CERT WILDLAND URBAN INTERFACE – PART A AWARENESS & PREVENTION

In this unit you will:

- Learn About The Wildland/Urban Interface Fire Problem: How a fire in the WUI differs from fires within or around a home in urban environments.
- Solution Content State Content
- Learn How To Prepare: Preparation in advance of a Wildland Fire is the key to success.
- Learn about Special Considerations: Each neighborhood may present special circumstances that will require different preparation measures.

OBJECTIVES	At the conclusion of this unit, the participants should be able to:
	 Define California's Wildland Fire Problem Explain the Wildland Fire Environment
	 Identify factors influencing Wildfire behavior Identify and reduce potential fire risks in and around a home in the WU Explain the Special Considerations that should be evaluated when considering the impacts of a Wildland Fire in the WUI
SCOPE	The scope of this unit will include:
	 Introduction and Unit Overview Analysis of the Wildland Fire environment Reducing Risk by being prepared for a Wildland Fire CERT Members and Special Considerations Unit Summary
ESTIMATED COMPLETION TIME	80 Minutes
TRAINING METHODS	Due to the complex nature of the subject of Wildland/Urban Interface fires, it is vitally important that the instructors of this module be very familiar with the following topics:
	? Wildland Fire Behavior
	? Vegetation types in the area
	? Fire History of the area
	? Local Vegetation Management practices (including restrictions)
	? Knowledge of local politics as they relate to fire services, water, etc
	It is therefore highly recommended that a Fire Service professional, knowledgeable in the above topics, instruct this module!
	As an introduction to fire safety in the Wildland/Urban Interface, the Instructor will describe what comprises the WUI and how a fire behaves in this area, emphasizing the importance of understanding how fire behavior in this type of environment.
	Then, the Instructor will present information on the Wildland Fire Environment: How a fire starts, burns, and spreads.
	In the next segment, the Instructor will discuss methods of how to reduce the risk to property from a Wildland Fire. Using a "Zone" concept in modifying the fuels around buildings, students will learn how to promote a safer environment.

Next the Instructor will discuss the Special Considerations that must be reviewed by the CERT members before a Wildland Fire, and the importance of having plans to handle these considerations.

Finally, the Instructor will summarize the information reviewed, and explain the importance of the information contained in Part A.

RESOURCES REQUIRED	 Community Emergency Response Team Instructor Guide Community Emergency Response Team Participant Manual Visuals Part A.1 through Part A.52
EQUIPMENT REQUIRED	In addition to the equipment listed at the front of this Instructor Guide, you will need the following equipment for this unit: A computer with PowerPoint software A computer projector and screen CERT WUI Part A program

Note to Instructor:

This module was created as a generic template for use in Southern California. However, there are many slides in the Powerpoint presentation that should be tailored to a local setting.

Before presenting this module, please review the following slides and customize as you see fit to make this class meaningful to your audience:

Visual A.8; A.9; A.31; A.33; A.34; A.35; A.36; A.37; A.45; A.46; A.50

NOTES A suggested time plan for this unit is as follows:

Introduction and Unit Overview	15 minutes
Analysis of Wildland Fire Environment	15 minutes
Reducing Risk by being Prepared	
CERT Members and Special Considerations	15 minutes
Unit Summary	15 minutes

Total Time: 80 minutes

Fire Behavior and the Wildland Fire Environment





VISUAL A.1

INTRODUCE

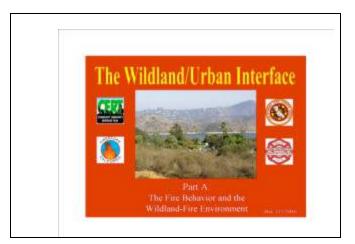
UNIT

Introduction and Unit Overview

Introduce this unit by welcoming the participants to Unit 2A of the CERT training program.

