

THE HOMEOWNER'S GUIDE TO . . .

FIRE PREVENTION IN THE OAKLAND HILLS

FIRE PREVENTION MATTERS

**What you do before a major wildfire occurs
can save your home and your life!**

By Bob Sieben

rsieben@yahoo.com

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INTRODUCTION

There is a lot you, the homeowner, can and must do to prevent a major wildfire from consuming your home. This has to be done before the perfect storm hits and overwhelms firefighters, stopping only when the wind changes.

This guide is written by a homeowner living in the Oakland hills for the homeowner living in the Oakland hills. We live in a unique intermix of wildlands and homes in a certified very high fire danger zone for which the available guides are of limited use. These guides describe large, flat properties with homes at a distance from their neighbors, contrasting with the steep, densely populated areas in the Oakland hills along narrow, winding streets, where we live in close proximity to our neighbors or even share a pod with them.

Unfortunately, our homeowners have no idea what they should do to avoid losing their homes and/or their lives to wildfire. This guide provides the information you need to improve your chances of surviving such a fire; the steps you need to take now, before the fire is approaching and it is too late.

Your fire insurance policy will not replace the time, the anguish, the loss of treasured personal items and pets, and the loss of community you will experience in such a fire.

These relatively simple steps can substantially improve your odds of never having to go through such an experience. They are detailed working from the structure itself outwards under these headings:

1. Reduce the sources of ignition.
2. Make fire prevention a year-round activity.
3. Reduce your home's vulnerability to embers.
4. Maintain a non-ignition zone adjacent to your structure.
5. Create defensible space around your home.
6. Create a wildland fuel reduction buffer zone.
7. Appendixes:
 - a. Monthly fire tips
 - b. Maximizing dumpster space
 - c. Monterey pine
 - d. Blue gum eucalyptus
 - e. French and Spanish broom
 - f. Pampus (Jubata) grass

ABOUT THESE GUIDELINES

These guidelines deal with management of the most persistent and hazardous types of vegetation in the Oakland hills at a level each homeowner can deal with.

They were developed by Robert Sieben, a resident of Hiller Highlands Homeowners Association, Phase V, consisting of clusters of 100 townhouses centered along Starview Drive and contiguous streets, including 14 acres of steep hillside property on the north side of Highway 24 just west of the Caldecott Tunnel in the Oakland hills between Tunnel Road, Hiller Drive and Charing Cross Road. The Firestorm of 1991 began just northeast of this area, consuming it within 20 minutes as ferocious diablo winds rapidly spread the devastating conflagration to downwind areas throughout the nearby hills.

Dr. Sieben has been the volunteer coordinator of fire prevention for HHV since 1998. He is a physician with no prior experience in fire prevention who built a town house on Starview Drive after the Firestorm. These guidelines represent what he has learned from thousands of hours of hands-on experience managing the fire prone vegetation on the large undeveloped portion of this property, and what he has learned by serving on the Advisory Committee of the Oakland Wildfire Prevention Assessment District (WPAD) for three terms (including chair); the North Hills Community Association (currently chair of the fire prevention committee); the Diablo Firesafe Council; and attendance at a meeting of the national Wildlands-Urban Interface Council.

These guidelines are specific to the unique characteristics of the most hazardous, persistent, and difficult to manage types of vegetation private property owners encounter in the Oakland hills. As private properties, options and techniques, otherwise referred to as “the available toolbox”, vary significantly from those available to the City of Oakland, and cannot be considered to be endorsed by it or the committees Dr. Sieben belongs to or has served upon. They are pragmatic strategies developed by an individual private property owner for the individual property owner.

At HHV the strategy has evolved from an all-volunteer program to voluntary contributions to annual funding by the HHV Board of Directors, now at \$8,000 annually (\$80 per homeowner). Currently, the bulk of the work is done under the supervision of Dr. Sieben by a vegetation management company and occasional volunteers. This work requires an intimate knowledge of the type of vegetation and its management beyond that which the occasional volunteer possesses. Furthermore, the terrain is steep and hazardous, beyond the physical capability of most potential volunteers.

The terrain is not suited for goats. Herbicides have been used selectively and sparingly, as is legal on private property, without any ill effects. Cuttings have been left in decomposition piles where appropriate, eliminating the high cost of removal. Burning brush is not feasible in this steep, windy, densely inhabited corridor. On the other hand, the winter rainy season and

lack of freezing temperatures or snow facilitate the decomposition of cut grasses, brush and trees.

As planting is difficult to sustain, the general approach has been to get rid of the bad stuff and let the good stuff grow, resulting in a much improved natural landscape that is decidedly more fire safe without contributing to erosion or landslides on the steeper slopes. Although the bias has been toward native plants, many native plants have been found to be of high fire risk—e.g., Ceanothus, elderberry, and coyote bush; and many non-natives of low fire risk—e.g., olive trees, oleander, and succulents.

There are no hard and fast rules, as the direction of the slope, its composition and steepness, exposure to Diablo winds, accessibility, density, maintenance, etc. all have to be taken into consideration.

REDUCE THE SOURCES OF IGNITION

Install an automatic gas shut off valve.

Lightning is fortunately quite rare in our community. However, a major earthquake is expected to occur on the nearby Hayward fault at any time over the next several years. When, not if, this earthquake occurs, your home is far more likely to be destroyed by fire than by the earthquake itself. You can reduce this possibility by having a plumber install an automatic gas shut off valve for about \$350 or less. Your neighbors will appreciate this.

As humans cause almost all the fires in our area, your first line of defense is to avoid starting a fire in the first place. Be aware of the commonest sources of ignition and take precautions to control them, beginning within your home and then outside it and along the roadside:

Within your home:

Don't smoke in bed, particularly if you have been drinking. Keep a fire extinguisher appropriate for gas and electric fires in your kitchen. If you use have a fire place, be sure you have a spark arrestor on your chimney and have a chimney sweep clean your chimney annually if you use it much at all.

Near your home:

Don't smoke or use charcoal barbecues, particularly on windy days. Use spark arrestors on gas powered tools.

Roadside ignition:

The commonest causes here are arson, discarded cigarettes, flares, fireworks, auto fires and catalytic convertors or exhaust pipes backed into dry grass.

MAKE FIRE PREVENTION A YEAR-ROUND ACTIVITY

Think of fire prevention in terms of two seasons. The *dry season* usually lasts from mid-June, after the rains have stopped, until mid-November, when they begin again. This is the time when ignition and fire suppression are key concerns. The *wet season* typically lasts from mid-November to mid-June. It is the best time to manage vegetation. The timing and extent of rains vary greatly from year to year, as do temperature and fog. Within the two primary seasons there are activities more appropriate to being done earlier or later (see Appendix A).

FIRE IGNITION SEASON

Early on...

- Attach exterior hoses.
- Avoid power tools on dry/windy days.
- Improve structural ember resistance
- Create and maintain a non-ignition zone adjacent to structures.
- Clear flammable materials from under decks, stairs, and fences.
- Remove seed heads of pampas grass, bagging them.
- Inspect and clean chimney and fireplace.
- Prune out and remove dead wood from plants near structures.

In high season...

- Water plants and mulch in non-ignition zone.
- Keep roof and gutters free of flammable debris, esp. pine needles.
- Prevent igniting fires with cigarettes, charcoal BBQ, catalytic converter.
- Close windows and skylights when gone from home and on red alert days.
- Close windows and garage door when evacuating.

WET SEASON

- Take advantage of better footing on steep wet slopes than dry ones.
- Reduce poison oak while relatively dormant.
- Do major tree cutting/pruning and brush removal/pruning early, allowing more time for decomposition to begin, especially if cut up and mulched when there is less fire danger.
- Trees are more tolerant of pruning in the dormant season.
- More workers are available.
- Cooler weather is easier to do heavy work in.

Pull broom seedlings before they bloom, first from shaded moister areas, then from exposed areas after significant rains. Search for yellow flowers to locate invading or surviving plants before they seed. Should begin in December and complete by April.

