Firewise, USA™ Site Recognition Program

Horseshoe Bend Wildfire Risk Assessment
Wood County, Texas

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NFPA
FIREWISE USA™
Residents reducing wildfire risks

TEXAS A&M FOREST SERVICE

Introduction

The Firewise, USA™ Program is designed to provide an effective management approach for preserving wildland living aesthetics in areas of Wildland Urban Interface (WUI). This program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community assessment is intended as a resource to be used by the Horseshoe Bend residents for creating a wildfire safety action plan. The plan developed from the information in this assessment should be implemented in a collaborative manner and should be updated and modified every 5 years.

This assessment was conducted by Wildland Urban Interface Coordinator Sean Dugan and Program Specialist Weldon Dent of the Texas A&M Forest Service on March 4, 2022.

Definition of the Home Ignition Zone

Horseshoe Bend is located within a wildfire environment. Wildfires will happen – the only variables are when and where they will occur. This assessment addresses the wildfire-related characteristics of Horseshoe Bend. It examines the area's exposure to wildfire as it relates to ignition potential. This assessment does not focus on any specific homes but examines risks and preventative measure to be taken for the community as a whole.

A house burns because of its interrelationship with its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with the house. This is accomplished by interrupting the natural path fire takes in the home ignition zone. This zone determines the potential for home ignitions during a wildland fire, it includes a house and its immediate surroundings within 100 to 150 feet. Changing a fire's path by modifying a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation and ladder fuels will reduce the intensity of the wildfire as it enters the home ignitions zone.

Included in this assessment are observations of homes and their surroundings made while visiting Horseshoe Bend. The assessment addresses the ease with which home ignitions can occur under sever wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Residents can reduce their risk of destruction during a wildfire by taking actions within their home ignitions zones.

Wildfire behavior will be dominated by the residential characteristics of this area- both the structures and the surrounding property. The good news is that by addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort with reap great rewards in wildfire safety.

Characteristics of a Severe Case Wildland Fire that Threatens the Area

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior to and during ignition, and the topography. Generally, the following relationships hold between the fire behavior and the fuel, weather and topography.

Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. In general, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.

The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower will be the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.

Wind speed significantly influences the rate of spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.

Topography influences fire behavior principally by the steepness of the slope. However, the features of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread an intensity.

While topography in Horseshoe Bend is not a large factor, fuels are. The entire property is heavily wooded. In the event of an extreme drought, there could exist a potential for a major crown fire. Based on the average status of home ignition zones, a crown fire has potential for destruction.

Embers are another characteristic of a wildfire that are not often considered by homeowners. Embers are small burning pieces of vegetation or wood that are carried by the wind ahead of a wildfire. An ember shower can be carried over a mile away and can create spot fires or ignite vegetation on the roof, gutters, or garden beds. Ember showers can lead to structure loss even if the wildfire is not within the boundaries of the neighborhood. Wildfire researchers know that embers are the leading cause of home loss in a wildfire due to post fire assessments.

Site Description

Horseshoe Bend is located about 10 miles southeast of Winnsboro, TX. It consists of 104 homes on roughly 700 acres. Common vegetation of the area includes native loblolly pine, southern red cedar, and various hardwoods. Pockets of flammable yaupon exist however they are sparse due to a high basal area of larger trees. The lots vary in size from less than an acre to several. Lots and homesites also vary in the degree to which they are manicured. Most homesites are well maintained with adequate fuel reduction beneath large pine and hardwood trees. Larger lots and/or lots without homes on them are densely wooded but with sparse understory vegetation. There was a presence well-maintained outbuildings and wide, paved roads throughout the property. Most homes were made with fire-resilient construction materials on concrete

foundations. There is one paved ingress and egress route, and there are three other emergency exits. Two exits lead to Farm to Market Road 2088, and one leads to Farm to Market Road 2869.

Assessment Process

During the assessment process, observations were made about the general wildfire characteristics of home ignition zones in the community. Common landscaping practices, plants species, construction materials, road widths and topography where all taken into consideration. Photos were taken to provide examples of certain characteristics.

Important Considerations

The Firewise, USA™ program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a WUI setting. Homeowners already balance their decisions about fire protection measures against their desire for certain flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices directly relate to the ignitability of their home ignition zones during a wildfire.

Observations and Recommendations

Horseshoe Bend is located within the greater Pineywoods ecoregion. The historical fire regime within this ecosystem consisted of low-intensity ground fires that burned off dead or dormant grasses and forest litter. These frequent ground fires produced a park-like forest structure that consisted of widely spaced mature trees beneath which wild grasses and forbs grew. The trees within these systems grew close enough together to limit the ability to grow low-lying limbs and far enough apart to allow sunlight on the forest floor. This structure limited the ability of a beneficial ground fire to transform into a destructive crown fire. It is recommended that homeowners within Horseshoe Bend mimic this forest structure on their properties.

An example of good tree spacing, good understory management, and also fire-resistant siding.

One of the initial observations when assessing the home ignition risk in Horseshoe Bend was the seasonal buildup of debris on roofs and gutters. This debris, mostly pine straw, leaf litter, and other dead vegetation, provides substantial amounts of fine fuels in direct contact with structures. In the event of a wildfire, embers would accumulate on roofs and gutters, igniting these fine fuels. The frequent removal of this debris is recommended to reduce the possibility of destruction during a wildfire especially before known fire seasons or if entering a drought period.

