Community Wildfire Protection Plan

MOUNTAIN REST LAKE

OCONEE COUNTY

AUGUST 2016

Prepared by:
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SC Forestry Commission
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Clemson Univ. Extension

CONTENTS

EXECUTIVE SUMMARY: HAZARD AND RISK ASSESSMENT

Technically, wildfire hazard is a function of the forest fuel situation as it affects wildfire ignition and resistance to control; risk is defined as the probability of a wildfire starting.

A wildland fire hazard and risk assessment was conducted in Mountain Rest Lake in April 2016 by the SC Forestry Commission and Clemson Extension. The assessment instrument rates wildfire hazard and risk as "Low," "Moderate," "High," and "Extreme." According to the survey, Mountain Rest Lake's rating is "**High**." See Appendix A for the rating score sheet.

The assessment instrument, the *South Carolina Wildfire Hazard & Risk Assessment Scoresheet,* was developed by the SC Forestry Commission and based on National Fire Protection Administration guidelines (NFPA 1144). It takes into consideration accessibility, vegetation, topography, building construction and roofing assembly, availability of fire protection resources, placement of gas and electric utilities, and other factors.

The following factors are primary wildfire safety concerns in your community:

Very limited egress should evacuation become necessary.
Most homes have combustible siding.
Minimal defensible space around some homes.
Flammable vegetation in and around the community.
Several homes feature flammable landscaping.

The remainder of this plan discusses specific hazard and risk issues in detail, and provides recommended mitigation measures to reduce the threat of wildfire.

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COMMUNITY COLLABORATION

Community Representatives
Mountain Rest Lake Property Owners' Association and Firewise Committee
Alan Schlenz & Frances Rundlett

County Government
Mountain Rest Fire Department
Chief Charlie Vissage

State Government
SC Forestry Commission: Jarrod Brucke, Bill Wiley

Clemson University Forestry Extension: Carolyn Dawson

APPROVED:_____
Steven C. Moore, Firewise Coordinator
SC Forestry Commission

OBJECTIVES

Using National Fire Plan funds, the South Carolina Forestry Commission has committed personnel to assess the danger from wildland fire to communities within our state.

Wildland fire experts from the Forestry Commission, in cooperation with community leaders, have completed an assessment of Mountain Rest Lake with regard to the threat from wildland fire. This report shows the results of that assessment.

The objectives of this report are to identify wildfire threats and provide recommendations to mitigate those threats. By implementing these recommendations, community leaders and residents can reduce wildland fuels and decrease structure ignitability, thus better protecting the community and its essential infrastructure.

Specifically, the plan includes community-centered actions that will:

Educate citizens about wildfire, its risks, and ways to protect life and property.
Focus on collaborative decision-making and citizen participation.
Develop and implement effective mitigation strategies.
Develop and implement effective community covenants and codes.

In addition to improving wildfire safety, Mountain Rest Lake can earn national recognition as a Firewise Community/USA®. The criteria are as follows:

Having a wildfire expert conduct a wildfire hazard/risk assessment. (Done.)
Developing a Community Wildfire Protection Plan (CWPP). (Done - this CWPP.)
Establishing a Firewise Committee to address wildfire protection concerns. (Done.)
Annually investing at least $2 per capita in wildfire protection work.
Sponsoring an annual Firewise workday involving community members.
Submitting an annual report documenting Firewise activities.

The Forestry Commission is available to assist property owners with mitigation practices recommended in this report. For more information, contact the SC Forestry Commission at the West Piedmont Unit Office (phone 864-878-6134).

COMMUNITY WILDFIRE PROTECTION PLAN

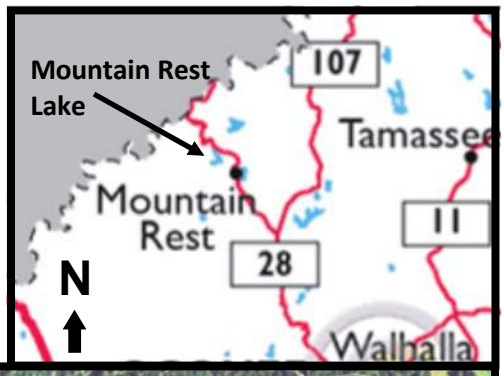
PART 1

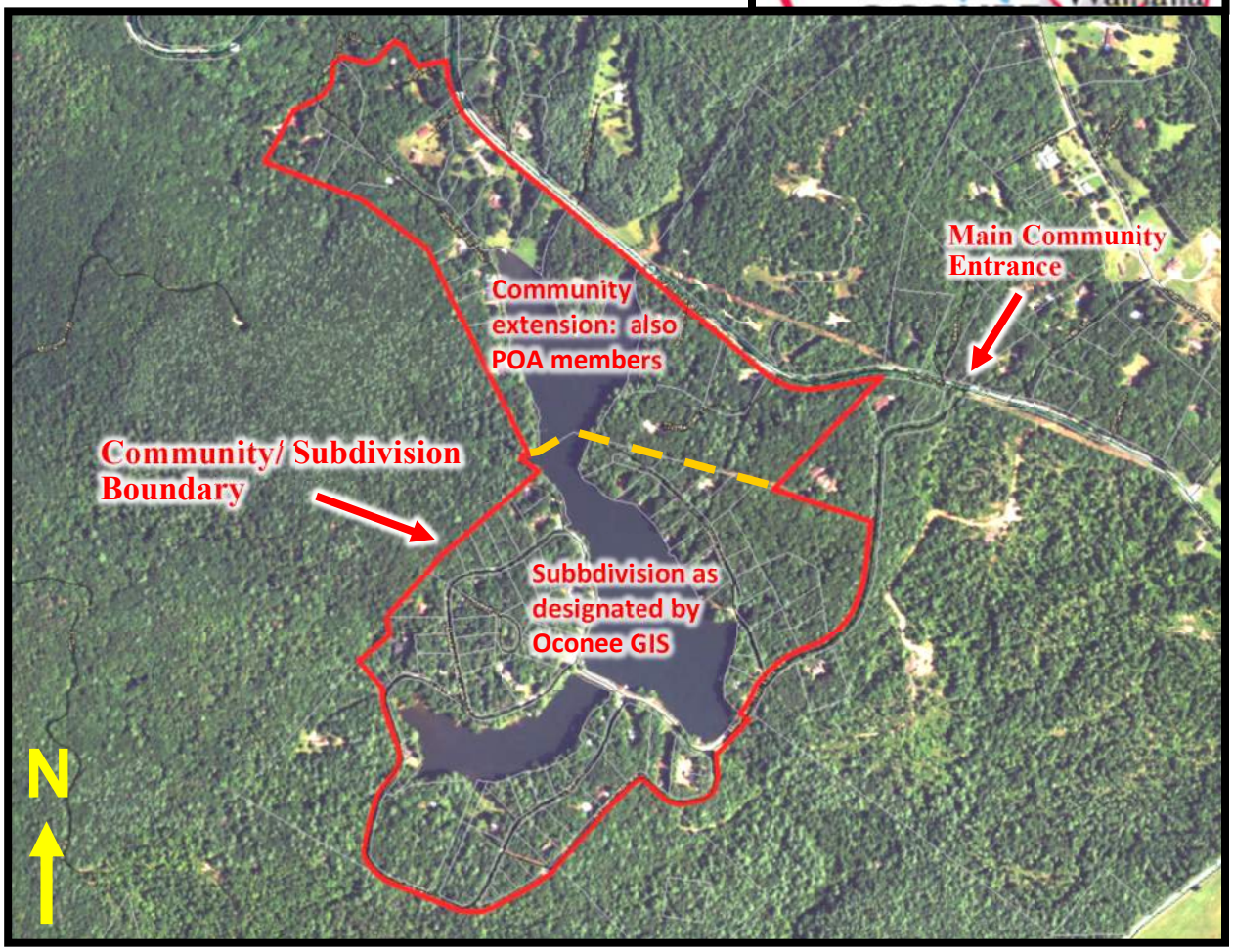
WILDFIRE HAZARD AND RISK

On the next several pages are findings from the Wildfire Risk Assessment conducted in April 2016, including pictures to illustrate significant points. Most pictures came from the assessment; other pictures serve for illustration.