Pick axe pampas grass roots after rains have softened the root ball; pull thistle.

REDUCE YOUR HOME'S VULNERABILITY TO EMBERS

In a wildfire your home is more likely to burn down as a result of embers than from any other source. Small embers may smolder and combine to ignite a fire long after the fire front has passed by.

Radiated heat can ignite a structure from a distance of even 30 feet or more away, so it is also a common cause of ignition in our area where homes are often crowded together. Vertical and uppermost surfaces are the most exposed to long-lived heat transfer. Even a small flame close to a window can crack it.

Direct contact by flames provides dramatic news coverage, but usually represents a short, passing pulse of flames that is less likely to ignite your home.

These recommendations apply only to the structure itself. Related vegetation issues will be dealt with in the following sections. Structures are not subject to inspection because the laws in the Fire Code apply only to new construction or remodels including 25% of the footprint of the house. Therefore, just because your property passed inspection does not mean it is fire safe.

The following tips are dealt with in sequence from the top of your home downward.

TOP OF THE STRUCTURE

Roof

Should be AAA rated; not tar and gravel when flat.

Install bird stops for barrel tiles

Clean pine needles and leaves, especially during high fire season, from valleys, crooks, and corners where roofing intersects with siding, such as dormers.

Screen places where leaves collect with 1/8" wire mesh (available at Orchard Supply). Embers will collect in the same areas.

Seal gaps between the fascia, which is prone to rot, and the roof.

Chimney and furnace vents

Install spark arresters (required on all homes).

Chimney sweep annually if frequent use of the fireplace.

Close fireplace damper when not in use to prevent embers entering.

Use a robust fire in the fireplace to burn off pitch in chimney.

Skylights

Use rated glass (see windows).

Close open skylights when you leave home.

Gutters

Clean out pine needles and leaves, particularly in the high fire season, inspecting the roof at the same time.

Use gutter guards, or 1/8" mesh, to protect hard to service areas.

Vents

Those at ridge and eyebrows are for outflow.

Those in fascia and eaves are for inflow, and more dangerous.

Screen horizontal vents with fiberglass or metal material.

Screen soffit vents with 1/8" metal mesh (swallows build flammable nests here).

Soffits (eaves)

Embers are deflected upward by the walls to soffits, the underside of which is often exposed plywood.

New homes are not allowed to have unprotected soffits.

They should be boxed with fire resistant materials.

SIDE OF THE STRUCTURE

Siding

Rated walls themselves are fairly resistant to fire, stucco moreso.

Decayed wood, found at the bottom corners of window sills and decks) ignites easier.

Chip it out, caulking any gaps.

Seal the lower edge of the siding and remove any combustibles below it.

Vinyl melts and falls off.

Windows

A broken or open window dooms the house.

Windows are second only to roofs as a source of fire.

Double pane, tempered glass is best.

Bronze metal screens are best, absorbing 1/3rd of conductive heat.

Consider metal roll down shutters on 1st floor windows especially facing dangerous northeast Diablo winds.

Move flammables away from windows if fire threatens because they may be ignited by conductive heat.

Window coverings

Non-flammable, heavy drapes of natural fibers are best.

No lace curtains or synthetics.

OVERHANGS

It's not so much the decks as what you put under them or on them.

Decks and porches

Use protective, rated stains or paints

Consider Armstrong in Sonoma or "Safer Wood". Old Trek burns.

2x6 all heart redwood is excellent but expensive.

Eliminate gaps, especially where attached to the structure.

Clean intersections of horizontal and vertical, where leaves and embers

collect.

Under the deck

The closer the deck is to the ground, the more dangerous.

Box in with stucco or 1/8" wire mesh.

Don't attach lattices, which ignite easily and can ladder fire to sleeping areas or eaves.

Don't store combustibles such as paint cans, fire wood, and brooms here.

Keep a hose attached to spray the deck or soffits from below if fire coming.

On the deck

Avoid combustible furniture, baskets, sculptured twigs, dried flowers.

Move flammables inside and away from windows if fire threatens.

BBQ covers are synthetics that can be ignited by embers, melt and then fuel a very intense flame that can ignite the deck.

ATTACHMENTS TO STRUCTURE

Garage

Usually more vulnerable than the rest of the house.

Have automatic gas cutoff installed to protect against an earthquake.

Consider cheaper, lighter, metal door.

Weather strip any gap below a rolling door.

Consider 2x4 trim for any gap at the top of the door.

Use rated windows and screen vents.

Don't use flammable plywood for doors on utility closet.

Disconnect automatic door when fire threatens.

When you evacuate leave door unlocked and *close the door*.

Foundation

Use 1/8th metal mesh to screen vents, which also blocks mouse entry.

Fences and gates

Thicker 1½" wood is better.

Consider a fence made with wire on a metal or wood frame with

Maintained vines.

A gate made of non-flammable material can break the continuity of a flammable fence.

Stucco pillars can also break the continuity of wood fences.

Removing a fence may provide better security by removing cover for burglars.

Avoid direct sprinkling, which can lead to decayed, more ignitable wood.

Leaving a gap at the bottom of the fence also helps prevent decay.

Use metal, masonry or stucco where wood attaches to the house.

Don't store combustibles against the fence.

MAINTAIN NON-IGNITION ZONE NEAR YOUR HOME

REMOVE FLAMMABLE MATERIALS FROM VULNERABLE AREAS

Overhangs including above and below eaves, decks, stairs and ground level vents.

Anything near windows or glass doors, including window boxes.

Remove firewood, construction debris, brooms, flammable decorations, and wood trellises.

USE NON-FLAMMABLE MATERIALS

Pavement, pavement stones, walkways, driveways, rocks, pebbles, concrete, tile, stucco, water, soft cement-like material (deposit granite).

Bare ground, which also favors native honey bees.

Fences of wire, cyclone fencing, iron gates, wire gates, "green fences."

Walls of piled rock, thick wood retaining walls, berms.

Avoid recycled plastics, as they may break down and spread flames, smaller sizes of lumber, uncapped lattices.

MANAGE VEGETATION

Maintenance is the key; be aware of the dangers and maintain it.

Break up continuity by providing both vertical and horizontal spacing between plants and between plants and chimney outlets, windows, eaves, overhangs, decks, stairs, fencing and vents.

Trees and brush

Trees don't usually burn by themselves

Eliminate the ground fuels under them.

Eliminate brush laddering fuels into them.

Remove lower branches, dead or drying branches, peeling bark.

Prune branches away from chimney outlets, windows, overhangs, vents.

Keep roofs, especially corners, free of pine needles, particularly in high fire season and on red alert days. Even redwood debris can burn in a drought.

Decrease density of crowns (space=insulation against spread).

You need to open up brush by pruning and be able to rake under it.

A common mistake is to plant hedges under eaves, decks or windows.

Flame heights can be three times the height of what is burning.

Mulch

Ideally, there should be none within five feet of a structure.

Worst are pine needles and shredded cedar or even shredded redwood or pine bark pellets.

Cigarette butts can ignite these.

It is important to be able rake such debris from under plants and fencing, even the lower, unsealed edges of siding.

Pea gravel keeps plants cooler and thriving.

Farther from a structure, mulching can help weed control and may put organic material or moisture back into the soil. Larger chips may roll down steep hills.

Ground covers can be a desirable living mulch in the non-ignition zone.

Native bees, important to thriving plants, need bare soil to nest and can't penetrate deep mulch.

Plant choices

Most plants will burn within 90 seconds. Where you plant them, how you space them and how you maintain them are most important. The idea is to limit fuels close to your structure, including fencing, to minimize heat output and ignition. You need to be able to rake underneath them easily.