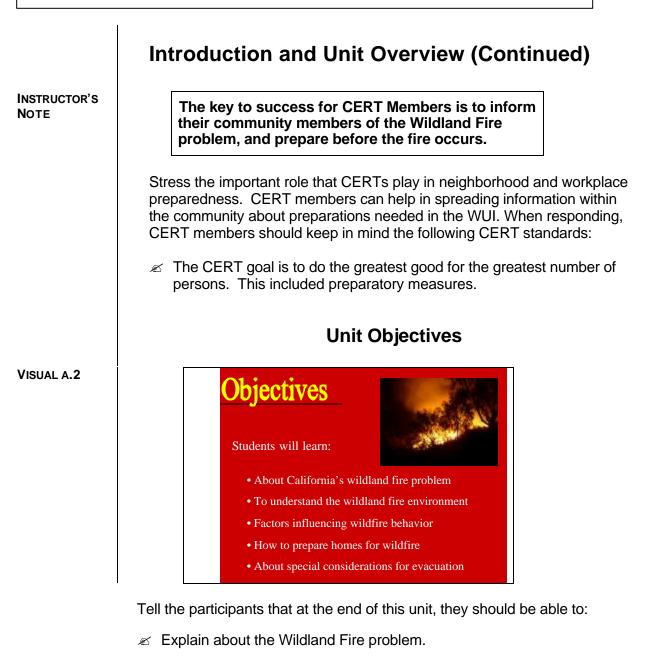
Introduce any new instructors who will be assisting with this session.

Introduce fire safety in the WUI by telling the participants that even a small fire in this area can impact many residents. The fire agencies consider any fire a threat and respond to all reported fires. They may be hampered by narrow roads, inadequate water supply, weather conditions, burning material, and inadequate resources.



Emphasize that CERTs play a very important role in fire safety by:

- *K* Understanding the Wildland/Urban Interface fire problem.
- Preparing their property and their community before the fire occurs. This unit will also describe how to reduce the risk to each home and the community.



- S Understand about the Wildland Fire Environment.
- Learn how to prepare their home and community to be safe from a Wildland Fire prior to the fire.
- Solution Understand the meaning and the needs of their family and their community when it comes to Special Considerations.

Introduction and Unit Overview (Continued)

pro rec	eview the unit topics by telling the group that the unit will byide them with the knowledge and skills that they will need to duce or eliminate fire hazards. The areas that they will learn out include:
Ľ	How fires in the WUI can travel so rapidly and what keeps them burning.
Ľ	Identification of steps to take to make the home, neighborhood, and workplace able to survive a Wildland Fire.
Ľ	How to conduct an assessment, or sizeup of the hazards outside a home.
Ľ	What Special Considerations may be present in their home or community, what community plans and resources exist for dealing with these special considerations and how to access them.
Tell the group that, at the end of the unit, they will have the knowledge to create a community that can better withstand the occurrence of a Wildland Fire.	



INSTRUCTOR'S NOTE



INTRODUCE TOPIC



ASK QUESTION



VISUAL A.3

Wildland Fire Problem

Introduce a picture or slide to demonstrate just what is the WUI.

Introduce this topic by asking the following question:

DOES ANYONE KNOW WHAT THE WILDLAND/URBAN INTERFACE IS?

The Wildland Fire Problem

California has one of the most severe wildland fire problems in the world because of:

Population

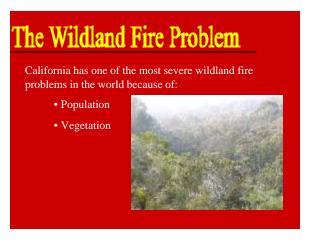


If not mentioned by the participants, explain that fire in the WUI does not only threaten the buildings that border the wildland or forested areas.
<u>Example</u> : In the Fire Siege of 2003, many homes were lost that were up to a mile away from these areas.
History: Wildfire in California has a history of burning vast areas of land, regardless of the presence of homes. From the Native Americans use of fire as a clearing and safety tool, to Wildfires that burned adjacent homes such as Berkeley in 1923, we have struggled to understand how fire behaves.
Population: People continue to build homes and move into areas that are next to or within the wildland regions.

Wildland Fire Problem, Con't.

INSTRUCTOR'S NOTE The Fire Siege of 2003 was the most destructive series of wildland fires this state has seen. There currently is no reason to suspect that this trend toward large conflagrations won't continue.

Visual a.4



The native vegetation in the WUI is some of the most explosive known to exist in the world. It is prone to fire, and some native species actually need fire involvement to thrive.

Then we make matters worse by introducing very flammable exotic trees, shrubs and plants into this mix.

However scientists have proven that wildfire has a natural role in the ecology of our area. Without fire, many species would not thrive. It is our role as a resident of this area to allow for the role of fire, but do it safely in a manner that does not endanger lives or threaten our properties.