1.1 COMMUNITY DESCRIPTION

Location: The Mountain Rest Lake community is located in northern Oconee County, South Carolina, near the Georgia border. The community is approximately 1 road mile north-northwest of Mountain Rest on SC Highway 28 (Highlands Highway) at Mountain Rest Lake Road. The main entrance is at Latitude 34.88N/ Longitude 82.17W. The original subdivision is shown on the lower part of the map below, with a community extension to include residents that are members of the Mountain Rest Lake Property Owners Association.





DISCLAIMER: This is a product of the South Carolina Forestry Commission. Reasonable efforts have been made to ensure the accuracy of this map. The SCFC expressly disclaims responsibility for damages or liability that may arise from the use of this map. Not to survey standards.

Terrain: This area is characterized by steep terrain with well drained sandy loam and loam soils. Some of the steeper slopes will affect fire behavior and firefighting operations. Significant terrain features are the lakes, the streams feeding into those lakes and the associated valleys or gullies.

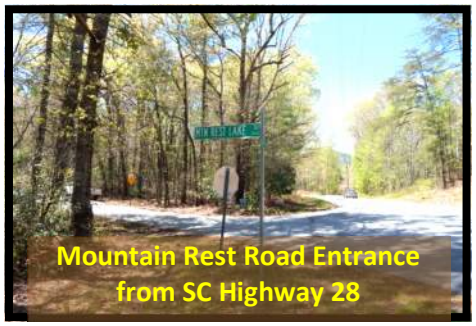
Forest Cover: The forested area within Mountain Rest Lake community is a mix of hardwood and pine. Hardwood species are oaks, hickories, yellow-poplar, maple and lesser species such as sourwood, persimmon, dogwood and redbud; eastern white and shortleaf pines are interspersed throughout. The understory in each area corresponds to the primary species with seedlings and saplings as well as small shrubs and vines.

Forest Fuels: Forest fuel includes any natural material, living or dead, that will burn. Fuel accumulation throughout the area is moderate to heavy. The primary surface fuel consists of hardwood leaf litter and pine needles. Other fuels include small brush, vines and some dead and downed timber.

Fire History: Wildfire is not common in the vicinity of Mountain Rest Lake. In a recent 10-year period, Forestry Commission firefighters responded to 12 fires within a five mile radius of the community. In addition to fires reported to SCFC, other fires have been extinguished by the local fire department. Note that much of this area includes US Forest Service acreage with very little wildfire activity. It also extends into North Carolina and fires there are not known at this writing.

Historically, debris burning has been the primary cause of wildfire in this area of Oconee County. Other causes have been equipment use, lightning, power lines and arson.

Infrastructure: Mountain Rest Lake is served by both paved and gravel roads. There is only a single main entrance on Mountain Rest Lake Road. The northern extension of the community (to the upper end of the upper lake) is accessed by Whippoorwill Hollow Road and from SC Highway 28. The width of the main entrance road to the intersection with Wren Drive will adequately accommodate most types of firefighting apparatus. However, road widths after that point are very narrow (some one-lane), including Whippoorwill Hollow.



Mountain Rest Road Entrance from SC Highway 28

There are three dead-end roads, Wren and Nuthatch Hill Roads and Hilltop Loop. Both Wren and Nuthatch Hill have either a cul-de-sac or loop turnaround. Both the cul-de-sac on Nuthatch Hill and the loop on Wren are very narrow with minimal turnaround space. Neither can accommodate larger firefighting vehicles. Hilltop Loop is a very narrow road, more like a driveway. These narrower roads and turnarounds will impede access by larger firefighting apparatus and therefore adversely impact access and response times.

End of Wren Road leading to turnaround

Most road shoulders are not drivable by fire apparatus.

Driveways are mostly paved or graveled, and many are fairly short. Others are longer and some are also steep and/or winding. Some driveways will require laying hose to provide firefighting service.

Whippoorwill Hollow Road

Infrastructure (cont.): Electrical supply is mostly above ground. One section across the lake has underground electrical service, an excellent Firewise factor. Cabinets housing said electrical service transformers are non-flammable. The transformer seen during the assessment is free from any surrounding flammable vegetation, a good practice. Gas service is through above ground propane/LP tanks. Most tanks seen had open space surrounding them, also a good practice.

Sewage disposal is through septic tanks.

Street signage is reflective and non-flammable with 4-inch high letters. House numbers are posted on mailboxes or drive entrances and some house fronts.

Vegetative debris disposal is the responsibility of individual homeowners. Open debris burning is allowed in the community.

There is no in-ground irrigation for yards.

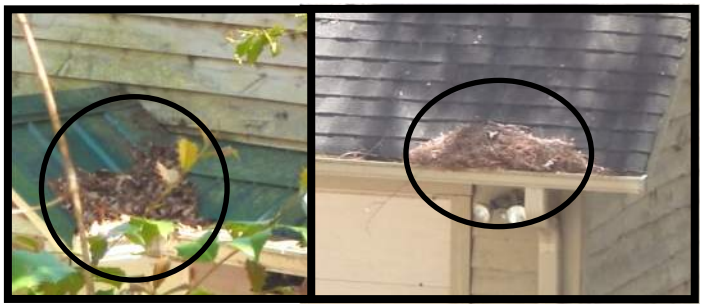
Development: Development at Mountain Rest Lake began in the 1950s. The community consists of 66 homes on 113 house lots. There is also a community lot with a boat dock.

Structure Density:
Structure density is light to medium. Most homes are approximately 45-50 feet to more than 100 feet apart. The aerial photo below gives the approximate location of several homes (designated by the blue rectangles). All homes may not be shown.

Map from Google Earth

Construction: Most homes are site-built, with a few mobile/modular homes. Most of the exterior sidings are wood or vinyl, with about 15% being brick siding. Eaves, crawl spaces, and soffits are enclosed; vents appear to be screened.

Roofs are about 2/3 fiberglass shingles to 1/3 metal. There is one roof with a small section of wood shakes that was scheduled to be replaced. About half of homes have gutters with about half of those open. Gutters as well as roof valleys are very susceptible to collecting dead leaves and pine needles. This debris can ignite from embers of a nearby wildfire with resulting flames spreading to the home.



About half of homes have chimneys have chimney caps, some with spark arrestor screens.

Most homes have wood decks and/or porches attached; many extending over slopes.

Several decks and porches also have lattice or other material enclosing the openings underneath.

At some homes, garden hoses were seen either attached or nearby for quick attachment.

Landscaping: There is a wide variety and density of landscape plantings. Many landscape plants are less flammable varieties. However, there were flammable plants seen next to or near homes. These include arborvitae and juniper. See Appendix E for a plant flammability list.

Where mulching material has been used adjacent to homes it is usually shredded hardwood or non-flammable mulch such as crushed brick/ decorative stone.

Pine straw mulch was not readily seen.

Defensible Space: This is the space immediately around a home where vegetation is managed to reduce wildfire risk and for easier firefighter access (see Appendix C). Many homes have open grassed lawn areas for firefighter access. Others have ornamental or natural ground covers with openings allowing access. Some of this ground cover includes leaves and pine needles that are also flammable. Additionally, there are homes with wooded areas very close to the homes. Recommended defensible space is 30 feet from the home to adjacent woodlands. Average defensible space in Mountain Rest Lake is 30-70 feet; although a few homes may be as close as 10 or 20 feet to the wood line.