Characteristics of fire resistant plants:

- Herb garden

- Almost anything in a pot

- High mineral content (grey), such as geraniums, cyclamen & other bulbs

- Little dead matter, such as succulents

- Thick, large leaves, such as camellias, rhododendrons

- High moisture content

- Trimable, with open, airy form (low fuel load), such as ferns

- Flowering annuals (less woody, brief growing period)

- How they age is important

- Favorable choices include:

 - Western redbud

 - Marguerite daisy

 - Pineapple guava

 - Oleander (very difficult to ignite even if you try to)

Characteristics of less fire resistant plants:

- Aromatic oils

- Buildup of dead matter

- Tiny leaves that ignite easily & lose moisture easily

- Particularly bad choices are:

 - Juniper (called a green gas can by firefighters)

 - Rosemary (develops lots of dead wood, highly flammable)

 - Blue gum eucalyptus (highly flammable debris, leaves, bark)

 - French and Spanish broom (above and highly invasive)

 - Monterey pine (easily ignited by radiated heat, much dead wood and needle drop).

 - Ceanothus.

Pride of Madeira (becomes very woody and spreads voraciously to surrounding areas).

CREATE DEFENSIBLE SPACE AROUND YOUR HOME

The most important person in protecting a house from wildfire is not a firefighter, but you, the property owner. It is the action taken by the owner before the wildfire occurs that is most critical.

This section will focus on what the owners can and must do to: 1.) give themselves time to evacuate; 2.) provide an opportunity for firefighters to effectively defend their house; and 3.) increase the odds their home may survive on its own when firefighting resources are overwhelmed.

WHAT IS DEFENSIBLE SPACE?

This is the area between your house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat. The key is to reduce the intensity of the wildfire as it nears your home.

The vegetation surrounding your home can have considerable influence upon its survivability and that of your neighbors. All vegetation, including plants native to the area and ornamental plants, is potential wildfire fuel. If this vegetation is properly modified and maintained, a wildfire can be slowed, the height of flames shortened, and the amount of heat reduced, all of which reduce the chance of your home being consumed by fire.

The California Fire Code requires homeowners to maintain defensible space for a minimum of 30 feet around their home and often for 100 feet or even further, depending on the property line. This code was developed at a national level to protect against a moving fire front at the wildland-urban interface. It primarily targeted areas where the home is on a relatively flat lot and adequately separated from neighboring houses. Such a lot is rare in the Oakland hills.

HOW DOES THIS APPLY TO THE OAKLAND HILLS?

In the Oakland Hills we live in a more densely populated wildland-urban *intermix*, an area where there are steep hills, little flat land, narrow winding streets that frequently dead-end, and many homes built within 10-20 feet of each other on narrow lots that may extend for a few hundred feet up or down a slope. The dangerous northeasterly Diablo winds tend to blow flames downhill, whereas most fires in other areas spread more rapidly uphill.

In addition, our weather is different. We experience considerable fog in the summer that increases moisture and leads to fog drip from the tree canopy that moistens the underlying soil. We do not have significant snow or freezing in the winter. This permits vegetation management work to be done with less hazard of ignition during the wet season and hastens decomposition of cut materials. This is an important difference because controlled burns are seldom advisable in our area.

The good news is that voters created the Oakland Wildfire Prevention Assessment District, funded by Oakland Hills residents for the Oakland Hills, that is steadily improving the situa-

tion and has become a respected model for wildland–urban interface fire districts throughout the nation.

SCOPE OF THIS SECTION

This does not deal with the first five feet in the *non-ignition zone*, which is described in a separate section. Nor does it deal with roads, water supplies, power lines and publicly owned lands. It focuses entirely on what homeowners can and must do to manage vegetation on their own land in the *lean, green and clean zone* beyond the non-ignition zone, whether it is in the first 30 feet from the home or even a few hundred feet, where one is dealing with what might more appropriately be called the buffer or *wildland fuel reduction zone*.

The strategies will vary greatly for each homeowner depending on the characteristics and exposures of the property. The strategies described are those homeowners can and should implement themselves. The homeowner has more “tools” available to him with fewer restrictions than those working on public lands. He is also the most familiar with his own property and able to closely monitor and maintain it as needed, when needed, on a regular basis

SEVEN STEPS TO CREATING AN EFFECTIVE DEFENSIBLE SPACE

Step One: Determine the size of an effective defensible space.

This space extends outward from the base of the house and may vary in different directions. It differs with the dominant vegetation, the steepness of the slope, and the direction wildfire is most likely to come from (e.g. —Diablo winds from the Northeast). Take wooden fences and other separate structures such as gazebos into account. Driveways, patios and swimming pools contribute to the defensible space. A slow, measured approach is preferable, working outward from the house and starting with invasive exotics.

Step Two: Include driveway clearance if applicable.

Vegetation should be reduced at least 10 feet from both sides of the driveway to provide an adequate evacuation route and access for firefighters. Overhanging branches and power lines should be removed or raised, if possible, to provide at least a 15-foot vertical clearance.

Step Three: Remove dead vegetation.

Dead vegetation includes dead and dying standing trees or recently fallen trees; dead native and ornamental shrubs; dead branches; dried grass, weeds and flowers. Fallen trees embedded into the ground and located more than 30 feet from the house can be left in place with exposed branches removed.

Pay particular attention to flammable ground fuels under bushes or trees. Pine needles and leaves should be removed in late Spring and may accumulate on the ground beyond the non-ignition zone as long as they do not create a fire hazard. Within 30 feet from the house, do not allow fallen needles and leaves to exceed a depth of 3 inches.

Step Four: Create a separation between trees and shrubs.

A small grassland opening in a field of coyote brush can be enlarged and improved, providing a beautiful, accessible, botanically rich and fuel-reduced pocket within a mosaic of brush and trees.

Monterey pine, Ceanothus, and coyote bush should not occur in a dense stand, as they pose a significant wildfire threat. Thin dense tree and shrub stands to create more space between them. On flat to gently sloping terrain more than 30 feet from the house, individual shrubs or small clumps of shrubs within the defensible space zone should be separated from one another by at least twice the height of the average shrub. On steeper slopes, the separation distance should be greater. Remove shrubs or prune them to reduce their height and/or diameter. They may be pruned in alternating years to preserve the roots for erosion control.

On flat to gently sloping terrain more than 30 feet from the house, provide an average separation between the canopies of trees of at least ten feet. Whereas greater distances between trees or groupings of trees are recommended on steep slopes, wide crowns may be beneficial by reducing erosion, reducing undergrowth and moistening the groundcover due to fog drip. Conditions differ greatly depending on whether the slope is Northeast facing (lush desirable groundcover, moister, less sun) or Southwest facing (drier, more sun, more broom and more coyote bush).

Step Five: Remove ladder fuels.

Vegetation that can carry a fire burning in low-growing plants to taller plants is called "ladder fuel." Lower branches should be removed to a height of 6 to 10 feet, but no more than a third of the height of the tree. Shrubs growing near or under the drip line should also be removed. Irrigated, well-maintained lawn and flower beds, as well as low-growing native ground covers, can be present under the tree's drip line as long as they would not allow a fire to ignite the tree.

Step Six: Create a lean, clean and green area extending 5 -30ft from the house.

The first goal is to eliminate easily ignitable fuels, or "kindling" near the house. This will help prevent embers from starting a fire in your yard. The second goal is to keep fire intensity low if it does ignite near the house. By proper management of the vegetation and other fuels near the house, a fire would not be able to generate enough heat to ignite the home. For most homeowners, this area is also the residential landscape. It often has irrigation, is planted with ornamental vegetation, and is regularly maintained.

Step Seven: Maintain the defensible space zone

Maintaining the defensible space is an ongoing year round activity that will vary significantly from year to year depending on the weather. Plants grow back, and flammable vegetation needs to be routinely removed and disposed of properly. Before each high fire season, reevaluate your property using the previous six steps and implement the necessary defensible space recommendations.

CREATE A WILDLAND FUEL REDUCTION ZONE

Four years after the catastrophic Firestorm in the Oakland and Berkeley Hills, the Vegetation Management Consortium effectively said: “Manage the vegetation in the hills or, as history and fire science has shown us, it will again burn catastrophically.” This did not mean that one must clear all vegetation within 10 feet of a road or 30 feet of any building with no respect for biological values. A more complex and nuanced approach to vegetation management was recommended for different types of plant communities to reduce and separate fuels so that, when wildfires occur, they would be more likely to be manageable.