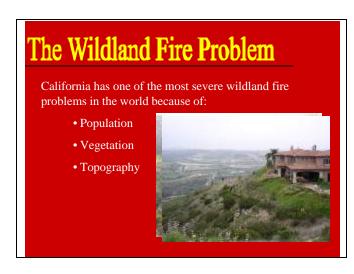


VISUAL A.5



VISUAL A.6

Wildland Fire Problem, Con't.



Discuss with the group the importance topography has on the survivability of a structure, and how it plays a role in the predictability of the spread of a wildfire.

The Wildland Fire ProblemCalifornia has one of the most severe wildland fire problems in the world because of: Population, Vegetation, Topography, and Climate

In wildland/urban interface areas, wildfire isn't a matter of "IF," it's a matter of "WHEN."

Explain that climate plays an important role both before a fire and during the event. In certain seasons fires are easier to start, and in some conditions more likely to spread. Put these factors together and it is no mystery that California has great fire disasters.

Wildland Fire Problem, Con't.





VISUAL A.7

Explain to the students that the key to creating an environment safe from Wildfire is to understand these Local Conditions and how they effect the wildfire.

Instructor's Note

Stress that the key to safety in a wildland fire is to understand the behavior and potential of the fire.

Wildland Fire Problem, Con't.

Visual A.8

Local Conditions

VEGETATION = FUEL



California's native plants and shrubs are among the most flammable in the world.

Chamise, buckwheat and sage are referred to as *chaparral*.

Local hillsides and canyons are covered with these flammable plant materials.

Discuss with the group the examples of commonly found native vegetation. Explain that these types of "fuels" are just that; they ignite easily and create a tremendous amount of heat due to the resins and oils contained in the plant.

Visual A.9

Local Conditions

VEGETATION = FUEL

In mountain areas, forests with large meadows are predominant.

Fire danger exists in this environment, as well.



Explain that a Wildland/Urban Interface doesn't have to consist of chaparral or forests, it can include grasslands and any vegetation that is flammable and allowed to exist in an unmanaged state.

The Wildfire Environment

Visual A.10

The Wildfire Environment



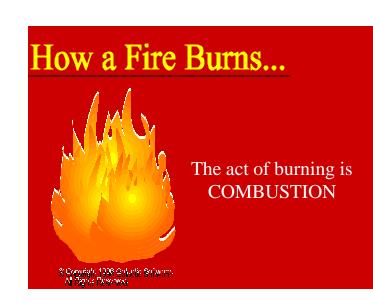
Instructor's Note

(for A.10)

Explain to the students that the key to creating an environment safe from Wildfire is to understand the Wildfire Environment: How it ignites and how it spreads. These facts are known, but the behavior of a wildland fire is influenced by many factors.

The Wildfire Environment (cont)

Visual A.11

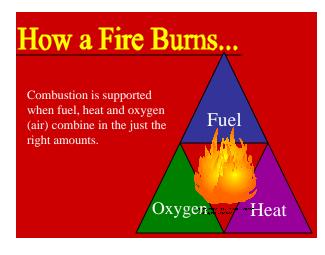


Instructor's Note

(for A.11)

Obviously living in the WUI is not a threat if a fire does not start. Prevention of a fire should be a key component of life in these areas.

Visual A.12

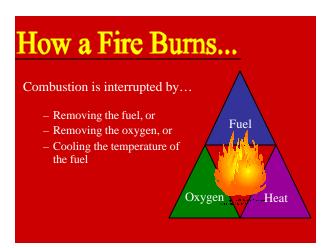


The Wildfire Environment (cont)

Instructor's Note

Remind the students that they learned about the Fire Triangle in the beginning of Unit 2.

Visual A.13



Instructor's Note

(for A.13)

Explain the importance of removing just one of the factors to extinguish a fire. Remove them beforehand, and the fire doesn't have a chance to start. harder to control a fire after long periods (days or weeks) of higher temperatures.

The Wildfire Environment (cont)

Visual A.14



Instructor's Note

(for A.14)

The threat of a Wildland Fire can be the speed and multiple directions in which it can travel. It is important to note the ways in which a fire is spread. Conduction and Radiation can spread the fire onto or within your property. The Convection currents will spread the fire great distances.

The Wildfire Environment (cont)

Visual A.15



Instructor's Note

(for A.15)

Understanding the importance of fuels is a basic element of understanding Wildland Fire Behavior.

Visual A.16



The Wildfire Environment (cont)

Instructor's Note

(for A.16)

"Ladder" fuels contribute greatly to the spread of a wildland fire. This is an easily controlled situation on maintained property.