Even with trees surrounding this home, there is much open space for firefighter access and green grass that when maintained can help slow an approaching fire.

This home is close to the wood line, especially at the back.

Fire Suppression Resources Available: Quick, effective initial attack is the key to managing wildland fires. Rapid response by firefighters depends on early detection and accurate reporting. Residents should immediately report suspicious smoke or fire to Oconee County 911.

Firefighting resources presently available to Mountain Rest Lake are listed below. Response times are estimates based on ideal response conditions.

MOUNTAIN REST FIRE DEPARTMENT	**10-12 MINUTES**
SC FORESTRY COMMISSION	**25-30 MINUTES**

Water Supply: Water for firefighting is available through six (6) non-pressurized dry hydrants. These were installed with the assistance of the Mountain Rest Fire Department. Signs are posted to help locate hydrants. If needed, there are open-source drafting sites available on the lake at the community boat ramp or from the dam.

In the event of a large wildfire in the area of long duration, the lake could be used as a helicopter dip site. In such emergencies, the SCFC has an agreement with the SC National Guard to call on them to assist in structure protection through the use of Blackhawk helicopters and helibuckets. Such use must be approved by the Governor.

1.2 WILDFIRE HAZARD

Wildfire Hazard: **The type, condition, amount, and arrangement of forest fuels that contribute to wildfire ignition and resistance to control.**

Fine fuels are usually the first to ignite and contribute to the early spread of a wildfire. The primary fine fuels in and around Mountain Rest Lake are dead hardwood leaves and pine needles along with very small dead limbs. Fine fuels are present in moderate to heavy concentrations throughout the community's wooded areas.

Intermediate fuels consist of dead branch wood, vines, and living brush, including very young trees. Moderate to heavy concentrations of intermediate fuels are present. While some of the brush is highly flammable (mountain laurel), some of the living brush is only mildly flammable. However, any brush will burn readily in dry conditions.

Heavy fuels like dead logs and stumps do not ignite readily, but once ablaze they will burn for a long time. These fuels contribute significantly to fire intensity, fire duration, and smoke production. Smoke production is a special concern as it can create significant health and safety problems. Heavy fuels are also present in moderate to heavy concentrations. Most of the heavy fuels are on vacant lots.

1.3 WILDFIRE RISK

***Wildfire Risk*: The chance of a wildfire starting, as influenced by forces of nature and the activities of people.**

In South Carolina, over 95% of all wildfires are caused by people and their activities. Wildfire risk is related to weather conditions, and risk increases when outdoor activities coincide with periods of low humidity, high wind, or drought.

Risk factors affecting Mountain Rest Lake include both internal and external influences. External risks include wildfires encroaching from woodlands, grasslands, or rights-of-way near the community. Such fires could be accidental or incendiary in origin.

Risk of wildfire originating within the community is relatively low. The most significant sources of ignition within the community may be related to:

1. **Vehicle-related ignitions along roadways. These include careless smoking, hot exhaust systems and brakes, and sparks from dragging metal, such as trailer safety chains.**

2. **Structure fires spreading to adjacent vegetative fuels or other structures.**

3. **Careless disposal of coals and ashes from fireplaces and barbeque grills.**

4. **Not ensuring that debris burn piles are completely extinguished.**

4. **Equipment malfunction, including sparks from yard maintenance equipment.**

Wildfire Risk Map:
At Appendix G is a map from a web-based application called SouthWRAP. This application uses historical fuels and land use data such as fuel type, flame length and housing density to estimate average wildfire risk to homes.

COMMUNITY WILDFIRE PROTECTION PLAN

PART 2

ACTION PLAN

On the next several pages are recommendations specific to Mountain Rest Lake residents as well as general Firewise recommendations. Where pictures are seen, they are used to illustrate Firewise principles. Most pictures show scenes in the community.

2.1 COMMUNITY ACTION

The following recommendations were developed and are listed in priority order based upon which actions would most significantly mitigate the wildfire hazards in Mountain Rest Lake. However, the community should take these recommendations under consideration and determine its own priority and timeframe for implementing the actions desired.

Continue utilizing the Firewise Committee to help with wildfire planning and assessing risks.

A Firewise Committee has been established in connection with the Property Owners Association to manage Firewise efforts at Mountain Rest Lake. Members are Mountain Rest Lake residents. SC Forestry Commission and Mountain Rest Fire Department officials are available for advice. The Committee should meet periodically to review progress and plan future activities. Among the Committee's duties are liaison with wildfire experts, writing grants for Firewise funding, publicizing community activities, and coordinating special events and workdays.

Organize one or more community-wide wildfire hazard reduction workdays.

Designate a day (perhaps a Saturday?) for a community wildfire hazard reduction event. The event can begin with a morning briefing, then residents spend the morning on hazard reduction projects at their homes. The Forestry Commission can provide an educational exhibit and wildfire experts to conduct individual home hazard/risk assessments.

Encourage owners of vacant lots to remove heavier underbrush.

Reducing fuels on vacant lots can help protect neighboring lots and homes. If owners are willing, under-brushing these lots can help reduce risks, while keeping a somewhat natural look to the woodlands. The photo at right gives and example from another community.

Treated (under-brushed) area on left and untreated on right.

Implement a sustained public awareness effort among residents.

Incorporate wildfire safety messages into community newsletters, e-mail notices, or bulletin boards. Distribute printed material (available from the Forestry Commission or other sources) at community events. See Appendix F for a list of sources.

Encourage residents to plan and prepare for wildfire emergencies.

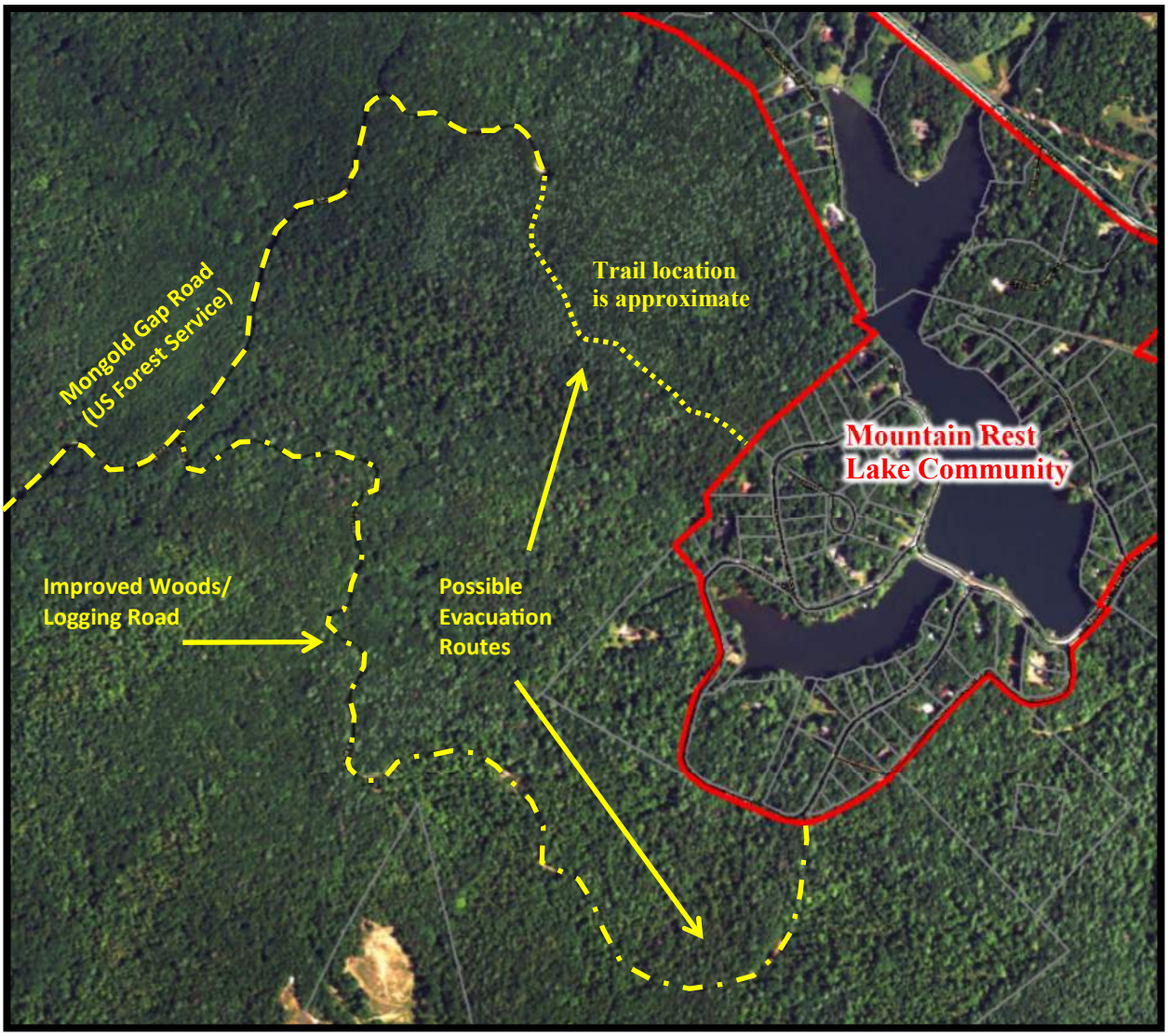
It has been shown that when prepared, residents are less anxious and more likely to leave in a timely manner if approaching wildfire requires evacuation. That should include keeping documents in a portable fireproof safe. See page 21 for details and a photo of one type of safe. The Ready, Set, Go! Program coordinated by local fire departments can also help with resident awareness and preparation. See Appendix I for more details on the Ready, Set, Go! Program.

