



## Multiple Mitigation Measures Save Home From Wildfire

### Full Mitigation Best Practice Story

#### *San Diego County, California*



**Jamul, CA** – In October 2007, fire surrounded the home of Bob and Suzy Bullock, who live approximately 25 miles east of San Diego near Jamul. They evacuated, and when they came back they found their home intact – protected by all the mitigation measures they took.

On a 10-acre site in the wildland area above Deerhorn Valley, the Bullocks' home sits surrounded by scorched hillsides and gulleys. The Santa Ana winds drove the Harris Fire, one of the biggest fires of the Southern California wildfires in 2007, through the area. The fire destroyed 19 homes within sight of the Bullock property.

A wide swath of defensible space planted with fire-resistant vegetation that is watered regularly with a special irrigation system helped save their home. So did its construction – a tile roof with boxed-in air vents that repel flying embers, stucco walls, concrete aprons around three sides of the structure, and the asphalt driveway at the back of the house. The Bullocks also have a fire hydrant (required by the county as a condition of the building permit) fed by water from a 10,000-gallon water tank.

The Bullock's firefighting system came into play when Lake Tahoe area firefighters used it to protect two of the area's homes (both owned by the Bullocks). "We came into [the] home through the open bedroom door," said Steve Bevenage, captain of Lake Valley Fire Protection District crews who protected Jamul and Deerhorn Valley homes.

"We closed [the] bedroom windows and all blinds," Bevenage said in a note the Bullocks found at their home when they returned. "Fire burned all around [the] exterior landscape, except for a small area next to [the] drive," the note said, ending with: "Great job with defensible space, fire pump, fire hose, thermal gel, and a reducer on [the] water."

The Bullocks' advance preparations included coating their house with a fire-repellent gel. The gel is applied as a mist with a garden hose. The "fire-blocking gel" should be rehydrated with a misting every eight hours. Firefighters from Lake Tahoe re-misted the gel while the Bullocks were gone.

The concrete aprons extend 10 to 21 feet from the outer walls of the house. The 16-foot-wide asphalt driveway behind the house serves as an apron there. The Bullocks also have an irrigation system installed for watering plants in the defensible space.

"My wife was really concerned," Dr. Bullock said, "when we were designing the house." She researched every source for information about measures to take in constructing their home. Included was defensible space.

Greg Rubin of California's Own, an Escondido-based landscape design company that specializes in preparing defensible spaces for homes, especially those which border the wildland urban interface where the potential for fire exists throughout the year, cited the Bullock home and their preparation for fire as a classic example of doing all the right things.

"Directly around the house, we like to do mostly hardscape, at least create a concrete or gravel apron that keeps the flames away from the eaves," he said. The "hardscape" at the Bullocks' home are the aprons and driveway.

"Native landscapes require an organic mulch in order to prevent weeds, control erosion, hold moisture, and provide some trace elements," said Rubin. "Of all the organic mulches, the shredded redwood bark (known also as 'gorilla hair') appears to be the most fire-resistant, once it has been matted down after a few irrigation cycles. It also seems to have the best physical and biochemical properties for natives," Rubin continued.

"As far as the plants themselves, hydration is the key. What is significant about natives is that they require very little supplemental irrigation to stay hydrated, and they hold onto that hydration. Many conventional exotics, on the other hand, take much more water to be hydrated and tend to lose the water rather quickly during the fire and then burn up. The mulch itself also seems to benefit from bimonthly light watering. I don't think it's a bad idea to give the landscape a good dousing right before the fire if there is time to do so, because the mulch will retain the moisture."

On November 11, 2007, Rubin toured the property with Bob Bullock, remarking that there is nothing Bullock needed to do other than maintain the defensible space by watering plants there every 7 to 10 days. He added that, although much of the vegetation closest to the burn areas was scorched, most or possibly all of the plant life will come back.

The next thing the Bullocks will do to enhance protection of their property is remove a pine tree that was growing next to the water tank behind and upslope from their house.

That decision was made when the Bullocks found out that vegetation by a water tank could ignite, destroying the water tank, as had happened on other properties in other fire areas.

The Bullocks know they are lucky that nothing happened, with respect to the pine tree, but they believe it is not worth the risk of keeping the pine tree just because it looks good next to the water tank. They also know they are lucky that a wood table inadvertently left next to the house did not catch fire.

The overall cost of mitigating their house with aprons, defensible space, including the irrigation system, well, fire hydrant, fire pump, and fire hose totals \$85,000. The cost of constructing their house in 2003 was \$600,000. The Bullocks' insurance company estimated late in 2007 that it would cost approximately \$775,000 to replace their home if it had been a total loss. That makes the cost benefit ratio 9 to 1. The house is insured for \$800,000, Bullock said.

The Bullocks own an adjacent 10 acres and have a rental house there. It also has defensible space with its own irrigation system, and the house is also fully mitigated. The house was also untouched by the fire. Lake Tahoe firefighters protected it with the Bullocks' firefighting system.

The Bullocks story serves as a classic example of what can be done, and perhaps what should be done, if one is to live in areas that are threatened by the ravages of wildfires. It does not mean that the property is absolutely fire-proofed, but does mean that the Bullocks reduced their vulnerability substantially. At that, they are fully protected by fire insurance, and when fire comes, they evacuate. The Bullocks encourage everyone to consider what they may do to protect their homes and consider that the extra costs are well worth it.

"We love it here. We wanted to make sure we did everything right," Dr. Bullock said. "I'm glad we took the steps we took."

#### Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IX**

State: **California**

County: **San Diego County**

City/Community: **Jamul**

#### Key Activity/Project Information

Sector: **Private**

Hazard Type: **Wildfire**

Activity/Project Type: **Building Codes; Vegetation Management**

Activity/Project Start Date: **01/2003**

Activity/Project End Date: **Ongoing**

Funding Source: **Property Owner, Residential**

## Activity/Project Economic Analysis

Cost: **\$85,000.00 (Estimated)**

## Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **No**

Value Tested By Disaster? **Yes**

Tested By Federal Disaster #: **1731 , 10/24/2007**

Repetitive Loss Property? **No**

## Reference URLs

Reference URL 1: <http://www.fema.gov/hazard/wildfire/index.shtm>

Reference URL 2: <http://www.fema.gov/library/viewRecord.do?id=3026>

## Main Points

- In October 2007 the Bullock's home survived the California wildfires fires because of the mitigation measures they took.
- A wide swath of defensible space planted with fire-resistant vegetation that is watered regularly with a special irrigation system helped save their home.
- Construction played a role – a tile roof with boxed-in air vents that repel flying embers, stucco walls, concrete aprons around three sides of the structure, and the asphalt driveway at the back of the house.
- The Bullocks also have a fire hydrant (required by the county as a condition of the building permit) fed by water from a 10,000-gallon water tank.
- The Bullocks' advance preparations included coating their house with a fire-repellent gel.
- Though their house was saved, they are going to take additional mitigation measure, such as removing a pine tree near their water tank.
- The Bullocks story serves as a classic example of what can be done, and perhaps what should be done, if one is to live in areas that are threatened by the ravages of wildfires.



The Bullocks home – untouched by the Harris Fire - October 2007



10,000-gallon water tank



Defensible space on Bullocks property



Hardscape at the back of the home



Irrigation system



Boxed-in eaves, stucco exterior, double-pane windows, fire alarm and hardscape