Treatment is called for in varying intensities and distances from values at risk. This treatment, if carried out in a thoughtful and enlightened way, can yield wonderful results on the ground. Instead of being an environmental negative, with cleared bare earth, we can use fire safety guidelines to encourage healthy, beautiful, and botanically diverse wildlands.

In grasslands

The overall fire hazard is moderate, but depends greatly on the height and density of grasses, forbs, and weeds; and their relationship to brush. In tall grass above knee level flame heights may reach 12 to 38 feet. Tall-grass fires are extremely hazardous to firefighters; up to ten times as high, fast, and hot as short-grass fires.

Fire hazard reduction goals for grasslands:

- Shorten grasses.

- Manage potential ignition sites.

- Encourage native perennial grasses.

- Encourage less flammable groundcovers.

- Break up the continuity of the grasses with firebreaks, low stone walls or even a horizontal line of shrubs.

Mowing at a height that preserves low lying ground covers such as wild strawberries, California wild blackberry, wild cucumber and ferns is preferable. Hand pulling and mowing are preferable to goats, as they eat everything, including desirables. Native bunch grasses are less fire prone, are less contiguous, need less water, stay green longer, and have deep roots that help prevent erosion. Surprisingly, a line or island of shrubs may slow the spread of fire in flash fuels because they have a higher combustion temperature.

Brush and scrub dominant communities

These became more common in the Oakland Hills with development as grasslands encouraged by periodic fires and grazing disappeared. The hazard this vegetation presents is described as “highest” or “most extreme.” Flame heights may reach 69 feet, with rapid spread and tremendous heat ten times as great as young brush under four feet in height. This is particularly true of climax stands of tall coyote bush.

Fire hazard reduction goals for brush:

- Shorten overall height of shrubs.

- Remove invasive exotic species.
- Remove or reduce dead materials and litter.
- Separate islands of taller shrubs.
- Encourage natural succession to grasslands or woodlands.

The biggest threats to California's beleaguered-but-still-fabulously-rich wildlands, after development pressures, are foreign lesions of invasive weeds. Invasive exotics like French and Spanish broom, pampas grass, blue gum eucalyptus, Monterey pine, and blackwood acacia are seriously increasing our fuel loads and fire problem while also usurping native habitats. By removing and discouraging these pyrophytic weeds we can make room for our local native plant communities.

Forests and riparian areas are a different matter, and not usually in the province or capability of the individual homeowner. We need to separate and reduce the fuels, especially tall grasses and brush, so fires don't consolidate into massive fronts. The ground fuels and ladder fuels under the tree are more important than the type of tree, as they are the most likely source of ignition. Dense fire chimneys and tree crowns need to be judiciously interrupted and/or thinned.

A great old oak is threatened, and is a threat itself, if choked with heavy brush, ladder fuels, and dead branches. Once the brush has been thinned and shortened, it is a natural, shaded firebreak, representing a value preserved.

Pine trees, especially Monterey pine, produce a lot of litter and, being composed of turpentine, can be easily ignited by radiant heat without a flame. Winds spread their pine needles over roofs. Blue gum eucalyptus require considerable maintenance because of their flammable bark and detritus. Even native Ceanothus or elderberries may be a hazard because of considerable buildup of dead wood in their branches. Native oaks, though their leaves tend to singe and are less likely to form fire brands, often contain many dead branches that can ignite and burn intensely. Willows may produce a great amount of dead branches than can ladder a fire up a dry drainage area.

The point is that each tree or group of trees should be considered individually, whether native or not. A common mistake is to plant them without any understanding of what their growth will be and what maintenance will be required in time. Having said all this, trees provide needed shade, discourage the growth of flammable brush underneath, soften the effect of heavy rains on erosion, and catch fog to produce life-giving fog drip, sequester carbon, and turn carbon monoxide into oxygen.

Be the steward of your own property

In summary, it is crucial that fuel management goes on forever. A patient, committed outlook, with many seasonal visits on into the indefinite future, is required. You need to be the steward of your own land -- caring for it on a long-term basis, taking careful steps informed by frequent field observations and knowledge, as well as the research and work of others.

APPENDIX A:

FIRE PREVENTION TIPS FOR HOMEOWNERS IN THE OAKLAND HILLS

January Begin eradicating French and Spanish broom

February Plan for firesafe spring planting

March Plan for annual inspection

April Begin seasonal mowing of flash fuels

May Remove close-in combustibles

June Prevent ignition

July Have an evacuation plan

August Evacuate your home if all else fails

September Maintain and review May-August tips

October Plan for the wet season

November Consider Christmas gift ideas

December Consider decomposition piles

--Bob Sieben, June 17, 2013

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

JANUARY: BEGIN ERADICATING FRENCH AND SPANISH BROOM

Eradication of French and Spanish broom is best done during the rainy season, because plants with stems up to one inch in diameter can easily be pulled out by the roots and there is no risk of spreading seeds. Large plants can be hauled to the curb for removal or cut up into separate piles on site that will decompose rapidly.

Plants with larger stems can be cut part way through with a pruning saw, breaking the stem downward so as to strip some of the bark. The remainder of the bark can then be peeled down to the ground, leaving a bare stump to treat directly with a few squirts of liquid Round-up. It is important to leave a stump of about 4" to provide a foothold as one works up the slope, leaning into the hill and leaving the cut debris below, and to make it easy to recut with a single stroke if there is any resprouting. Plants with smaller stems can be cut with loppers, twisting the loppers as one completes the cut to peel the bark downward, or simply broken and stripped downward by hand. An alternative treatment for flatter slopes is to use a weed wrench or pick axe to dig the plant out by the roots.

Once the first cut of broom is made in an area, the goal is to prevent any plants from dropping seed, while depleting the existing seed bank over time. One must patrol the treated area regularly during the rainy season, pulling out new seedlings and treating any surviving plants as described above. Look carefully for missed plants hidden within shrubs such as coyote bush or poison oak. If the seedlings are dense, one can rake them with a pruning saw, or wait until the survivors are a few feet tall and many of the seedlings have failed.

In April and May it is particularly important to inspect one's property carefully for the telltale yellow blossoms of flowering broom indicating missed plants or invasion of a new area. Broom tends to spread downhill to contiguous areas, so look uphill for surviving plants above the area you are working in that may be reseeding the area.

After a well performed first cut, when the bulk of the biomass is removed, and after meticulous maintenance the next year, the maintenance will become much easier in the following years. Periods of rain may lead to a flourish of new seedlings. It pays to be obsessive-compulsive, with a zero tolerance for any blooming broom.

Private property owners have the advantage of being able to check their property frequently for surviving plants as indicated and at their convenience, compared to public lands where contractors must be scheduled well in advance to do the work without knowing exactly what may be required.

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

FEBRUARY: PLAN FOR FIRESAFE SPRING PLANTING

One can't simply provide a list of what is good and what is bad to plant in the defensible space near your home, because recommendations vary greatly depending on the specific characteristics of your property. Nonetheless, here are a few guidelines to consider.

TREES Remember that they grow. Smaller trees such as flowering plum, western redbud, pineapple guava, and others such as Japanese maples that tolerate pruning and don't overwhelm your structure are preferable. Avoid pines (particularly Monterey pines), blue gum eucalyptus, and palm trees. Ceanothus, although native, can become a fire hazard if you don't maintain it by removing dead wood. Space trees out to separate the crowns. Trees don't normally burn by themselves; so eliminate ground fuels and brush that might carry fire into the tree. Simplify maintenance by not planting tall trees near your structure, as a privacy screen in front of a window, or along the border of your property .