Preplan evacuation routes and means for emergencies.

With wooded areas in and around the community, there is the possibility of a fire from various sources. Residents should remain aware of nearby incidents and be ready for evacuation if such is warranted. However, if a fire is at or near the entrance residents may not be able to evacuate the community via usual routes.

There is one (1) possibility that might serve for evacuation across USDA Forest Service land. This would require approval from the Forest Service and security measures such as a locked gate to prevent unauthorized access to the community (and from the community onto Forest Service land). The route would have to be improved and could connect with Forest Service roads that eventually lead to Mountain Rest via Rocky Gap and Chattooga Ridge Roads. See below for an aerial photo of proposed routes.

There is some reluctance to open the road for evacuation. However, the local District Ranger is willing to meet for discussions related to possible evacuation routes.



Designate a community safety zone (or zones) for residents who cannot evacuate.

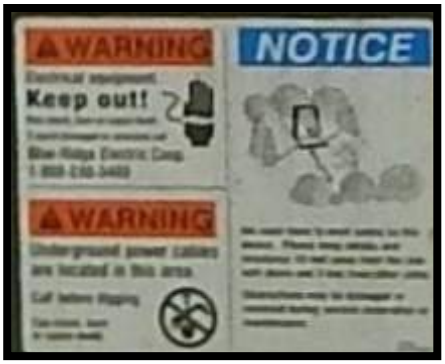
Working with residents, consider locating and designating spots around the lakes that can act as safety zones for residents who cannot evacuate in the event a fire blocks the main entrance.

Enroll as a participant in the Forestry Commission's Red Flag Fire Alert Program.

The Red Flag Fire Alert Program serves as a warning that wildfire danger is increasing. Participation requires a signed agreement between the Homeowner's Association and the Forestry Commission. Under terms of the agreement, the Forestry Commission will supply a Red Flag Fire Alert pennant to the community. The Commission will notify the community immediately when an Alert is activated. The community must agree to fly the flag prominently (such as on a pole) and take it down as soon as the Alert is over. An agreement form is available by calling 803-325-1926. Since the main entrance turns off of SC Highway 28, the community may need approval from SC DOT to erect a flag pole there.

Where electrical cabinets (transformers) are present, ensure fuels around them are kept reduced.

While the underground electrical service is an excellent Firewise factor, the above-ground service cabinets can be vulnerable to wildfire, especially if in wooded areas or where surrounded by flammable fuels. In the event of fire, metal cabinets will not protect sensitive circuitry if subjected to significant heat. Since these pad-mount transformers can carry significant electrical charges, any significant activity near these transformers should be coordinated with Duke Energy. Keeping the surrounding area either grassed or mulched with non-flammable material (such as crushed brick or stone) can help protect them. See Appendix H for more information.



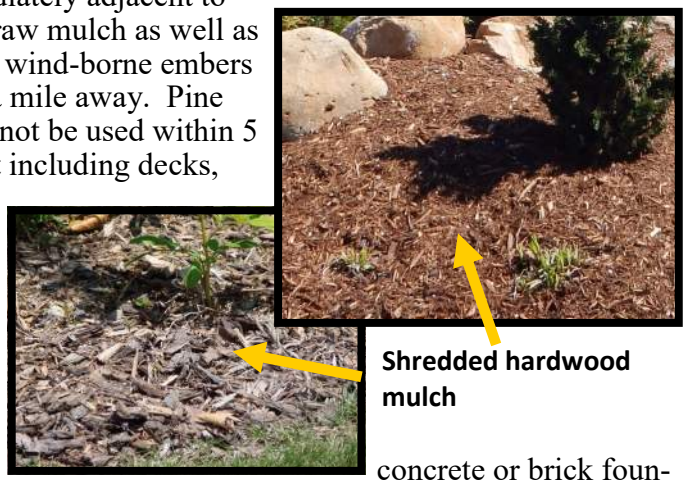
A sticker like one of these should be on all transformers.

2.2 INDIVIDUAL ACTION

The following recommendations were developed and are listed in priority order based upon which actions would most significantly mitigate the wildfire hazards to homes at Mountain Rest Lake. However, residents should take these recommendations under consideration and determine their own priority and timeframe for implementing the actions desired.

Clear fine fuels that are immediately adjacent to homes.

Residents should clear any fine fuels immediately adjacent to their homes. These fuels, including pine straw mulch as well as leave and pine needle litter, can ignite from wind-borne embers originating in wildfires burning more than a mile away. Pine straw and other flammable mulches should not be used within 5 feet of any flammable structural component including decks, porches and fences. Mulch materials including shredded hardwood and large pine bark nuggets are less flammable; crushed brick and decorative stone are non-flammable. Most homes in the community use this less flammable material.



Shredded hardwood mulch

Even less flammable mulches can create a risk if those mulches are directly against a concrete or brick foundation with flammable siding immediately above the mulch. As stated above, no flammable mulch should be used within 5 feet of any flammable home component.

Avoid highly flammable landscape plants near homes.

Landscaping with highly flammable plants is discouraged. Juniper ground cover should be no closer than 6 feet. Pampas grass, Chinese silver grass and resinous trees like Leyland Cypress should not be planted within 15-20 feet of flammable structural material. Ornamental grasses such as Pampas grass and Chinese silver grass should be cut back in February or March to prevent accumulations of dead material. Trees should be trimmed to remove dead limbs and needles.

Where limbs start at or near ground level, lower limbs should be pruned to reduce the possibility that ground level fires could travel into crowns.

Ground Juniper

Pampas grass

Above photos are from another community

Clear dead plant material and brushy vegetation from within 30 feet of any structure.

When homes have vegetation closer than 30 feet, this vegetation should be thinned out and pruned to remove dead material. Lower limbs of larger trees should be pruned up to 6-8 feet from the ground. Residents are encouraged to use suitable deadwood for fireplace or wood stove fuel. Where lot lines permit, wood fuel should be stacked at least 30 feet from any structure. Unusable deadwood should be hauled away or otherwise mitigated (such as through chipping/mulching). If debris is disposed of by burning, be sure to comply with the SC Notification and Precautions law that requires calling the Forestry Commission, an adequate break around the burning site, means of control and staying with the fire until it is completely safe. See Appendix J for more information.

