



# ARE YOU READY?

Learn how one California couple prepared their horse property against the threat of Western wildland fire. When put to the test, their defenses worked.

By **KENN MCCARTY**

The largest wildfire in Colorado history—the Cameron Peak Fire—showed explosive growth outside Estes Park, as indicated in the rising smoke pillar captured in this photo taken on October 16, 2020.

“Within one-hour of a fast-moving wildland fire ignition, your local fire service agencies will be fully overwhelmed in most cases with far fewer resources than there are properties to immediately protect,” says author Kenn McCarty. He offers some advice on preparing a property for a good defense.





Firefighting aircraft helped to slow the 2018 River Fire's advance in Lake County, California, that threatened John and Susan McGann's home and barn.

Since 2013, Lake County, California, has been hard hit with wildland fires, eight of which have destroyed 2,825 structures and charred 581,629 acres. Most recently, in the summer of 2020, Lake County was one of six counties stricken by the massive August Complex Fire, which burned 1,032,648 acres, consumed 935 buildings and killed one firefighter.

The recent spate of devastating wildland fires in Lake County has reinvigorated much discussion there on the issue of home fire preparedness and defense, and horse owners are especially vulnerable with large animals to protect. You've seen those iconic aerial photos of whole neighborhoods, or a charred forest leveled by fire except for one lone surviving home still standing. Often, it survived the fire on the basis of its own defensible space merits—the property owner had the foresight to take measures to prepare and protect it from fire.

Following is an example of how one horse-owning couple did it right in Lake County. In the summer of 2018, the River Fire joined the Ranch Fire to become the Mendocino Complex; by the time both were controlled, 459,123 acres had burned, 280 structures had been destroyed, and one firefighter lost his life.

This couple's house, barn and horses survived. Here's what they did.

## THE HOUSE

John and Susan McGann purchased their dream property in 1991 and immediately began the process of defensible space fire protection. For the house, the measures they took in the years that followed fell under five areas.

**1. Location.** Even before ground was broken for the construction of their home, they began the process of clearing brush and thinning trees. This gave them a better look at the underlying geography and where the house would be best situated. Even if everything else is done right, poor geographical placement alone can render all other design and preparedness features ineffective and lead to the destruction of a home by wildland fire.

Three places where a home should never be built are on the apex of a steep hill or mountain top; on the backbone of a sharp

ridgeline; and within or directly above any hillside drainage. As a wildfire moves up a slope, it gradually burns faster, hotter and the flame lengths are greatly increased. In a drainage, the physics of a fire are akin to river water entering a narrow canyon, where speed and intensity increase dramatically. There are other geographic features that should be avoided as well, but these are the "big three."

The McGanns chose a relatively flat location on a gentle slope. They knew that they would eventually be visited by a wildland fire and this location offered both a nice view of the valley below and the ability to create vast defensible space around the house.


**2. Water and power.** They brought power to the house underground, thus eliminating some of the inherent hazards in overhead powerlines. Once their well was drilled and capped, they installed a 10,000-gallon concrete water tank next to it. For the purpose of firefighting, a 3-inch fire hydrant riser with a 2½-inch fire department connection was installed at the tank. In later years, because the hydrant was 75 yards from the house, they extended the 3-inch water main down the slope to the house.

For water use in the fire defense of a home to be effective, it must have pressure. Creating water pressure for a domestic house water service is relatively easy and affordable; but creating water pressure for a fire hydrant can be much more expensive.

They decided to purchase a portable gas-powered fire pump that would be permanently housed in a "fire pump station" next to the fire hydrant. With the purchase of some fire hose fittings and some used fire hose from an auction, they had the ability to mount an effective home defense. The system also greatly enhances the fire department's efforts to defend against a wildland fire, as well as to extinguish a fire that might start within the home.

In addition, their 10,000-gallon water tank holds the equivalent to the water carried on 20 fire engines or five "water tenders," or tanker trucks. Their system equates to a giant fire extinguisher that is immediately available.

**3. Building materials.** An equally critical component to home fire preparedness and defense is building construction. Con-



Firefighters effectively fought the River Fire using the defensible space around the McGanns' home and barn, aided by the McGanns' fire preparedness.

struction methods and choice of construction materials will either save or kill a home.

The McGanns chose not to have any near-ground level wooden decks or porches. They also installed a roof-mounted fire sprinkler system. After the fact, they realized they created one vulnerability by using wooden siding and are planning to replace it with siding that carries a "Class-A" fire rating, the highest in fire safety materials. The use of "Class-A" fire rated materials is a key component of fire preparedness in building construction.