SHRUBS Avoid juniper (called green gas by firefighters), all species of broom, and Jubata grass (commonly called pampas grass). Rosemary develops lots of dead wood and becomes highly flammable; but well maintained individual plants may be used. Pride of Madeira manifests similar characteristics and can also seed widely out of your garden into nearby wild areas. Choose plants with high mineral content (indicated by a grey color), little dead matter, thick leaves, and high moisture content, with an open, airy form. Well cared for camelias, azaleas and rhododendrons are good choices. Whereas those with aromatic oils are usually a bad choice, individual oleander plants are, surprisingly, difficult to ignite. Manzanita, though native, can burn with high intensity.

GARDEN PLANTS Consider an herb garden and almost anything in a pot. Avoid ivy where it may spread into nearby wildlands or become difficult to control. Geraniums, cyclamen and other bulbs, cactus, succulents, and flowering annuals are good choices. Myoporum species are small shrubs or small trees that can take full sun and tolerate hot, dry weather. Myoporum Prostratum is a dense low cover plant that spreads by creeping roots. Although it can be locally invasive, this may be desirable in areas with fast growing grasses because it can survive mowing just above it.

VERTICAL GARDENS One way to achieve screening of neighbors is to have a wire mesh fence with well-maintained vines or other plants growing up it. Be aware that plants used for privacy also give potential burglars a place to hide.

OTHER ALTERNATIVES What is under the plants is very important. Mulches can themselves become a source of ignition. Consider using rocks, pebbles, or paving stone.
Seasonal fire prevention tips for homeowners in the Oakland hills . . .

MARCH: PLAN FOR ANNUAL INSPECTION

Annual inspections of private properties will begin in May this year, allowing time for enforcement on non-compliant properties before the highest hazard season arrives. Priority is given to habitually non-compliant properties. The inspections are performed by OFD engine companies under the supervision of fire inspectors, who follow-up on properties found out of compliance and monitor the firemen's performance. Inspectors are paid out of City funds, not the WPAD. They talk with the homeowner to develop a reasonable plan for compliance.

Most of the confusion about the inspections results from the fact that the Fire Code was developed as a national code that adopted by the state of California, which in required Oakland to adopt the code as written. Whereas the annual notice you receive must conform to the Fire Code, case by case exceptions are allowed throughout the Oakland hills, as we live in a unique urban-wildland intermix with a relatively dense population and smaller lots in a very hilly area. What might be appropriate for Idaho or Arizona is not appropriate for us.

For example, it is not practical to trim all tree branches to within a minimum of 10 feet from any roof, chimney, and structure; to remove all dead/dying branches from trees; or to remove all tree limbs within 6 feet of the ground. In reality, the inspectors want limbs cut back a few feet from any structure, particularly near openings such as windows, vents and eaves, and from under decks and stairs. They also want limbs trimmed back from chimney or stovepipe outlets and gutters. Limbing a smaller tree one-fourth of its height is usually sufficient.

Inspectors are concerned about what is under the tree and how it is maintained, as ground fuels can ignite easily and spread fire into the tree or an overhanging deck. Plants should be spaced apart, have an airy form, and be free of dead wood. Thus dense growths of juniper and overgrown rosemary are likely to be cited. Mulch itself can become a hazard and should be raked back a foot or so from the side of the house or from flammable fencing.

Inspectors are also concerned about the accumulation of leaves, needles or other dead or dying vegetation on one's roof. Passing a one-time inspection doesn't protect you, because the accumulation may rapidly build up again. Consider installing commercially available gutter guards and be sure to remove accumulations during the highest hazard months of September and October. Trimming, tree removal, or tree replacement might be preferable.

Finally, don't assume that the fact you passed the inspection means your home is fire safe. The fire code and inspections are limited and do not apply to the structure itself. This is why the blue colored "Recommends" section was added to the annual notice.

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

APRIL: BEGIN SEASONAL MOWING OF FLASH FUELS

Flash fuels consist of grasses and dried weeds that ignite easily and can spread fire quickly to engulf your home in flames. Firefighters are known to have died when the wind changed while they were fighting grass fires and became surrounded by flames.

Now is the time to be sure your property is in compliance with the fire code by mowing these fuels to 6" or less within 30 feet of your structure.

Be careful not to start a fire while trying to prevent it. A two cycle engine on a mower or steel blades on a weed whacker striking a rock can cause sparks. Do not mow on hot, windy days when the grass is fully dried; and always have a hose or fire suppression tool nearby.

When robust rains lead to grasses bolting to unusual heights, it may help to weed whack the grass as early as April when it is only 2-3 feet high for several reasons:

- a) Grass is more difficult to cut when it grows over 3 feet;
- b) You can mulch the grass and leave it on site so it will mat down;
- c) You can avoid the difficulty and expense of removing it from steep slopes;
- d) This prevents seeding and favors low lying ground cover and desirable bunch grasses.

Consider following up with a later mowing close to the ground in strategic close-in areas; raking and removing the cut grass to create a fire break.

Depending on the rains, mowing may be started as early as April. Usually, it should be completed by early June. You can selectively hand pull small amounts of flash fuels out by the roots.

Understand that the OFD has thousands of miles of roadside ignition zones and many acres of Oakland property to mow that cannot be done all at once. Many factors are considered in deciding which areas are to be mowed first. The Oakland Wildfire Prevention Assessment District(WPAD) that pays for this is funded by your dedicated tax dollars.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

MAY: REMOVE CLOSE-IN COMBUSTIBLES

This is a good time to remove combustible materials near your home now that they have been drying out and the high fire hazard season is fast approaching. The following recommended actions do not involve using tools that may start a fire, such as gas-powered lawn mowers and weed whackers, or leaving cut grass or brush where they may contribute to a fire:

1. Attach exterior hoses.
2. Provide street address numbers that are clearly visible from the road. They should be of contrasting color and at least 4" high.
3. Remove combustibles from on and under decks, overhangs, stairs and fences.
4. Keep leaves and other flammable debris away from lawn and deck furniture, barbecues, dog houses, children's play structures, or toys.
5. Remove dead wood and ground litter from close-in plants.
6. Rake mulch, pine needles and leaves at least 2 feet away from your home's foundation and from wooden fences.
7. Cut vegetation and branches back at least 3 feet from windows and glass doors.
8. Screen foundation vents with 1/8" wire mesh (available at Orchard supply and elsewhere).
9. Keep gutters and roofs free of pine needles and leaves, particularly in the corners. It is important to check these areas after high winds that may lead to a considerable accumulation of dry pine needles from nearby trees.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

JUNE: PREVENT IGNITION

Almost all wildfires in the East Bay hills are caused by humans, rather than lightning. Report suspicious behavior immediately to the police or fire department.

BEFORE AN EARTHQUAKE It is extremely important, for both you and your neighbors, that you have an automatic shut off valve installed on your gas line. This works 24/7, even when you are out of town. Plumbers will install it for about \$300-\$350. Be careful not to bump the valve when putting things in your utility closet. It helps to know how to safely relight the pilot light on your water heater so you don't have to wait for PG&E to do so.

WITHIN THE HOME Smoking in bed is the most common cause of fire in the home, particularly when combined with drinking. Kitchen fires are also common, so be sure you have a fire extinguisher that can put out a grease fire close at hand in your kitchen. The law requires you to have a spark arrestor on your chimney. You should have a chimney sweeper clean your chimney every year or so, depending on how often you use your fireplace.

NEAR THE HOME The covers on large barbecues are usually made of a synthetic material that can be ignited by firebrands, melt onto the deck, and ignite it. The grease pan can ignite if not cleaned out regularly. Charcoal barbecues are particularly dangerous because of the sparks they put out, particularly on windy days. They are illegal on your deck. Never smoke outside your home or use gas-powered tools such as gas-powered lawnmowers, weed whackers or chain saws on Red Alert days.

NEARBY SPOT FIRES You may be able to put out spot fires started by flying embers with a hose, fire extinguisher, entry mat or car mat. Fire rakes, fire suppression flap tools, and backpack water sprayers are available from mail order suppliers such as gemplers.com or benmeadows.com.