Establish and maintain defensible space.

Defensible space is an area around the home that is maintained in such a way as to retard fire spread and to allow firefighting access. Where possible given lot lines, residents should maintain a minimum of 30 feet of defensible space between the home and adjacent woodlands (See Appendix C). Where homes are near woodlands, current defensible space in the Mountain Rest Lake community averages 30-70 feet, with some homes closer than 20 feet.

Keep roofs and gutters clear of vegetative debris.

Dead leaves and pine needles accumulate quickly on rooftops, especially in roof valleys, behind chimneys, and in gutters. Clear this material frequently, especially during the December-April wildfire season. The complex roof structure and open gutters of some homes provides niches for pocket accumulations. Embers falling into this accumulation can cause homes to burn.

Protect the underside of decks/ porches or other structural elements overhanging slopes.

Keep underside of decks and porches clear of flammable vegetative debris. Use lattice backed with metal wire mesh (1/8 inch or less openings) to enclose space beneath overhangs where practical. Patios/ porches with high ceilings can be screened. Do not store firewood, gasoline or other flammable material under decks or porches.

Firewood stacked at least30 feet from home.

Plan and prepare for wildfire emergencies.

Keep garden hoses attached to outside faucets at all times (when practical given weather conditions). Essential documents and photos should be stored in a fireproof safe or kept in a similar container that can be easily transported in the event of evacuation. Small handle-carry fireproof safes are available at several stores for a relatively small price. When evacuating, close all windows, doors, crawl space entrances, and garage doors to prevent embers from blowing in to these areas.

Fire- and Water-proof Rated Box

2.3 SUSTAINABILITY

To accurately assess progress and effectiveness of the Action Plan, the Mountain Rest Lake Firewise Committee should do the following:

1. Annually review the wildfire risk assessment to determine if hazard and risk have changed.

2. Update the Action Plan based on the assessment. Plan at least one community Firewise workday or activity each year.

3. Publish an annual report detailing hazard mitigation work and other projects which have been initiated and/or completed. Include a financial statement of funds received, funds expended, and in-kind services utilized. The report should include a "state of the community" section that critically evaluates Firewise progress and needs.

COMMUNITY WILDFIRE PROTECTION PLAN

APPENDICES

APPENDIX A

South Carolina 's Wildfire Hazard & Risk Assessment Scoresheet

** This document is based upon the NFPA 1144

Community: Mountain Rest Lake **Lat/Long: 34.88N/83.17W**

County: Oconee

A. Means of Access

1. Ingress and egress

a. Two or more roads in/out	0	7
b. One road in/out	7	

2. Road width

a. Greater than or equal to 24 feet	0	4
b. Greater than or equal to 20 feet and less than 24 feet	2	
c. Less than 20 feet	4	

3. All-season road condition

a. Surfaced road, grade is less than or equal to 5%	0	3
b. Surfaced road, grade is greater than 5%	2	
c. Non-surfaced road, grade is less than or equal to 5%	3	
d. Non-surfaced road, grade is greater than 5%	5	
e. Other than all-season	7	

4. Fire service access (road length)

a. Majority of dead-end roads are less than or equal to 300 feet long	0	5
b. Majority of dead-end roads are greater than 300 feet	5	

5. Fire service turnaround capability

a. Turnarounds or cul-de-sacs have a radius of at least 50 feet	0	4
b. Turnarounds or cul-de-sacs have a radius less than 50 feet	2	
c. Dead ends have no cul-de-sacs or turnarounds	5	

6. Street signs

a. Present, lettering 4 inches high, non-flammable and reflective	0	0
b. Present but wooden, non-reflective, or lettering less than 4"	3	
c. Not present	5	

B. Vegetation

1. Characteristics of predominate vegetation within 300 feet

a. Light: short grasses and shrubs less than 2 feet high	5	15
b. Medium: tall grasses and shrubs 2-6 feet high (palmetto-gallberry understory)	10	
c. Heavy: dense brush, bay vegetation, shrubs over 6 feet high	20	
d. Slash: harvesting residue; insect/disease/fire-killed timber	25	

2. Defensible space

a. More than 100 feet defensible space between structure and wildland	1	10
b. 71 - 100 feet defensible space between structure and wildland	3	
c. 30 - 70 feet defensible space between structure and wildland	10	
d. Less than 30 feet defensible space between structure and wildland	25	

C. Topography within 300 feet of structures

1. Slope

a. Slope is less than or equal to 9%	1	5
b. Slope 10% to 20%	4	
c. Slope 21% to 30%	7	
d. Slope > 30%	10	

D. Additional Rating Factors (rate all that apply)

1. Miscellaneous

a. Topographical features that adversely affect wildland fire behavior and/or firefighting	0-5	5
b. Areas with a history of high fire occurrence.	0-5	1
c. Areas that are periodically exposed to severe fire weather and strong dry winds	0-5	1
d. Structure-to-structure fire spread likely due to close spacing	0-5	0

E. Roofing Assembly

1. Roof composition of the majority of homes

a. Metal, ceramic tile, slate, or other non-flammable material	0	4
b. Asphalt/fiberglass shingles	5	
c. Wood shakes/shingles	25	

F. Building Construction

1. Building construction of homes, siding, eaves, and deck

a. 75% of homes with noncombustible siding, eaves, and deck	0	10
b. 75% of homes with noncombustible siding and eaves, but combustible deck or fence	5	
c. 75% of homes with combustible siding, eaves and deck, or 75% mobile homes	10	

2. Building setback relative to slopes of 30% or more

a. Not applicable	0	2
b. Greater than or equal to 30 feet from slope	1	
c. Less than 30 feet from slope	5	

G. Available Fire Protection

1. Water source availablility

a. Pressurized water availability - >1000 gpm; hydrants <1000' apart	0	5
b. Pressurized water availability - >500 gpm; hydrants <1000' apart	1	
c. Pressurized water availability- <500 gpm	3	
d. No pressurized water, but draft water point on-site	5	
e. No pressurized water, but draft water point off-site within 1 mile	7	
f. Available water more than 1 mile distant	10	

2. Organized response resources

a. Nearest station is within 5 miles of structures	1	2
b. Nearest station is more than 5 miles from structures	5	

3. Fixed fire protection

a. Outdoor sprinkler system	1	5
b. None	5	

H. Placement of Gas and Electric Utilities

1. Placement of utilities

a. Both underground	0	4
b. One underground, one aboveground	3	
c. Both aboveground	5	

I. Totals for Home or Subdivision (total of all points)

92

Assessor's Name(s) Alan Schlenz, Frances Rundlett (Mtn Rest Lake), Carolyn Dawson (CU Ext.), Charlie Vissage (Mtn Rest FD), Bill Wiley

Date 4/18/16

Hazard Assessment	Total
Low	< 40
Moderate	40-69
High	70-112
Extreme	> 112

APPENDIX B

STRUCTURE IGNITABILITY

A structure's ability to survive a wildfire is directly related to material and design. This is especially significant where fire hazard is high and fire suppression is difficult.

Researchers at the US Forest Service Fire Sciences Laboratory in Missoula, MT have studied structure survival on large wildfires around the country. Some of their findings are as follows:

1. Roof materials are the single most important factor in construction.

a) Ceramic or metal roofing materials are probably the safest. Some ceramics are made to look like wood shakes.
b) Fiberglass-asphalt shingles do not ignite readily. In some cases they melt rather than ignite.
c) Wood shingles pressure treated with fire retardant may provide some protection for up to five years. Observations indicate that the effective life of the treatment may be as little as eighteen months. Re-treatment by spraying on retardant may be effective for about a year.