**4. Landscape.** Landscape and design also can add to the home's fire defense if done properly, or be the cause of its demise if done poorly. With regard to brush and dry weed clearance, the McGanns' efforts vastly exceed the requirements set forth in California's Public Resources Code, which includes rules and guidelines for fire prevention and defense for the private land owner. In addition, no flammable ground covers or shrubbery are planted within 15 feet of the foundation of the home.

Their driveway, which is about 200 yards long, is wide, flat and has ample clearance of brush on both sides. Tree overgrowth along a driveway access can be a problem, and they constantly revisit their tree thinning and removal plan.

**5. Housekeeping.** The way you keep house is also a key component of fire preparedness. During the summer fire season, the McGanns make sure that no firewood stacks are near the house or shop, no flammable patio or yard furniture cushions are left out when not in use, and no other flammable accumulations of any kind are allowed.

Garage and shop doors are always kept closed when they are not in use, and no gas-powered equipment is ever allowed to be operated in adjacent dry grass areas without fire prevention and extinguishing measures in place.

## THE BARN

As the McGanns prepared their property for fire defense, they also focused their efforts on the barn and corral area, which is located roughly 150 yards from the house. Here, fire preparedness fell under four areas.

**1. Horse-keeping practices.** During the summer months, no flammable bedding or hay should ever be used in or stored in the barn. Bedding and hay are fire ember-catchers and are most frequently the cause of barns catching fire. Dry manure wasn't a problem as their daily cleaning earned them high marks.

Feeding hay in the barn is okay as long as the horses finish up all the hay at every feeding and any dregs are cleaned out regularly. They use a leaf-rake or a leaf-blower to prevent any accumulation of flammables. It takes just a handful of hay or bedding in a corner to receive a blown-in fire ember and burn down the barn.

From fall to spring, using and storing bedding and hay in the barn is no problem. In summer, some experts recommend using metal shipping containers, also called "connex" containers or intermodal containers, to store bedding and hay. When set in a clear, open area, they are effective fire-safe storage if the doors are kept closed.

Metal or non-flammable decorative shade roof and siding can be attached to make the container appealing to the eye and match your barn style and color. These containers are engineered structures and are generally allowed for such purposes. They are also portable, which increases their utility and application.

**2. Maintaining the landscape.** Their horses' grazing keeps dry grass clear around the barn, and the McGanns clear away any additional brush. It's important to ensure that a 30-foot perimeter around the foundation of the barn is bare dirt or gravel. (California requires 100-foot clearance of all dry and continuous vegetation.)

However, keep in mind that with every 20 percent (or 11 degrees slope) increase in terrain slope, these clearance distances should be doubled, due to a wildfire's increased flame length, speed and intensity when moving uphill.

The McGanns had a moderate stand of Western Grey Pine with a continuous canopy extending from the lower part of the paddock area right up to the barn. Based on expert advice, they reduced the density and opened the canopy of the trees by 50 percent out to a distance of 300 feet from the barn so that no canopy of any two trees were touching. They did this simply by removing unhealthy trees—spindly non-vigorous trees and very



**LEFT:** A gas-powered fire pump effectively increases the water pressure of a domestic water service into powerful fire hydrant pressure. It pulls water from the McGanns' 10,000-gallon concrete water tank. With this system, the McGanns were able to begin defending their home. **RIGHT:** The McGanns store their portable gas-powered fire pump and auction-bought used fire hose in their "fire pump station."

old and decadent trees. Now, enough healthy trees remain to offer shade and render a pleasant, park-like appearance. Beyond 300 feet from the barn, a strategic fire break is being developed, which also serves as a secondary escape route from the property.

**3. Establishing fire defense systems.** Fire defense systems include a number of options, including passive systems, or construction features designed to protect the barn, and dynamic systems which are operated in the defense of the barn.

The McGanns immediately tapped into a 2-inch water line at the barn and installed a fire hydrant valve. The head pressure in this line coming down the hill from their 10,000-gallon water tank provides enough water pressure to operate a 1½-inch fire hose at the barn.

Every barn should be able to be fully closed to prevent fire embers from blowing inside. It should be equipped with a 5-gallon refillable backpack fire extinguisher, like the Smith "Indian" brand.

It should have a quality 1-inch diameter garden hose with a solid-stream straight tip hooked up and ready for use. A garden hose is an effective fire extinguisher, and the straight tip gives the operator reach. The hose should never be away from its designated location.

At distant barn locations, it's good to install a 5,000-gallon water tank with a minimum 2½-inch fire department connection, along with a gas-powered pump and fire hose. In the dry West, water storage is our best friend for both utility purposes and in the defense against wildland fire.

**4. Making a plan.** Even with the best fire defense and home preparedness measures in place, every property also needs a horse evacuation plan established in advance.