ROADSIDES AND TRAILSIDES Cigarettes led to the 2008 Tunnel Road fire, and the fire above the North Oakland Athletic Field before that. Catalytic convertors can ignite dry grass when cars are backed into it. Flares put out for an accident ignited a fire on Grizzly Peak Road not long ago. Inadequately extinguished cooking fires led to the 1991 firestorm, the Angora fire at Lake Tahoe, and the Inverness fire at Point Reyes.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

JULY: HAVE AN EVACUATION PLAN

MEETING PLACE Designate a meeting place for your family outside of your neighborhood in case they are not together when a disaster strikes. Enter important contacts in each family member's cell phone.

EMERGENCY CONTACT Identify someone who lives outside of the potential hazard area for friends and family to contact for updates on your situation. Ideally, this should be someone in a different part of California or even in another state, particularly so in a major earthquake. To keep phone lines from becoming overloaded, ask that person to phone or text relatives and friends located out of the area.

RECORDS Keep originals or duplicates of important documents such as passports, wills, birth certificates, marriage certificates and insurance policies in an off-site location, not a safe. Digitalized photographs and scanned documents can be stored online. Take photographs (movies preferred) of the inside of your home and valuables to substantiate possible insurance claims. Include copies of receipts for unusually expensive items such as jewelry, paintings, antiques, computers and cameras.

ID ITEMS TO TAKE Place family photos and other irreplaceable items in clearly identified boxes so that you can quickly load them into your car before evacuating. Have a small duffel bag or backpack packed with emergency clothing for you and your family. Keep your daily medications, personal hygiene items, and a flashlight together with a bag nearby that you can toss them into.

PRE-PLAN FOR PETS Prepare a kit with food, leashes, and collars. Include current photos. Consider a microchip for identification.

LEARN HOW TO SHUT OFF your gas, electricity and water, and how to open your garage door manually. Have fire extinguishers in your house and car.

HAVE A BATTERY-POWERED RADIO to keep track of the progress of a fire and a cell phone charger in your car.

EVACUATION ROUTES Identify all possible evacuation routes in advance. A bike may be an alternative to a car. The Fire Department cannot recommend routes in advance because some routes may not be safe and others may be blocked off for firefighter access. You should also plan for alternative exits from your home in case the most obvious choice is blocked by fire or debris. Consider purchasing an emergency fire escape ladder you can hang from a deck railing (available at Sears).

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

AUGUST: EVACUATE YOUR HOME IF ALL ELSE FAILS

CAR KEYS, WALLET, GLASSES AND CELL PHONE Keep these in a dedicated location en route to your garage so you don't waste time looking for them in an emergency.

CLOTHING Wear cotton or wool clothing, a long sleeve shirt, and long pants (synthetic materials can melt onto skin); wear leather gloves and boots, a cloth hat or safety helmet, and goggles. Have a face mask in your glove compartment that you can wear to minimize smoke inhalation (especially in areas of burning poison oak).

URGENT EVACUATION Be ready for a quick getaway. Know how to open your garage door manually. Park your car facing outward toward the street with the keys in the ignition. If you have two cars, and a responsible adult can drive one of them, evacuate children, the disabled, the elderly, and pets first to the location you have previously identified. Do not stay behind if you know a fire is heading your way.

CLOSE ALL OPENINGS TO YOUR HOME'S INTERIOR Reduce the chance of flames entering your home by closing all windows, patio doors, skylight vents, and garage doors. Move combustibles such as synthetic drapes, furniture and decorative items away from windows. Close interior doors. Leave all doors and windows unlocked and leave the lights on for firefighter access.

MOVE NEARBY COMBUSTIBLES AWAY These include lawn furniture, cloth or plastic awnings, barbecues, and portable propane tanks. Those on a deck can be moved to within the house.

IF TIME PERMITS, EXTINGUISH SPOT FIRES Exterior hoses should have been hooked up at the beginning of the high fire season. If you have time, fill a waterproof garbage can with water and place a bucket near it so someone can dip into to put out spot fires from embers. The mat in your car can be used for this too. Smoldering fires caused by embers frequently flare up long after the fire front has passed by. When fire personnel can only focus on the fire front, you can help greatly by extinguishing embers in advance of the flames.

UPON EVACUATION Close your garage door when you evacuate. Many homes were lost in the Angora fire at Lake Tahoe because homeowners panicked and left without closing their garage doors, allowing embers to blow into their open garage and ignite their entire home.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

SEPTEMBER: REVIEW AND MAINTAIN MAY-AUGUST TIPS

If you have already implemented the recommended fire prevention tips, you should be in pretty good shape as the high fire season occurs. This is the time to maintain the fire safe measures you have put in place and to review key parts of your plan.

MAINTAIN CLEARANCE OF CLOSE-IN COMBUSTIBLES Keep your gutters and roofs free of accumulated pine needles and leaves, especially after strong winds have deposited them on your roof. Rake them back from under your decks, under your stairs, and under your close-in plants. Check to make sure you haven't left brooms, flammable decorations, or flammable debris where they could be ignited by fire brands.

PREVENT IGNITION Don't smoke in bed or outside your home. Don't use a charcoal barbecue. Be sure the drip pan on your gas barbecue has been cleaned out. Remove the flammable cover of your barbecue and store it inside. Don't park your car where the catalytic convertor could ignite flash fuels. Be sure your outside hoses are connected and any fire suppression tools are readily available.

BE PREPARED FOR POSSIBLE EVACUATION Be sure to leave your car keys, wallet, glasses and cell phone in a dedicated location en route to your garage, where you should have a zip-lock plastic bag containing a face mask, chalk to leave a message on your door, and non-flammable clothing. Practice opening and closing your garage door manually. Place a few weeks supply of essential medications in a zip-lock bag where you can readily access them. Review the short list of valuables you would want to take with you, post the list, and have appropriate containers available. Have a kit of pet food, leashes, collars and pictures readily available in your garage.

REMIND YOURSELF AND NEIGHBORS You and your neighbors should know how to turn off each other's gas and water, as you may not be home when a fire occurs. Close your windows and skylight vents when away from home, particularly so on the hot, dry days you're most likely to leave them open. Don't forget to close your garage door and all windows when you leave; and don't forget doors unlocked and the lights on for firefighter access.

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

OCTOBER: PLANNING FOR THE WET SEASON

Fire prevention is a year-round job, particularly so in the Mediterranean climate common to the East Bay hills. Most of the recommended vegetation management is best done during the wet season, which typically lasts from mid-November through May, because:

The rains nourish seeds and seedlings.

Steep, moist slopes provide better footing than dry ones.

There is little risk of power tools igniting a fire.

Trees and brush tolerate pruning better when dormant.

Leaf drop reduces the amount of debris to be removed.

Cooler weather makes it easier for workers to do this strenuous work.

More workers are available in this "off season."

The rains facilitate decomposition of cuttings remaining on site.

There is less chance of spreading seeds.

DECEMBER-JANUARY

Seed, sow and plant desirables.

Thin, mow, or remove poison oak and hemlock while relatively dormant.

Prune and thin trees and brush, using decomposition piles where appropriate.

FEBRUARY-MARCH

Pull seedlings of broom and other weeds; spray thistle while its leaves are spread flat on the ground with bleach or Roundup; dig up root balls of pampas (Jubata) grass.

Pick axe access trails to improve them.

APRIL-MAY

Search for surviving flowering broom and eradicate it.

Pull thistles and unwanted grasses.

There is considerable overlap in these activities depending on the weather, the type of vegetation, and the slope. The Wildfire Prevention Assessment District (WPAD) offers removal and chipping services on a year round basis.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Seasonal fire prevention tips for homeowners in the Oakland hills . . .

NOVEMBER: CONSIDER CHRISTMAS GIFT IDEAS

Here are some gift ideas for someone active in fire prevention:

Kitchen fire extinguisher for grease fires.

Outside fire extinguisher for BBQ fires.

Escape ladder for bedroom when escape route is blocked (available from Sears).