Lawns and landscapes around the homes had both positive and negative characteristics. Most lawns were well- maintained, which helps to reduce the fuel load and decrease fire intensity near structures.

Ladder fuels are living and dead plant material that allow a fire to travel vertically from the ground surface to the tree canopy or crown. A crown is fire very dangerous and difficult to control. Pruning trees up helps to break up the vertical fuel continuity. Most of the trees near structures in Horseshoe Bend have been limbed up to at least 5-6ft. Most homes had mown lawns with short grass and/or leaf litter. There was very little ladder around homes and buildings. Crown spacing on mature trees was good to fair. Limited ladder fuels and adequate crown spacing between mature trees help to disrupt the ability of a fire to travel vertically and then horizontally across the landscape.

Most of the homesites in Horseshoe Bend were well maintained, however, the entire property is heavily wooded with many greenbelts running between homesites. It is recommended to increase crown spacing of mature trees within the Extended Zone (30-100ft). This will reduce the risk of tree-to-tree ignition in the case of a moving crown fire. Also, proper pruning of these trees can reduce this ladder fuel potential. Pruning up trees five or six feet may take several years, and most tree species do not tolerate heavy pruning. Pruning should never take more than 25% of the tree crown in one year. In addition, residents must ensure the proper watering of plants in landscaping beds to keep plants healthy, but not the overwatering of trees. Overwatering trees can decrease overall tree health, which will in turn decrease the trees resistance to wildfire. Keeping moisture in these landscaping beds also makes them more resistant to ignition by an ember shower.

While the fire-rated roofing material and properly pruned trees offer some protection from wildfire risk, the woodpile next to the deck and the flammable siding and skirting pose hazards.

Many of the homes had chimneys, which were constructed with an ember cap. This helps prevent wildfire embers from entering a structure via the chimney. Many of the lots had wooden decks and lattices. These structures act as a path for fire to travel from plants to structures. This increases the risk of home ignition and therefore home-to-home ignition. It is recommended that anything that meets the structure be constructed out of fire-resistant material, such as fiber cement board, poly board, stone or concrete. Stone pillars can also be added to support decking to help disrupt the fire's path.

Some homes had plants at or near the foundation, placing them directly under the eaves, and often in front of windows. These plants provide fuel for wildfire that can result in flames directly touching a structure. These plants should be removed or trimmed both off the structure and up from the ground to lessen the intensity of fire near a structure. Any dead vegetation under the plants should be removed as well, as this acts as path for fire.

In general, the landscaping and fuels reduction in Horseshoe Bend helps to reduce the wildfire risk. However, small significant changes could be made in the home ignition zone, to reduce the chance of structure loss during a wildfire.

Successful Firewise Modifications

When adequately prepared, a house can likely withstand a wildfire without the direct intervention of fire fighters. Further, a house and its surrounding community can be both Firewise and compatible with the area's ecosystem. The Firewise, USA™ program is designed to enable communities to achieve a high level of protection against WUI fire loss even as a sustainable ecosystem balance is maintained. A homeowner and the community must focus attention on the home ignition zone and eliminate the fire's potential relationship with the house.

Roofs of any residence, even if they are rated, should be kept free of fine fuels such as pine straw or leaf litter. Also, many of the homesites were located on or very near the water. This allows access for firefighters to draft water into their engines for structure protection.

As discussed, proper pruning techniques can be used to decrease the vertical fuel continuity. When making these cuts always use sharp tools to ensure a clean cut. Cut outside of the branch bark and do not leave a stub. Always cut at an angel away from the stem. These methods can promote the health of the tree, while decreasing the amount of ladder fuels.

Key Considerations

- Remove any buildup of forest litter on roofs and in gutters
- Remove any flammable materials such as wood piles or dead landscaping that are within the Immediate Zone (1-5ft from structure)
- Keep understory vegetation within the Intermediate and Extended Zone (5-100ft from stucture) such as yaupon to a minimum
- Maintain adequate crown spacing on mature trees out to the Extended Zone (100+ft from structure)
- Store flammables such as gasoline or motor oil in outbuildings away from the home
- Maintain an awareness of natural firebreaks such as creeks, walking paths, or driveways

Next Steps

After reviewing the contents of this assessment and its recommendations, the Horseshoe Bend Firewise Board in cooperation with the Perryville Fire Department will determine whether or not it wishes to continue seeking Firewise, USA™ recognitions. After deciding they will need to create a portal login and contact Kari Hines.

If the site assessment and recommendations are accepted and recognition will be sought, the Horseshoe Bend Firewise Board will create agreed-upon, area-specific solutions to the recommendations and create an action plan in cooperation with the Perryville Fire Department.

Timeline

Assuming the assessment area seeks to achieve national Firewise, USA™ recognitions status, it will integrate the following standards into its plan of action: (Step 2 is already completed with the creation of this document)

1. Sponsor a local Firewise board, task force, committee, commission or department that maintains the Firewise Community program and status.
2. Enlist a WUI specialist to complete an assessment and create a plan from which it identifies agreed-upon, achievable local solutions.
3. Invest a minimum of $28.50 (or 1 volunteer hour) per dwelling unit in its Firewise, USA™ program. (Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state-federal grants dedicated to that purpose.)
4. Observe a Firewise, USA™ Day each spring that is dedicated to a local Firewise project.
5. Submit an annual report to Firewise, USA™. This report documents continuing participation in the program.