2. Wood siding does not ignite readily unless exposed to direct flame.

a) Siding (T-111 or board) is more likely to ignite when direct flame is applied to the edges.
b) No flammable materials should be allowed within 5' of wood siding.
c) Firewise alternatives to wood siding include brick, stucco, and fiber-cement.

3. Expanses of glass, especially on down-slope side of homes, can increase vulnerability.

a) Double-paned glass reduces the amount of heat energy transmitted into the home. If the outside pane breaks from the heat, the second pane still affords some protection.
b) Double-paned tempered glass is best; double-paned non-tempered is adequate.
c) Pane size is significant. Large windows are more likely to break under heat; several smaller panes are preferable to one large sheet of glass.

4. A clean, simple exterior design minimizes surface exposed to heat and flame.

a) Avoid designs that include many angles and set-backs in exterior walls. Limit valleys and dormers in roof construction.
b) If the house or deck overhangs a slope, the underside should be sealed or screened, and kept immaculately clean of any flammables. Fire under the structure may be pulled into the underbelly as air chimneys around support posts. If lattice or similar material is used to close in the underside of decks/ homes, it should be backed by one-eighth inch non-flammable (metal) mesh screen.
c) Support posts under decks should be non-flammable.
d) Vents should be non-flammable and screened with one-eighth inch non-flammable (metal) mesh.

5. Gutters should be installed on an as-needed basis.

a) Use gutters only to deflect water from entrances and move water away from the structure.
b) Covered gutters are preferable.
b) Open gutters must be kept clear of vegetative debris, especially during fire season.

6. Structure density can be significant.

a) For single story homes with 18' roof peaks, there should be a minimum horizontal separation of 25-30' between homes.
b) Two-story homes should be separated by 50-60' of horizontal distance.

APPENDIX C

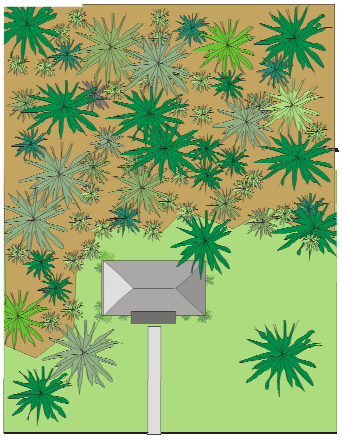
DEFENSIBLE SPACE

Defensible space is the managed area between the home and the wildland. It involves both fuel management and spatial management. The most critical area is within a 30-foot radius of the home.

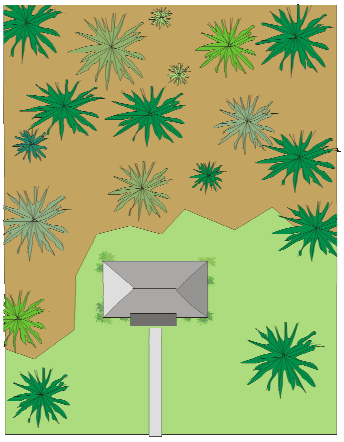
<u>Fuel management</u> reduces fire intensity and slows its spread.

Avoid highly flammable landscape plants near house.
Use less-flammable mulch within three feet of flammable structural components.
Water landscape plants and keep mulch moist during dry periods.
Keep roof and gutters free of pine straw and dead leaves.
Prune tree branches that touch or hang over the house.
Remove tree branches within 10 feet of the ground if foliage is flammable.
Thin trees to prevent branch contact between trees.
Clear dead plant material from the yard.
Store firewood at least 30 feet from important structures.
Clear natural underbrush within 30 feet of the home.
Do not attach flammable fences to the house.

Poor Fuel Management



Good Fuel Management



<u>Spatial</u> <u>manage-</u> <u>ment</u> pro- vides ade- quate room for firefighting access.

Insure garden fences and walls have openings or functioning gates.
Don't allow structural landscape elements to impede access.
Make sure vehicles and recreational equipment won't block firefighters.

APPENDIX D

FUEL MITIGATION ZONES

A fuel mitigation zone is a specified area of wildland where the natural fuel has been physically modified or reduced. Fuel mitigation is designed to reduce the intensity of an oncoming wildfire as it approaches a high value area. Lower fire intensity provides two benefits: firefighting efforts are more effective, and vulnerable structures are subjected to less radiant heat.

Fuel mitigation may be accomplished by prescribed burning, mowing, herbicide application, mastication, or thinning. Selecting a mitigation method should consider environmental and aesthetic values, cost, contractor availability, and the physical fuel situation.

In some cases, 8-10 foot wide cleared firebreaks are integrated into the fuel mitigation zone for added protection. Such firebreaks can be valuable as walking trails or wildlife observation corridors.

Large scale fuel mitigation projects must consider the following:

Cost. The cost may range from $25 per acre (prescribed burning) to more than $500 per acre (mastication). Firewise grants may be available for some projects.

Environmental Impact. Some mitigation may be limited by air and water quality considerations. Low impact methods like mowing, mastication, and chipping are especially useful in sensitive environmental situations.

Maintenance. If fuels include living brush or accumulations of pine straw and dead leaves, the area will need to be re-treated every two to five years. While cost will generally decrease after the initial treatment, communities must still budget for regular maintenance of fuel mitigation zones.

Lack of consensus. For various reasons, some property owners may resist modifying the wildland. Handling such situations may require negotiation and diplomacy, depending on ownership of property in the mitigation zone and the community's legal structure.

Fuel mitigation is most critical within 30 feet of structures. If feasible, less intense fuel mitigation should be employed from 30-100 feet from structures.

APPENDIX E: PLANT FLAMMABILITY

E = Evergreen ***SE = Semi-evergreen*** ***D = Deciduous***

High Flammability
Arborvitae (Thuja spp) E
Cedar, eastern red (Juniperus virginianus) E
Eucalyptus (Eucalyptus spp) E
Gallberry (Ilex glabra) E
Juniper, Chinese (Juniperus chinensis) E
Juniper, Creeping (Juniperus horizontalis)E
Miscanthus Grasses (Miscanthus spp.) **[Also an Invasive]**
Mountain laurel (Kalmia latifolia) E
Pampas grass (Cortaderia selloana) SE **[Also an Invasive]**
Pine (Pinus spp.) E
Podocarpus (Podocarpus spp) E
Staggerbush (Lyonia ferruginea) D
Switchcane, Large (Arundinaria gigantea) SE
Switchcane, Small (Arundinaria tecta) SE
Waxmyrtle (Myrica cerifera) E
Yaupon, dwarf (Ilex vomitoria) E
Yew (Taxus spp) E

Moderate Flammability
Abelia, glossy (Abelia x grandiflora) E
Azalea (Rhododendron spp) E
Boxwood (Buxus spp) E
Laurelcherry, Carolina (Prunus caroliniana) E
Leyland cypress (Cupressocyparis leylandii) E
Rhododendron (Rhododendron spp) E or D
Sago palm (Cycas revoluta) E

Low Flammability
Adam's needle (Yucca filamentosa) E
Butterfly bush (Buddleia spp) D
Beautyberry, French mulberry (Callicarpa dichotoma) D
Camellia (Camellia japonica) E
Coontie (Zamia pumila) E
Forsythia (Forsythia spp) D
Gardenia (Gardenia spp) E
Hydrangea (Hydrangea spp) D
Holly, Blue (Ilex x meserveae) E
Holly, Foster (Ilex x attenuata) E
Holly, winterberry (Ilex verticillata) E
Indian hawthorne (Rhaphiolepis indica) E
Magnolia, southern (Magnolia grandiflora) E
Needle palm (Rhapidophyllum hystrix) E
Oleander (Nerium oleander) E
Pittosporum (Pittosporum spp) E
Pyracantha (Pyracantha coccinea) E
Sasanqua (Camellia sasanqua) E
Viburnum (Viburnum obovatum, V. dentatum, V. spp) SE

APPENDIX E, CONTINUED

Fire-Resistant Groundcovers
Ajuga, Bugleweed (Ajuga reptans)
Asian Jasmine (Trachelospermum asiaticum)
Pachysandra (Pachysandra terminallis)
Phlox, creeping (Phlox ovata)
Sedum, Stonecrop (Sedum spp)
Thyme, creeping (Thymus serpyllum)

Liriope (Liriope spp) has been widely used as a succulent ground cover. If planted and maintained properly, it can be a good Firewise option. However, it has been added to an alert list as an Invasive Species and should be planted only as recommended. Please dispose of properly if being discarded; do not dump in nearby woodlands where it can spread unchecked.