Fire suppression tools to put out spot fires: 15 gallon backpack for water; fire flap on a pole; fire rake; and Pulaski fire tool. These are all available from benmeadows.com or gemplers.com.

Under bed earthquake survival kit. Make this up yourself, including a crowbar, light stick that requires no batteries, face mask, escape ladder to hang from balcony, whistle, cloth hat and jacket or sweatshirt, old shoes hiking shoes, leather gloves, protective goggles.

Stihl gas powered chain saw: costs less than \$200 and is by far the best. Furber saw in Martinez is the nearest supplier. They also offer protective chaps and proper headgear, which are a must, as well as very good loppers, hand pruning saws and a variety of weed whackers and extended pruning saws for tree limbs. They also offer ready-for-use gasoline that lasts for two years and a small 29 pound generator to power up your cell phone or computer, and some light for \$700.

Chain saw boots with cleats for steep slopes can be obtained from gemplers.com. They are quite high and water proof; and keep annoying pointed grass seeds from getting into your boots.

--Bob Sieben, Chair, NHCA Fire Prevention Committee

DECEMBER:

CONSIDER DEGRADATION PILES

It may not be economically feasible to remove cut brush and trees from large, steep properties. If thinning or reducing a stand of Monterey pines, for example, it may cost more to remove the cuttings than to cut the trees in the first place. Reducing the resulting debris to a degradation pile can reduce the fire hazard by as much as 90%. This is also true for broom, poison oak, coyote brush and live oak prunings. A proper degradation pile is a dense mass of cut up limbs no more than 18" high; separated by at least 10 feet from other such piles, with no highly flammable fuel surrounding it; and in a location where it is not likely to ignite a nearby tree or structure. Preferably, it might be placed where it may help prevent erosion. Even if an ember were to ignite such a pile, it would not likely spread,

This technique saves funds that can better be used to further extend the fire safe zone. It works best on a Northeast facing slope where there is likely to be more natural groundcover such as California blackberry, wild strawberry, ferns, wild cucumber or native bunch grasses. Willow trunks and eucalyptus are slow to decompose compared to pines and oaks, so this has to be taken into consideration when dealing with these species.

Such degradation piles also provide habitat for small animals and insects that may in turn provide a food source for birds. They are particularly appropriate to the East Bay hills, where our mild, wet winters facilitate decomposition, in contrast to the Sierra, where such fuels freeze in the winter and have to be burned off in Spring.

--Bob Sieben, Chair, Fire Prevention Committee, NHCA

Appendix B:

MAXIMIZING DUMPSTER USE

Dumpsters provided by Waste Management are widely used for removal and recycling of flammable vegetation in vegetation management programs. The Oakland Wildfire Prevention Assessment District has funded dumpsters at their expense to support homeowners who have grouped together to reduce flammable vegetation in their neighborhood. This is a significant saving, as the cost of removing cut vegetation can easily equal the cost of cutting it in the first place.

The following tips can help you make the most efficient use of a dumpster:

1. Be very clear about where the dumpster is to be placed. Sending in a map isn't enough. Mark the exact site clearly with orange cones and staked cardboard signs. It's no fun hauling your vegetation even an extra 30 feet if you don't have to.

2. Consider having a sign on white poster board saying:

FIRE PREVENTION
WORKDAY HERE
SATURDAY

3. Such a sign could be reused any Saturday. It facilitates getting the dumpster placed in the right location while at the same time advertising the work day.

4. You are responsible for what goes in the dumpster, so minimize the time the dumpster is on your site to reduce the chances of passersby using it for their own trash. There is no delivery or pickup of a dumpster on the weekend.

5. You could cut some vegetation before the dumpster is delivered and have it ready to load quickly once the dumpster arrives, leaving scant time for unauthorized additions. Consider cutting the vegetation a week or two before to give it time to dry out some, reducing its weight and volume. This is especially true for French broom, whose tiny leaves will dry up and drop off.

6. It would help greatly if you could have someone go into the dumpster with a chain saw to cut up the debris and compact it. This substantially increases the amount you can get into the dumpster. As a minimum, use loppers to cut up branches.

7. Another option is to use a shredder. These are rentable but dangerous. Most tree services can provide them with an operator.

8. Cover the dumpster with a tarp to prevent it being used for trash.

Appendix C:

MONTEREY PINE

Monterey pine (*Pinus radiata*; Pinaceae) is a beautiful tree that can grow to 60 feet in only 15 years, making it a popular landscape plant in California. However, it ranks as the highest hazard tree around. It is literally a turpentine factory that ignites easily, even in the absence of a bare flame. Ignited needles and branches are easily carried airborne, spreading fire downwind for long distances. Survivors of the Oakland Hills Firestorm of 1991 could see these trees exploding in fire as they rushed to evacuate in the face of a horizontal blowtorch of embers.

Drought and frequent infestation by bark beetles and pine pitch canker increase the susceptibility of these trees to fire as they age. They are relatively short-lived, 40-60 years on average. Aging trees may drop large branches, split apart or fall on buildings and parked cars.

In addition, as these trees mature, there is a rapid build-up dead branches and pine needles under the trees and on adjacent roofs. This duff layer ignites easily and spreads the fire to the dead lower branches, creating a fuel ladder. The mature trees burn with intense heat with a flame height that is beyond the reach of firefighters' equipment.

Although native to the Central Coast from San Mateo to San Luis Obispo Counties, the Monterey pine is not native to the East Bay. It is of little value to wildlife. It crowds out native plants by depriving them of sunlight and covering the ground with a thick layer of duff. Fire leads to a profusion of new seedlings. Other pine trees, even redwoods, exhibit some similar characteristics to Monterey pines that may have to be taken into consideration.

MANAGEMENT STRATEGIES FOR MONTEREY PINE

Eradication is the most cost effective solution. Once cut, these trees do not regrow from stumps. No herbicide is needed. The wood is relatively soft and easy to cut with loppers, a pruning saw, or chain saw. It is urgent they be cut when small, as they can grow four feet a year with a proportionate increase in the cost of removal. Remove specimens from ridge tops or near the urban interface to reduce spotting. Remove trees from underneath balconies, decks and roof overhangs.

Medium branches can be thrown stepwise down a hill to a dumpster and cut up with a chain saw for compaction. Larger trunks can be winched down a hill. The trunks will decompose over years and may be left in separate piles where appropriate. Trunks as much as two feet in diameter were found rotting and turning to soil 10 years after the Oakland Firestorm. It is important to keep the piles small and separated by firebreaks.

Management requires annual maintenance and pruning.

If you choose to leave the tree in place, it is important to create vertical separation between the tree canopy and surface fuels below. Remove lower branches for a third of the height of the

tree or upto6 feet. Remove dead branches and reduce the duff layer.Create separation between groupings of trees. Thin the stand to reduce the fuel load. Keep pine needle duff from accumulating on roofs or in gutters, particularly during high fire season. Gutter guards may make this easier to do.

Appendix D:

BLUE GUM EUCALYPTUS

Blue gum eucalyptus (*Eucalyptus globules*, Myrtaceae) is an Australian import planted in the mid-nineteenth century as a windbreak or in anticipation of timber production. It burns very hot, but has to be cured several months before using it as a fuel. It was to be used for railroad ties and support timbers in mines, but couldn't be worked because it would split. It is harvested in Peru and Ecuador for cooking fires, supports for adobe buildings and flooring.

This very fast growing hardwood thrives in the East Bay, but is invasive with negative effects on fish and wildlife and shades out other more desirable plants. Furthermore, it is a very tall tree subject to large limb failure that can block roads and destroy buildings. Living downwind and downhill from a towering eucalyptus places you and your home at great risk; and you are liable if your tree damages a neighbor's property.

It is a notorious fire hazard, as the aromatic oils in its leaves ignite easily, especially when they have dried out. The accumulation of dead leaves, bark and branches leads to a highly flammable fuel load that can exceed thirteen tons/acre. Fire spreads rapidly from the litter on the ground up the loose bark and into the crown, producing firebrands that can spread the fire for miles ahead of the fire front. The trees are too tall for firefighters to control a fire in them once it starts.