Visual A.17



Instructor's Note

(for A.17)

Weather plays such an important role in Wildland Fires. The greatest percentage of major fires in Southern California occur during a Santa Ana wind event however, don't let this fact fool you. A destructive fire can occur in our Wildland/Urban Interface any time of the year. It just takes an ignition source, dry fuels and light winds to endanger the surrounding community.

The Wildfire Environment (cont)

Visual A.18

<section-header>Weather & Wildfire...Image: Display the second seco

Instructor's Note

(for A.18)

Explain the importance of heating the fuels, how the sun starts early and the prime ignition time is at the middle of the day, when the temperature peaks. Also explain why it is easier to ignite and harder to control a fire after long periods (days or weeks) of higher temperatures.

The Wildfire Environment (cont)

Visual A.19

Weather & Wildfire...Delative Humidity:• Water vapor in the air• Water vapor in the air• Expressed in a percentage• Hot temperature = reduced humidity• Cool temperature = increased humidity• Higher humidity = higher fuel moisture• Fires usually burn more rapidly during the day due to lower humidity

Instructor's Note

(for A.19)

The RH figures prominently into how easily a fire starts and spreads. Under normal conditions, this area recovers some moisture into the fuels at night, however during times of low RH, there can be no recovery at all. This will make the next day's fuel moisture dry out even more.

Visual A.20



The Wildfire Environment (cont)

Instructor's Note

(for A.20)

The unpredictability of winds at a Wildland Fire can be a significant threat to the safety of those present. The fire can create it's own winds, and they will be erratic. All of natures elements combine to effect the winds.

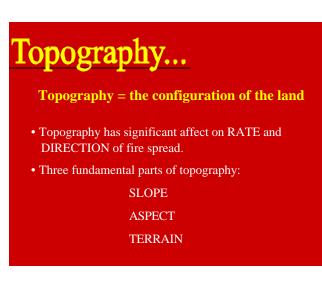
Ask Question



What time of year can we expect Santa Ana winds here? The answer is they usually occur September through February, however they can occur at any time!

The Wildfire Environment (cont)

Visual A.21



Some veteran firefighters can "read" the topography to accurately predict what a fire will do. This becomes very difficult in thick brush that hasn't burned in many years.

Visual A.22

Topography... Slope • The steeper the fire will

- The steeper the slope, the faster the fire will move
- Slope influences fire by preheating fuels
- Wind currents usually flow uphill
- Convected heat causes a draft
- Burning material can roll downhill

Slope plays a very important part in the movement of a wildland fire. You should take this into account as you assess your property and it's vulnerability to an approaching wildland fire.

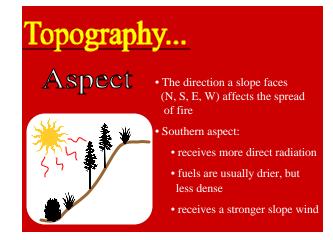
Instructor's Note

(for A.22)

Remind the students that fire travels many times faster uphill. However, other influences such as down slope/ down canyon winds can also drive a fire quickly, surprising those below.

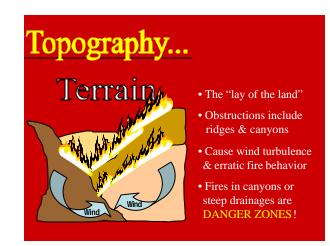
The Wildfire Environment (cont)

Visual A.23



The direction in which the slope faces is also important, as it will be a factor in how dense the vegetation is and how dry it is.

Visual A.24



The fire's behavior can seem erratic if you don't understand the influence of the terrain on a wildfire.

The Wildfire Environment (cont)

Visual A.25

Spot Fires: Fire Brands & Embers

CONVECTION:

Pieces of burning material are lifted into a convection column.

Embers settle on homes and vegetation far ahead of the fire-front.



Visual A.26

Spot Fires: Fire Brands & Embers

WIND:

Causes short-range spot fires ahead of fire-front.

The combination of convection & wind can carry brands considerable distances, causing long-range spotting.



Spot fires have been documented to occur up to one mile in front of a fast-moving Wildfire. Embers from brush, trees and building materials such as wood roofs get picked up in the smoke column only to rain down ahead of the main fire to start new fires.

The Wildfire Environment (cont)

Visual A.27



Instructor's Note

(for A.27)

Click in the middle of this picture to activate a 40 second video clip.