APPENDIX F: INFORMATIONAL RESOURCES

Using community notification resources already in place (newsletters, e-mail, bulletin boards, etc.) provide wildfire protection information to residents of Mountain Rest Lake. This may include:

- Printed material available on request from the SC Forestry Commission
  - Living With Fire
  - How to Have a Firewise Home
  - Flammable Plants List (Landscaping Can Be Attractive and Firewise)
  - Homeowner's Checklist
  - Be Firewise Around Your Home

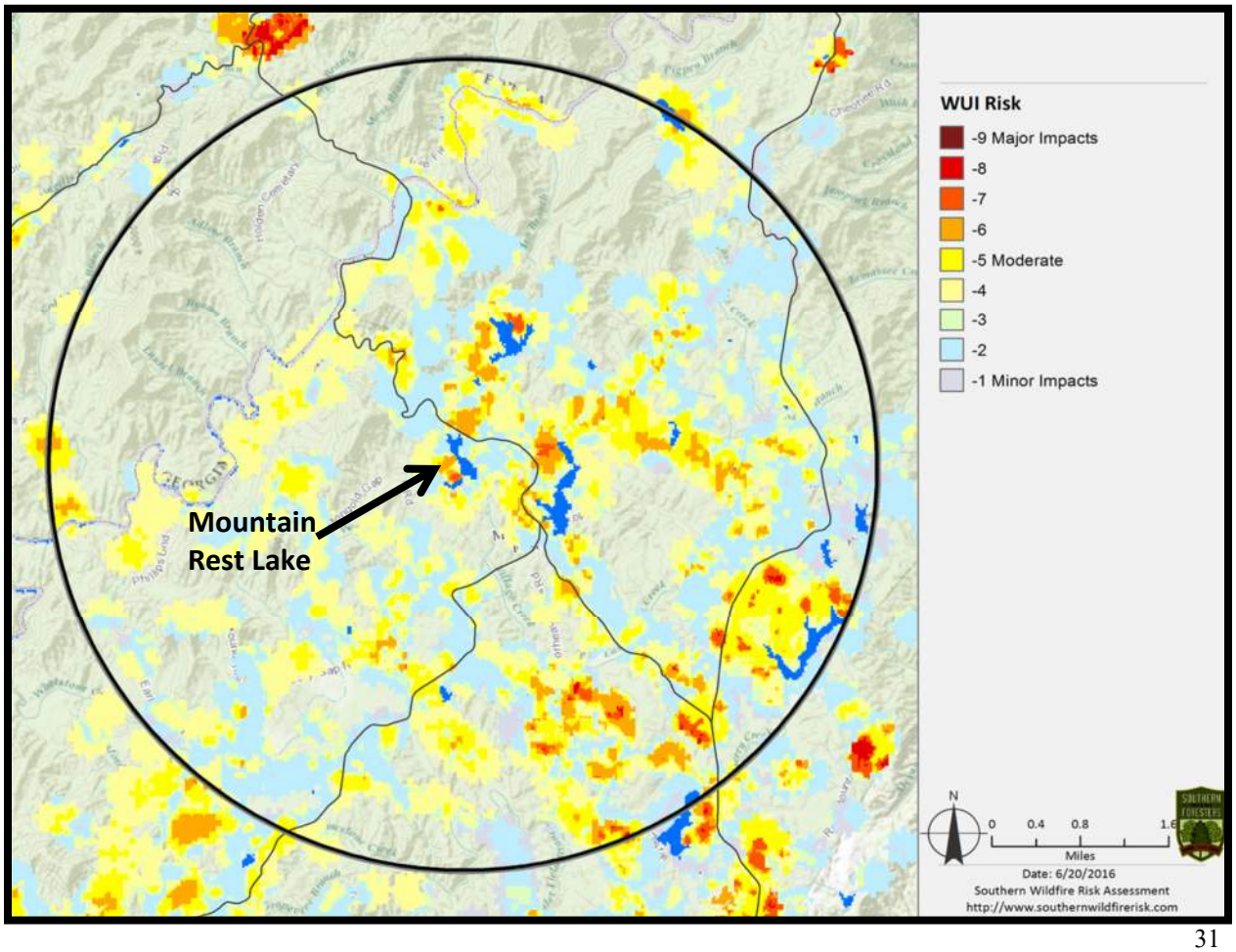
- Internet resources, including:
  - South Carolina Forestry Commission: www.trees.sc.gov
    - Look under "South Carolina's Firewise Program"
    - On the home page,
    - OR under "Fire and Burning Information/
    - FIREWISE in the Wildland Urban Interface"
  - Firewise (NFPA): www.firewise.org
  - Interface South: www.interfacesouth.org
  - Institute for Business and Home Safety (IBHS): www.disastersafety.org
  - Federal Alliance for Safe Homes (FLASH): www.flash.org

APPENDIX G: MAP SHOWING RELATIVE WILDFIRE RISK FOR MOUNTAIN REST LAKE IN THE WILDLAND-URBAN INTERFACE

The Wildland-Urban Interface (WUI) is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

A wildfire planning program called SouthWRAP can be used to evaluate relative risks to communities. The map below is taken from that program and is provided for information. It shows relative risk from wildfire in the vicinity of Mountain Rest Lake where there are homes; no risk was projected for unpopulated areas. The black circle represents a 4-mile radius from the center of Mountain Rest Lake. As can be seen from the map, average risk is mostly moderate (yellow on the map) with other areas showing a higher risk (orange to red on the map). However, assessments of local areas (such as was done for Mountain Rest Lake) can show a higher risk when observing conditions on the ground.

In planning for possible wildfires, individual homeowners should evaluate their own risks and plan their actions based on recommendations in this Community Wildfire Protection Plan (CWPP). The SC Forestry Commission can also conduct individual home assessments to assist homeowners in determining their risk.



APPENDIX H: ELECTRICAL TRANSFORMERS

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The Big Green Box

BY MEGAN McKOY-NOE

THEY'RE BIG. They're often green. They generally sit on concrete, often within housing developments. Some folks don't like these "electrical boxes" (a common nickname for pad-mount transformers) and try to hide them with bushes, fences, or flower beds. But stay clear: even small additions around pad-mount transformers create hazards.

To improve aesthetics of new neighborhoods, developers often put in underground power lines. While this eliminates utility poles and overhead wires, it requires installing pad-mounted transformers in some front yards. Unfortunately some homeowners, concerned about curb appeal, attempt to screen pad-mount transformers from view—creating an unsafe situation for all concerned, including Mid-Carolina Electric lineworkers.

"We realize landscaping represents an investment of time and money," shares Jeremy Alcorn, MCEC's vegetation management coordinator. "We respect the effort and care our members invest in making their properties attractive. However, landscaping around electrical equipment interferes with our ability to deliver reliable power."

Mid-Carolina Electric recommends leaving at least 10 feet of clear space in front of pad-mount transformers. Linemen repair units while they are energized so homeowners don't experience an interruption in service. To ensure safety, they use an 8-foot fiberglass hot stick that requires about 10 feet of "elbow room" in front of the access panel.

