feet. Do not over prune the crowns. A good rule of thumb is to remove no more than one-third of the live crown of the tree when pruning. Do not prune newly planted trees until they have become established.
- Some trees (for example, Colorado blue spruce) tend to keep a full crown. Other trees grown in the open may also exhibit a full growth habit. Limit the number of trees with full crowns within the defensible space. Prune surrounding trees and shrubs as described above and mow grasses around such specimen trees.



Example of safe ground clearance



Example of tree too close to structure

STRUCTURAL ELEMENTS OF A FIRE-RESISTANT LANDSCAPE

When building a deck or patio:

- Use concrete, flagstone, rock, pavers, heavy timbers or wood products pressure-treated for fire resistance. Avoid use of untreated wood deck boards. Always clear any debris from below decks, between boards or areas that collect debris.
- If your property requires a retaining wall, consider the materials used for construction. Rock or masonry walls are best, but even wooden tie walls constructed of heavy timbers will work. Avoid having landscape timbers tying into the structure.
- On steep slopes, consider building steps and walkways around structures. This serves as a physical barrier to fire spread.



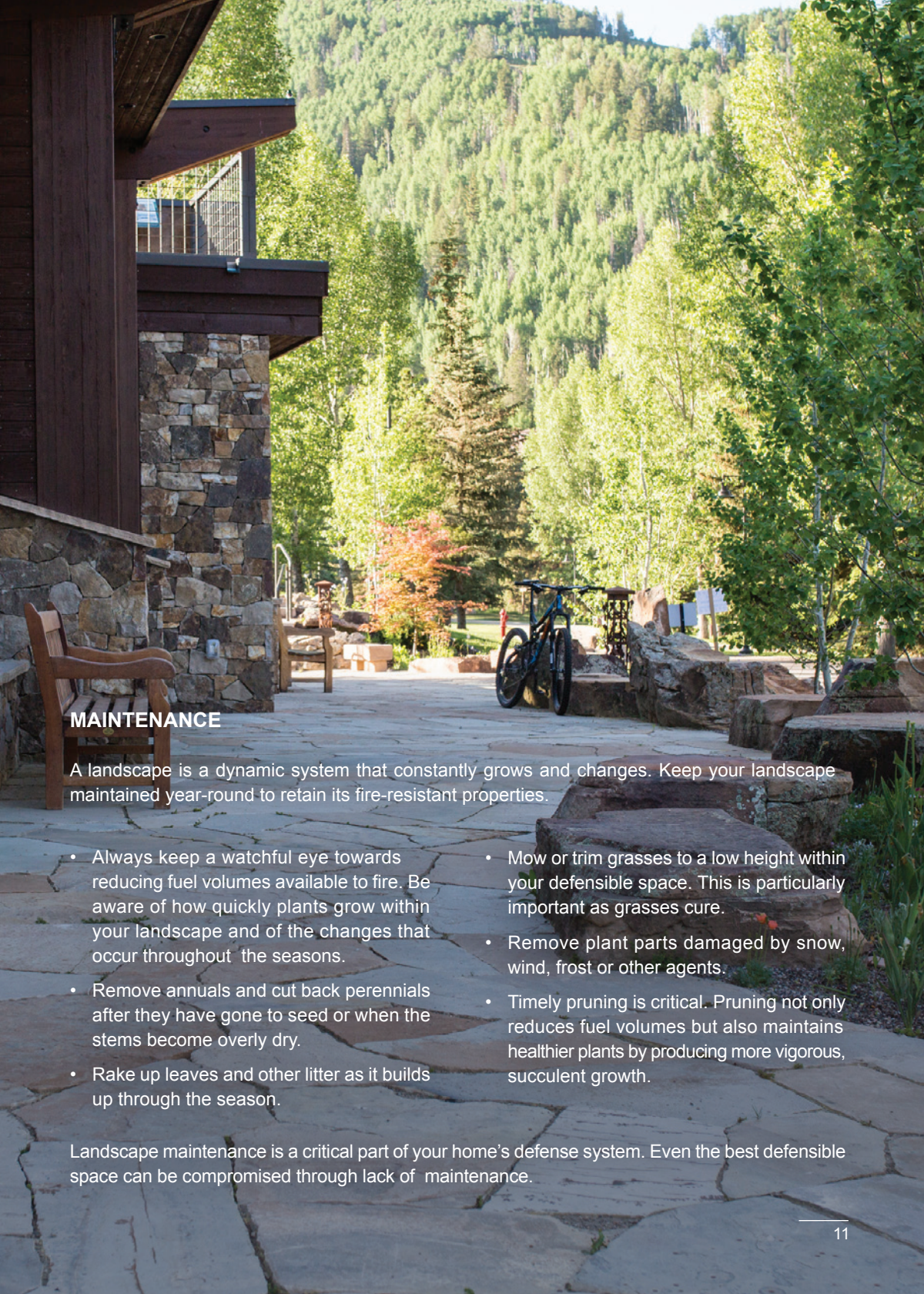
Example of non-combustible landscaping



Gabion rock wall



Stacked stone



MAINTENANCE

A landscape is a dynamic system that constantly grows and changes. Keep your landscape maintained year-round to retain its fire-resistant properties.

- Always keep a watchful eye towards reducing fuel volumes available to fire. Be aware of how quickly plants grow within your landscape and of the changes that occur throughout the seasons.
- Remove annuals and cut back perennials after they have gone to seed or when the stems become overly dry.
- Rake up leaves and other litter as it builds up through the season.
- Mow or trim grasses to a low height within your defensible space. This is particularly important as grasses cure.
- Remove plant parts damaged by snow, wind, frost or other agents.
- Timely pruning is critical. Pruning not only reduces fuel volumes but also maintains healthier plants by producing more vigorous, succulent growth.