Embers and fire brands that are produced at wildfires swirl and travel great distances. It is these embers that are usually responsible for starting other buildings, vehicles and vegetation on fire.

The Wildfire Environment (cont)

Visual A.28



So there you have the principle factors of the Wildland Fire Environment.

Instructor's Note

(for A.28)

Underscore to the student the importance of knowing these factors, as the knowledge here will assist in preventing a large WUI fire *and* it can provide safety to the CERT member if caught in a WUI fire.

Prepare for a Wildland/Urban Interface Fire

Visual A.29



How do you prepare for a large-scale Wildland Fire? This slide graphically depicts how a Wildfire can descend upon a Wildland/Urban Interface area, taken in the Alpine area of San Diego County during the 2003 Fire Siege.

Visual A.30



A WUI fire is survivable if you understand the forces of nature and man's influence. Knowledge of these aspects is the first step in preparation. Now we will discuss the specifics of what and how to prepare your home if you live in a fire-prone area.

Prepare for a Wildland/Urban Interface Fire (con't)

Instructor's Note

(for A.30)

Point out that after a large fire such as those seen in the Fire Siege of 2003, people are eager to find out how to make their homes safe. However, as time passes most people place less and less significance on the preparation and maintenance of their property.

Visual A.31

Defensible Space

An area surrounding structures that allows firefighters and equipment the space to defend against an approaching wildfire.



In the concept of "Defensible Space," the idea is to remove the highly combustible materials (ie: Fuel Load) from near the structure *and* to give enough area for the firefighters to safely operate in order to protect the structure. How much Defensible Space is needed depends upon three things: The type of vegetation; the slope surrounding the home; and what Defensible Space setbacks are approved for installation within your community.

Ask Question

What is the Defensible Space dimension for our community?

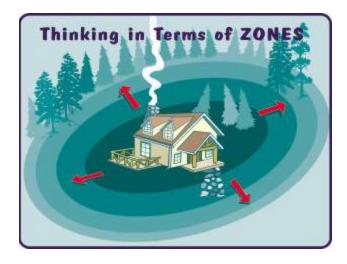
Prepare for a Wildland/Urban Interface Fire (con't)

Instructor's Note

(for A.31)

The smallest Defensible Space requirement found in our state is 30 feet from a structure. Most areas have adopted 100 feet as the minimum, however some communities have adopted larger areas because of the amount of fuels and the slopes in which homes are built. If you have questions whether you have enough, please contact your local fire agency.

Visual A.32



For most communities, it is very simple to construct your defensible space utilizing a "Zone" concept. Many areas use a 4 Zone plan, while others may use a 2 or 3 zone plan.

Instructor's Note

(for A.32)

The size and number of zones required may vary according to local requirements. Seek information on this *prior* to teaching this segment.

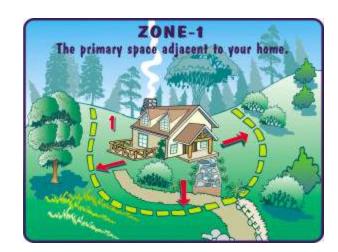
Prepare for a Wildland/Urban Interface Fire (con't)

Visual A.33



The fire agency in your community has established some dimensions for your landscaping. Whether they are called "landscape zones" or "vegetation management zones," they are designed to provide for a maximum of fire safety while still allowing the homeowner to have a selection of plant types to choose from.

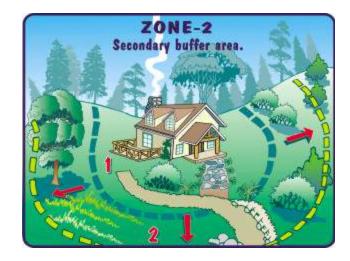
Visual A.34



This is the zone closest to your home. This is the most restrictive zone, and should have all flammable native vegetation removed. Limited plantings of fire-resistive vegetation are encouraged. If large trees extend within this zone, they should be trimmed.

Prepare for a Wildland/Urban Interface Fire (con't)

Visual A.35



The next zone allows trees if they are limbed up (1.5 times the height of surrounding ground cover) and kept healthy. Any bushes or shrubs should be considered fire-resistive and be well maintained.