Eucalyptus is killed by freezing, leaving an entire burnt tree even more susceptible to fire. The big freeze preceding the Oakland Firestorm of 1991 contributed greatly to that fire. Unfortunately, the roots survived and led to trees with multiple sprouts more prone to ignition than the original single trunk tree.

Another variety, red gum eucalyptus, is frequently used in landscaping along roadways, including the Highway 24 corridor. It is being killed off by lerp psillads, identified by 1mm clamshell-like encrustations on the leaves. These dead trees are creating a widespread fire hazard.

MANAGEMENT STRATEGIES FOR EUCALYPTUS

ERADICATION: get 'em while they're small, prevent re-sprouting.

First of all, don't plant it.

Be aggressive in cutting smaller trees while they are still manageable. It is important to paint the Cambrian layer of the cut stumps immediately with Gabon. Spraying them with RoundUp may also work, but it can spread into the roots of nearby plants. Repeated cutting of sprouts as they appear may be effective over time, but it is labor intensive.

Disposal of the cut wood is a problem. It does not decompose noticeably over a 12 year span. There is as of now no identifiable market for it as a fuel or flooring. It may burn hotter than a fireplace can handle, starting the fire you were trying to prevent. Cutting eucalyptus without follow up may well create a worse, multiple-trunk hazard as it sprouts voraciously.

Tall thin trees near houses are trickier to remove than heavier ones because they are easily blown the wrong direction by the wind, requiring a crane for control. This can cost \$200-300 per tree. Larger trees may cost nearly \$1000 to remove.

On steep slopes prone to erosion one strategy is to prune the tree to 10-15 feet and cut it back annually. This preserves the root system while giving more desirable trees a chance to get established. You might take advantage of the durability of cut logs by using them as low retaining walls to control erosion or as roadside curbs.

MANAGEMENT

Reduce the fire ladder effect by pruning, thinning, and removal of dead wood and reduction of litter. This will improve conditions for native plant growth. Remove smaller trees to reduce fuel ladders.

Pay particular attention to large branches that could block a road or fall on a building.

Very large trees free of litter are a lesser hazard than a second growth multiple-trunk tree.

Appendix E:

FRENCH AND SPANISH BROOM

French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*) and Spanish broom (*Spartium junceum*) are non-native shrubs with beautiful yellow flowers. They thrive in fog-prone areas on disturbed slopes with sunny exposures. French and Scotch broom have small half-inch long yellow flowers and small light green to grey-green leaves. The less common Spanish broom has reed-like leaves and gorgeous one-inch bright yellow wax-like flowers. It grows faster and dies back faster. Hazards and management are the same for each.

Broom grows rapidly to 15 feet in height and 6 feet in width. Once it gains a foothold it is very prolific, because mature plants can produce thousands of seeds annually. It grows up to 30 inches a year, quickly towering over most native vegetation by shading it out, its dense growth displacing 75% of the native plants. Within 20 years it can produce an impenetrable thicket displacing all plants except tall trees, and the birds and animals that depend on the native plants. This results in an extremely high volume of flammable biomass.

Short-lived, fast-growing and inches apart from one another, broom can generate a massive amount of kindling and grow tall enough to transmit fire into the crowns of trees. It grows in height for 6-8 years, enters a period during which it increases the ratio of woody to green material, and then dies within 15-23 years. It becomes top-heavy and can fall en masse into great tangles. With the sun unable to reach the ground, new broom grows straight up through the snarl, shading out and killing its downed comrades. This creates an ever more complex mosaic of tinder. If a fire occurs broom regrows with a vengeance.

As if this were not enough, broom produces an oily substance that even deer and goats avoid. With no local source of natural control, an ideal climate and a landscape under continuous onslaught by human "progress," broom is in weed heaven. A member of the pea family, it fixes nitrogen on its roots. It eventually creates an overly nitrogen-rich soil, encouraging nitrogen demanding nonnative grasses and weeds that act as flash fuels.

Broom is overrunning the California coastal counties with disastrous effects on native plants and wildlife. It is particularly bad in Point Reyes and Big Sur. It does not thrive in shaded woodlands. A Portuguese variant has overtaken the foothills to the Andes in South America.

MANAGEMENT STRATEGIES FOR BROOM

Being obsessive compulsive is required.

Eradication is the desired approach. *Long-term maintenance and follow up are obligatory* because of the incredible seed load that remains viable for years.

First remove the large plants. This is best done in spring before the seeds form. This gets rid of the biomass and prevents further contribution to the seed load. A weed wrench or pick axe can be used during the rainy season where disturbing the slope is not an issue, but this is not advisable on a steep slope. Alternatively, you can cut the stump about 6" off the ground with a chain saw if over an inch in diameter, but smaller diameters may jam the chain. A pruning saw or loppers are fast and effective, particularly if you cut part way through the stem, then twist the tool and strip the bark down. Machetes don't work. Mowing and goats favor regrowth.

It is preferable to spray or paint the raw stump immediately with concentrated RoundUp or Rodeo before the stump seals off and before you forget which one you sprayed. Failure to do this results in several stems forming from the live one like a candelabra, growing up to 3 feet a year, requiring multiple repeat cuts the next time around, and making removal much more difficult. The purpose of leaving a stump is to help locate the stump you just cut to treat and to limit herbicide to the stump surface. Peeling back the bark of the stump increases the effectiveness of the herbicide and may itself kill the plant.

Although others claim a high kill rate with stripping alone, this has not been my experience. It's not possible when a stump has been cut flush with the ground and it is not as quickly done. The cut stump provides a foothold on steeper slopes and a stump to cut with a single stroke if it sprouts. By leaving the cut brush out for a week or two before removal the small leaves will fall off and dry up, reducing the volume you have to remove. Disposing of this cut vegetation is time consuming and expensive, but you only have to do it once if you follow these suggestions.

Once the big plants are removed you have to do regular maintenance or you will have wasted your time. The maintenance gets easier each year as there is no need to haul the cuttings to a dumpster and have them carted away, or to create separated decomposition piles. Medium plants up to an inch in diameter can be pulled out by hand when the ground is wet and yellow flowers make them easy to identify. These cuttings are usually small enough that they can be left on the ground or in separated piles. Seedlings can also be pulled at the same time, but the numbers may be staggering. You might use a pruning saw to rake them up by the roots with one hand while pulling with the other. It is easier to pull the surviving plants when they are a little larger and many of the seedlings have failed.

Allow no bloomin' broom. The seed load diminishes each year. It is crucial to pull all the flowering broom so as to prevent new seed formation. In larger areas you need to patrol during the flowering season to spot volunteers that might invest an entirely new area. Encourage trees that will shade out the broom, which requires sun to thrive.

Appendix F:

PAMPAS GRASS

What is commonly called pampas grass is actually Jubata grass. It is an attractive plant with beautiful long silken fronds several feet in length. Over time it builds up a mass of dead material at its center. The dried fronds catch fire and act like torches, spreading fire over long distances. Once the root ball catches fire it smolders and perpetuates the fire. Jubata grass is an indicator of an underlying water source that may warn of a landslide risk. It can form dense masses of plants that are difficult to remove. It has invaded the cliffs of Big Sur where it is impossible to eradicate.

MANAGEMENT STRATEGIES

Cut the fronds in summer, bagging them headfirst in a large trash bag to prevent spreading the seeds when you remove them. Then, after winter rains have saturated the ground, seedlings and smaller plants can be pickaxed with relative ease.

Medium sized plants can also be pickaxed, but this is hard work. Alternatively, you can use a pruning saw, loppers or even a chain saw to cut down to the base of the plant, which can then be sprayed directly with RoundUp. This is best done at the same time you remove the fronds. Aim directly at the cut frond end and at the remaining leaves. Later the dead mass will be easier to remove and any sprouts can be cut and re-sprayed. The dug up root balls are best allowed to dry out, reducing their mass, and then carried away for removal.