Landscape maintenance is a critical part of your home's defense system. Even the best defensible space can be compromised through lack of maintenance.

PROPERTY SELF ASSESSMENT

General Slope of Area	0 - 9%	10 - 20%	21 - 30%	31 - 41%	> 40%
Homes positioned on a slope or proximity to features that adversely affect wildfire behavior	Bottom 1/3 of slope		Middle 1/3 of slope	Top 1/3 of slope, ridge top, saddle or adjacent to steep canyon or box canyon	
Separation of structures that can contribute to fire spread/ behavior	30 feet or greater		20-29 feet	Less than 20 feet	
Architectural styles that contribute to home ignition	Complex roof designs		Interior corners/ roof dormers	Large overhangs	

Items in green indicate a lower risk while items in orange and red indicate high risk factors.

Your self assessment starts with an overall look at your home site. Certain factors such as: the slope of the area, where your home sits on the hillside, distance between you and your neighbors, and the design of your home greatly influence your risk from wildfires. Many of these risk factors can not be directly changed, however mitigation actions such as changing/reducing landscaping around your home can reduce the effect of these risk factors. Vail Fire and Emergency Services is available year-round to assist you with any questions or concerns. Contact the Wildland Division at **970.477.3475**.

BUILT ZONE - The structure itself

YES	NO	
		Non-combustible roof materials present
		Non-combustible siding material present on 75% or more of the structure
		Deck built with ignition-resistant materials
		Absence of combustible attachments (i.e. fences, window boxes, accessory buildings)
		Spark arrestor on chimneys
		4" or larger address displayed where it is visible from the road

LEAN, CLEAR AND GREEN ZONE - Within 5 feet of structure

YES	NO	
		Branches removed from within 10 feet of the structure
		Leaves, needles and other flammable materials removed from gutter and roof
		Leaves, needles and other flammable materials removed from on top and beneath decks, steps and overhangs
		No plants, leaves, needles and other flammable material within 5 feet of structure

WILDLAND FUEL REDUCTION ZONE - Within 100 feet of the structure

YES	NO	
		Grass mowed to 4 inches or less in height within 30 feet of the structure
		Trees thinned to spacing guidelines on page 9
		Shrubs thinned to spacing guidelines on page 8
		Flammable brush removed from beneath trees
		Trees limbed to a minimum of 6 feet above ground (10 feet desired, do not limb more than 1/3 of the total height of the tree)
		Dead or dying material removed from the lower 10 feet of all trees and bushes

ACTIONS TO BE TAKEN TO MAKE YOUR HOME SAFER

WAYS WILDFIRE WILL THREATEN YOUR RESIDENCE

Vail Fire and Emergency Services has provided this guide as a reference for community members to understand wildfire risks and ways to reduce that risk. Following these recommendations will help your home survive in the event of a wildland fire. For more information, refer to vailgov.com/departments/fire/wildland. Wildfire will threaten your property in three ways:

Contact by Flames

This type of threat occurs when vegetation and other fuels burning near the house produce flames that come in contact with the home and ignite it. Often it happens when fire burns through a uniform layer of vegetation right up to the house. It is important to reduce wildland vegetation on the property to reduce this threat.

Radiated Heat

Radiated heat is produced by electromagnetic waves that travel out in all directions from a flame. When a house receives enough radiated heat for a sufficient amount of time, it will ignite. Sometimes radiated heat can burst windows and allow burning embers to enter the house. It is important to construct homes with fire-resistant materials to reduce this threat.

Flying Embers

More houses burn due to flying embers than any other reason. If fire conditions are right, embers can be lofted high into the air and transported more than a mile. Burning embers can also be carried by wind and fire whirls. If these burning embers land in easily ignitable materials, a new fire can start. Wood shake roofs are especially vulnerable to ember ignition. It is important to remove flammable materials on and near homes such as pine needles, wood piles and shrubs to reduce this threat.



SHRUB SPACING GUIDELINES

0-5 feet from the structure

There should be no combustible vegetation in this zone. Water-dependent and irrigated vegetation is acceptable if kept free of dead needles, leaves and debris.

5-30 feet from structure

Vegetation in this zone should be limited to single, well-spaced specimen plants. No dead vegetation should exist in this zone. If you decide to allow some flammable brush to remain such as juniper bushes, they must be thinned and maintained to the extent that it cannot transfer fire to the structure or other vegetation. These specimen plants should not be left under the drip line of any overstory trees in this zone.

Beyond 30 feet from the structure

Flammable brush in this area should be removed from under the drip line of any trees. A good rule of thumb for thinning brush in open areas is to create a distance between shrubs of twice the height. For example, if a shrub is 3 feet high then the distance to the next shrub should be at least 6 feet. This spacing should increase as slope of the lot increases.

TREE SPACING GUIDELINES

0-5 feet from the structure

No trees or branches should be within this zone. Trees and branches should not touch or overhang the structure. If trees must be kept in this zone they should be limbed up a minimum of 10 feet and be free of dead limbs, needles and leaves.

10-30 feet from structure

A few individual well spaced trees can be kept in this zone. All trees in this zone should be limbed to a height of 10 feet, but never prune branches on more than 1/3 the total height of the tree.

30-100 feet from the structure

Trees in this zone should be well spaced and maintained. Trees should be spaced an average of 10 feet from drip line to drip line of the trees. Small clumps of trees can be left if desirable. Treat each clump as if it were a single tree and create spacing between the clumps. All dead and diseased trees in this zone should be removed.

A permit is required for the removal of all trees in the Town of Vail limits. Permits can be obtained from Vail Fire Department at 2399 N. Frontage Road N. **970.477.3475**.



75 South Frontage Road
Vail, Colorado 81657
970.479.2250 | vailgov.com/fire