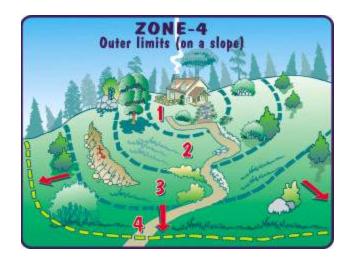
Visual A.36



This is the first of the "transitional zones." Some allowance of native vegetation is allowed, if irrigated and maintained. The density and placement of bushes and shrubs should be sparse enough to make the communication of flames from one zone to the next nearly impossible.

Prepare for a Wildland/Urban Interface Fire (con't)

Visual A.37



The last zone, native plants and trees are allowed however maintenance is required. For bushes and shrubs, remove the dead and dying portions of the plants. The volume (number) of flammable native plants should be culled down to about 50% of what you would normally find in that area. The trees should be limbed up, trimmed, laced and maintained.

Instructor's Note

(for A.37)

Explain to the students that the maintenance of zones needs to take place throughout the year, not just as the "fire season" approaches. Maintenance is the key to a successful Defensible Space Zone.

Visual A.38



This slide was taken after a February fire in Southern California. These homes were on a ridgeline, where fire came at them from two sides. The difference between buildings that survived and those that were lost was not only the type of roof and construction, but the attention to the "small things" that homeowners can do to help the survivability of the structures.

Visual A.39



Your home has many vulnerable spots. Check each of these to make sure that they are in good repair, that there are no cracks or other openings developing. Wood roofs are a tremendous hazard in the WUI, not only to your home but to the entire community. These shingles easily become large embers in a wildfire, quickly spreading flames to adjacent properties.

Visual A.40



The time it takes to check on and solve the "small things" will pay off for the homeowner when done regularly. Check the windows and caulking for integrity. Are they cracked?

Any screens that are torn or damaged need to be replaced to prevent embers from entering into open windows or those that are broken during the fire. Check to see that your screens are constructed of metal, not plastic or fiberglass!

Does your home have decorative woodwork and vents? All vents should have metal screen behind it, and the decorative woodwork should not be near or surrounding any vent or other opening. If it is, protect the opening.

Clean your gutters and downspouts regularly. Leaves and debris that accumulate here can be an easy starting point for the fire to gain a foothold!

Prepare for a Wildland/Urban Interface Fire (con't)

Visual A.41



Once again, if you take the time to treat the small things, you've made significant progress in protecting your home.

Instructor's Note

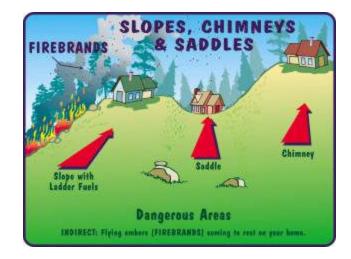
(for A.41)

Underscore the importance of regular maintenance addressing the problems of things around the home *and* maintenance of the vegetation. It is a package deal!

Ask Question

This house is mid-slope. What additional measures can be taken to further protect it? (Answer: Move firewood to the uphill side of the house)

Visual A.42



The location of your home also has an important role in how vulnerable your home is to a Wildfire. As we learned earlier in the "Terrain," "Slope," and "Weather" portions, positioning of your home can make the difference whether it will be an easy save, or extremely difficult.

Visual A.43



Fire department access is extremely important & often overlooked



• Driveways and other access roads must meet or exceed your fire department's needs.

Display address with
4" high numerals on a contrasting background.

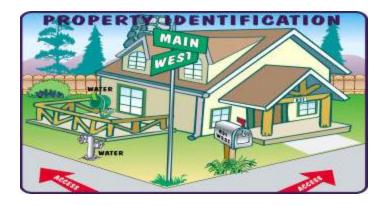
Access is one of the most critical aspects of protecting a home and neighborhood. Emergency vehicles need to not only pass evacuating cars, trucks and horse trailers, but also other emergency vehicles that may be operating.

Making sure that your address is clearly visible from the street is an easy task that is often overlooked. Find out what your fire agency has for minimum standards for both

Prepare for a Wildland/Urban Interface Fire (con't)

address sign size and also for what a minimum road surface should be!

Visual A.44



And how about the street sign? Is it up and visible? Many street signs on private roads are neglected. Take the time to see that yours is clearly and appropriately marked.

Visual A.45



- Keep roadways free from overhanging vegetation, fence posts or signage.
- "Vertical Clearance"
- Driveway/road surface and weight requirements.



Check with your local fire agency to find out what restrictions are placed on the dimensions of roadways and driveways in your area.