"In some cases, consumers may leave plenty of space in front of the transformer, but grow vegetation on the other three sides," explains Alcorn. "This invites other problems. For example, plant roots can interfere with its operation. Overheating is another big concern that can cause service interruptions when air circulation is compromised."

Pad-mounted transformers surrounded by vegetation or a structure may overheat and cause service interruptions when the air circulation around them is compromised. Allow at least four feet of space on both sides and behind the transformer.

Members should also be aware that plantings along rights of way—strips of land owned by a member on which the co-op places poles, wires, and other equipment like pad-mount transformers—could be damaged by co-op vehicles.

"Occasionally, we may need to repair a transformer, and eventually transformers must be upgraded and replaced," says Alcorn. "To perform this work, line trucks must be driven into the right of way and the transformer lifted out. Although we try to minimize the impact, plants will be damaged if they're in the way."

Call before you dig!

Because underground service continues from the transformer to your home, you should never dig anywhere in your yard without first calling 811 to find out where cables are buried.

MEGAN McKOY-NOE writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association, the Arlington, Va.-based service arm of the nation's 900-plus consumer-owned, not-for-profit electric cooperatives. Horry Electric Cooperative in South Carolina and GreyStone Power Corporation in Georgia contributed to this article.

While this may be more aesthetically pleasing, it is very dangerous for our employees and may cause power outages.

Keep roots away and air flowing around your home's pad-mount transformer by leaving at least 10 feet of space around the equipment.

EMILY STOWE

Transformers need to be *left alone*

- **Never** let anything grow closer than 10 feet from a pad-mount transformer. (The access panel is marked by a handle, lock, and sticker on the front.)
- **Never** enclose a pad-mount transformer with fencing, shrubs, or anything else with less than a 10-foot-wide gate or opening.
- **Never** allow children to play near pad-mount transformers.
- **Never** pour waste oils, chemicals, or other liquids on or near a pad-mount transformer. These liquids can seep into the ground and damage underground cables.

This sticker, placed on all MCEC pad-mount transformers alerts homeowners to danger as well as instructions on planting around the transformer.

EMILY STOWE

APPENDIX I: READY, SET, GO! PROGRAM

The International Association of Fire Chiefs developed **Ready, Set, Go!** to help educate residents in wildfire risk areas in how to prepare for possible evacuation due to an approaching wildfire. The information sheet below gives more details and is copied with permission.

Ready, Set, Go!

Program Introduction

Powered by the IAFC

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The **Ready, Set, Go! (RSG) Program**, managed by the International Association of Fire Chiefs (IAFC), seeks to develop and improve the dialogue between fire departments and the residents they serve. Launched nationally in March 2011 at the Wildland Urban Interface (WUI) 2011 Conference, the program helps the fire and emergency service teach individuals who live in high risk wildland fire areas, the Wildland Urban Interface (WUI), how to best prepare themselves, their families, and their properties against fire threats.

The fire may be called a brush fire, grass fire, field fire, railroad fire, outdoor fire, backyard fire, or forest fire, but no matter the name, the risks to residents and resources remain the same. Engaging in this dialogue is particularly important for the fire service because national studies have shown that firefighters are uniquely respected in their communities and can project a trusted voice to the public preparedness appeal. Firefighters can also explain what resources are available during an event and the role individuals can play in preparedness and early evacuation, if called for by their local officials, to increase firefighter and resident safety.

The program continues to work in a complimentary and collaborative fashion with existing wildland fire public education efforts, and amplifies their messages to individuals to better achieve the common goal of **Fire Adapted Communities (FAC)** that we all share. The **RSG! Program** tenets help residents to be ***Ready*** with preparedness understanding, be ***Set*** with situational awareness when fire threatens, and to ***Go!***, acting early when a fire starts. To learn more and join the program, please visit **www.wildlandfireRSG.org**.

Ready – **Take personal responsibility** and prepare long before the threat of a wildland fire so your home is ready in case of a fire. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe place. Plan escape routes and make sure all those residing within the home know the plan of action.

Set – **Situational awareness.** Pack your emergency items. Stay aware of the latest news and information on a fire from local media, your local fire department, and public safety.

Go! – **Act early!** Follow your personal wildland fire action plan. Doing so will not only support your safety, but will allow firefighters to best maneuver resources to combat the fire.

www.wildlandfireRSG.org

APPENDIX I: READY, SET, GO! PROGRAM

Wildfire Preparedness
Emergency Evacuation Kit

(Adapted from the American Red Cross)

- **Water (3-day supply) – one gallon per person per day**
- **Food (non-perishable) - 3-day supply - for family & pets (include a can opener)**
- **Flashlight with extra batteries**
- **Battery powered or hand-cranked radio with extra batteries (weather radio if possible)**
- **First Aid Kit/ Medications (7-day supply)**
- **Sanitation/ cleaning supplies (Moist towelettes/ trash bags)**
- **Extra cash, credit cards, etc.**
- **Personal documents/ contact numbers**
- **Chargers for cell phones/ laptop, etc.**
- **Multi-tool (for turning utilities on or off)**
- **Maps with escape routes**

APPENDIX J: DISPOSAL OF YARD DEBRIS

SOUTH CAROLINA FORESTRY COMMISSION

FIREWISE Contacts for South Carolina

State Firewise Program Manager
Steve Moore
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Cell: 803-360-6956

Coastal Firewise Field Coordinator
Drake Carroll
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Cell: 843-601-9121

Upstate Firewise Field Coordinator
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Cell: 803-360-8264

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Street Address: 5500 Broad River Road
Columbia, SC 29212
Phone: 803-896-8800
Email: scfc@scfc.gov

www.trees.sc.gov

Make your community FIREWISE

FIREWISE COMMUNITIES

www.firewise.org

This brochure is produced by the SC Forestry Commission and funded by a grant from the USDA Forest Service. Both the USDA and the Forestry Commission are equal opportunity providers and employers.

FIREWISE SC

Disposal of Yard Debris

Protect yourself and neighbors... dispose of yard debris properly!

APPENDIX J: DISPOSAL OF YARD DEBRIS (CONT.)

Benefits of Debris Removal

Removing dead and dying debris from homes and yards is a great Firewise practice. It removes flammable material that can ignite from embers blown in from wildfires or other flame sources (outdoor grills, chimneys, legal debris burning, etc.).

Removal of debris also presents a more pleasing appearance to a well maintained yard and garden.

However, if not done properly, disposal of debris can create problems for you and your neighbors. Piles of yard debris left in wooded areas create more fuel for fires and can increase fire intensity and smoke related to fires. If dumped on neighboring property, there are legal issues.

Options for Disposal

- **Grinding and/or composting**
  Both can provide material for soil improvement or mulch for garden beds.
- **Hauling debris off the property**
  Local solid waste collection/ convenience centers may take yard debris. (Check local and county ordinances).

- **Burning**
  Consult your homeowner restrictions, local community rules, as well as local county ordinances before burning.
- Combining the removal with a **Firewise event** is a great way to help clean yards and have a recognized annual event. Debris can be collected and positioned at the road side for pickup or chipping by a local contractor.

Chipping debris for neighborhood use.

Laws

Outdoor Burning: The South Carolina Notification and Precautions law must be followed, and you must also comply with DHEC

A proper burn site has an adequate fire break, a means of control, and an individual with the burn until it is out.

regulations and local ordinances.

The law does not apply within any town or city limits. If outdoor debris burning is allowed in a neighborhood, the law requires a landowner to call the SC Forestry Commission, have an adequate break around the burning site, have an adequate means of control, and to stay with the fire until it is completely safe.

Toll-free numbers to call in each county for yard debris burning notification can generally be found near the front of most local phone books and online at **www.trees.sc.gov/fyard.htm**. The statewide number to report a wildfire is **1-800-777-FIRE**.

Burning of household garbage is prohibited by state law.