Keep a horse trailer stocked with supplies and ready to go at a moment's notice. Know in advance where you can take horses and that location should not be within a wildland fire

threat zone. Have a long-term feeding and care plan as this evacuation may last for a month or longer.

If evacuation is not possible, horses should never be locked in or allowed to freely enter the barn. Horses consider the barn as a safe zone. Even if a barn is burning, they will go in and remain in it.

Ideally, every equestrian property should have a "safety zone," a large area that is completely free of vegetation within which people and horses can safely ride out the passing of a wildfire. An arena (150 feet by 250 feet) generally will accomplish this. It won't be comfortable, but it can help all survive the passing of a fire front. Other options for safety zones include a plowed field, any large parcel void of dry vegetation, and large pasture areas that are either fully grazed down to dirt or that are green.

## THE FIRE

During the 2018 River Fire, as soon as advisory evacuation notices were issued, Susan immediately initiated her horse evacuation plan and got them away from the property and settled in a safe, long term location. Next, the McGanns focused on defending their home.

At 5 p.m. on July 29, the River Fire appeared on the ridge north of the house and made a strong eastward run along the ridge, pushed by the wind. The neighbor's house, which had virtually no defensible space, was quickly engulfed in fire.

Shortly after the appearance of the fire-front, firefighting aircraft arrived, which effectively slowed the fire's advance so that ground forces could then move in and bolster fire lines. Just after nightfall, the fire encroached on the barn. At that very moment, three private-hire bulldozers arrived and saved the barn.

For the rest of the evening, the bulldozers, a hand crew and two fire engine crews established a line around the house, which in part was the driveway. The excellent defensive space that the McGanns created around their home allowed the fire crews to establish their fire defense lines well away from the house.



At the barn, in addition to a “red hose” system (a never-unhooked heavy-duty garden hose with straight-stream tip), the McGanns have a bucket, chemical fire extinguisher and a 5-gallon backpack fire extinguisher ready to use at all times.

At the house itself, the crew needed to use water only once to douse some flames that got close to a detached shop building. In total, only 200 gallons were used. The house, barn and shop were saved, greatly helped by the thoroughness of the defensible space work done by the McGanns.

However, even with this success, they took notes and immediately began to improve upon what they already had in place, including further tree thinning and reevaluating water lines. They also took advantage of what the fire did, bringing in a masticator machine to reduce standing charred brush to mulch.

## THE FUTURE

The McGanns haven’t stopped with their own property. They realize that defensible space and fire protection planning needs to be a community-wide approach. They, along with another couple in the neighborhood, have begun working on a greater strategic fire preparedness and protection plan for their area, involving vegetation management on private and public lands, reviewing public land use and summer fire season activities, utility line fire prevention and more.

Once started, wildfires can have an extremely rapid rate of spread and grow exponentially within hours. The growth of these fires challenges and rapidly exceeds the abilities of even

the most robust fire service. For many ranchers, farmers or anyone who lives in the rural West, a measure of self-reliance can often be the difference between saving or losing your home and livelihood. The fire services would rather see everyone evacuate their homes and properties once the word is given, but it is often the case that fire services simply can’t protect everyone’s property when the threat arrives.

This is key for all homeowners to understand: Within one hour of a fast-moving wildland fire ignition, your local fire service agencies will be fully overwhelmed in most cases with far fewer resources than there are properties to immediately protect. It’s up to you to be your first (with the property’s built-in “static systems”) and second (in-person “dynamic”) lines of fire defense.

Many additional homeowner responsibilities are inherent with living within wildland fire threat zones. Many people think that the government should step in and do much of what is needed for them. Indeed, managing public lands is the job of government, but managing private land is the property owner’s job. If every home and property owner within wildland fire-prone zones followed the McGanns’ example, it would go a long way toward alleviating the severity of our present situation. **W**

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### REFERENCES

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The McGanns have to constantly work to maintain the landscape around their house and barn, keeping grass grazed down, thinning trees and clearing brush.

## MEET THE EXPERT

**KENN MCCARTY** retired after 35 years in the fire service as a captain for the California Department of Forestry and Fire Protection, or CAL Fire. Prior to that, his career included working in fire prevention for the Bureau of Land Management. His wife, Susan, is a 16-year veteran of the wildland fire service. Lifelong horsemen and teamsters, the McCartys own and operate Live Oak Belgians, a horse-drawn wagon and carriage service business. They also successfully compete annually with their teams at the Draft Horse Classic show in Grass Valley, California. Longtime residents of Lake County, California, they relocated their home and business to Montana in 2020. With their combined horse and wildland fire experience, the McCartys are regularly consulted on fire preparedness for rural homes and livestock barn facilities. For more information go to [liveoakbelgians.com](http://liveoakbelgians.com).