Instructor's Note

(for A.45)

Explain to the students the importance of clearance not only to the sides but also the vertical clearance. Illustrate by describing this slide if fire was encroaching, how this type of non-native overhanging vegetation produces a "tunnel of fire" eliminating the possibility of safe escape!

Visual A.46



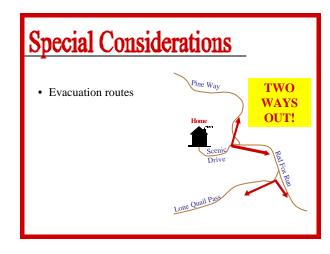
This photograph shows a 16 foot wide paved driveway with lush vegetation, but notice how the plants that grow tall are kept at more than two feet away from the edge of the surface. This is an excellent area for fire apparatus to work from, but what if you were evacuating, and encountered a large firetruck with hoses deployed?

Ask Question

What are the requirements in our area for width and minimum height on roads and driveways?

Special Considerations

Visual A.47



In some cases, evacuation routes are well known. However, they may not be detailed enough so that the entire public knows where to go. Make it a point to know two ways out of your neighborhood, and two ways to a place of safety!

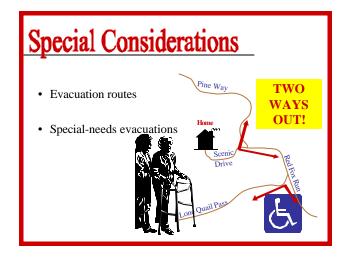
Instructor's Note

(for A.47)

Find out if evacuation routes are known and published for this area. If so, have some printed maps on hand to distribute. If not, find the phone number of the local fire agency to hand out to the students.

Special Considerations (con't)

Visual A.48



There may be individuals in your neighborhood that will need special assistance during a wildfire event. They may be physically unable to evacuate themselves. Or perhaps there may be children home with a sitter, and no vehicle available to evacuate.

Instructor's Note

(for A.48)

Discuss with the students the importance of finding out the needs within their community, and how they might keep track of the special requirements of individuals. Also suggest that the CERT members share this gathered information with the local emergency services.

CERT members should also enlist the assistance of those having a special need. Often these people have already made the arrangements. If not, the CERT members would be empowering these people with a mission and a goal in taking care of themselves.

Are there a significant number of special needs people in your neighborhood? Perhaps your team needs to organize a Special Needs group just to assist these folks in emergencies.

Special Considerations (con't)

Visual A.49

Special Considerations

- Evacuation routes
- Special-needs evacuations
- Livestock & pet evacuations



Another problem is the evacuation of animals. There are organized groups that come in to assist with the removal of livestock in large incidents, but you may need to evacuate before they arrive. What are the possibilities? Do any neighbors have horse trailers? Do you know how to hook them up and safely load animals?

Instructor's Note

(for A.49)

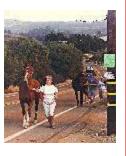
Find out what the animal evacuation agencies are in your area. Provide the students with the emergency contact numbers of these agencies. Suggest that the CERT members make a list of what resources exist in their neighborhood to move animals, where they can be safely taken, etc.

Special Considerations (con't)

Visual A.50

Special Considerations

- Evacuation routes
- Special-needs evacuations
- Livestock & pet evacuations
- "Safe" areas



Are there known "safe areas" in your community? Are there large open parks, schools, golf courses, etc? These are good things to know in the event that you are cut off from evacuating to the identified evacuation centers.

Instructor's Note

(for A.50) More on this in B

Have your CERT members establish a list of possible "safe areas," and then ask them to discuss this list with their local fire agency to confirm the safety.

Instructor's Note

Remind the students that well meaning volunteers coming into neighborhoods to evacuate people and livestock sometimes add to the problems. Large trucks and trailers compete with emergency vehicles on small roads.

Also, there may be established evacuation routes in your area and also safe areas. If there are, make sure that your team, your neighbors who have trailers, and any organized animal rescue organizations are aware of these plans!

Visual A.51



We've now learned about Wildland fires, why they are such a significant problem and how they spread. We've also become aware of what we can do today to help our home and our neighborhood withstand the wildland fire. We understand how to prepare both the inside and outside of our homes when a wildland fire is approaching, and what preparations we need to make within our community to prepare everyone to evacuate.

Remember, awareness and preparation are two of the most important things in surviving a wildland fire!