FIREWISE USA®
RESIDENTS REDUCING WILDFIRE RISKS

# FIREWISE USA® RECOGNITION PROGRAM
# COMMUNITY WILDFIRE RISK ASSESSMENT

## Prepared for Benbow
## Humboldt County, California

Prepared by
The Benbow Firewise Committee, Garberville Fire Chief,
CAL FIRE HUU Personnel, and the Humboldt Firewise Coordinator

*Completed April 2022*

# Contents

# Introduction

The national Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level. Any community that meets a set of voluntary criteria on an annual basis and retains an "In Good Standing Status" may identify itself as being a Firewise® Site. The Firewise USA® program is administered by NFPA and is co-sponsored by the USDA Forest Service and the National Association of State Foresters. While the NFPA administers this program, individuals and communities participate on a voluntary basis. The following community assessment is intended to be used by the Benbow Firewise Committee as a resource for creating a three-year wildfire safety action plan. The plan developed from the information in this assessment will be implemented in a collaborative manner and updated and modified every three years.

Funding for this assessment was provided by a grant from the California Fire Safe Council (CFSC) as part of the 2019 Grants Clearinghouse Fire Prevention Program. This State Fire Assistance grant is made possible by federal financial assistance provided to the CFSC from the United States Department of Agriculture (USDA) Forest Service.

# Benbow Firewise Wildfire Risk Assessment Overview

The Benbow Fire Safe Community developed the Firewise Committee with the objective of helping Benbow become more prepared for wildfire. On March 2nd, 2022, members of the Benbow Firewise Committee, the Firewise Coordinator, Garberville Fire Department, and CAL FIRE met to conduct a Community Fire Risk Assessment Tour. This tour took place throughout the Benbow Firewise area.

## Assessment Participants

**Craig Johnson**, Benbow Firewise Committee member and resident
**Tim Tietz**, Garberville Fire Chief
**Richard Barnick**, Garberville Fire Department Firefighter
**Jennifer Renner**, CAL FIRE HUU Fire Planning Captain
**Erik Bryant**, CAL FIRE Battalion Chief
**Brandon West**, CAL FIRE Defensible Space Inspector
**Tanner Speas**, Humboldt County Firewise Coordinator

During the Community Wildfire Risk Assessment, emphasis was placed on the Home Ignition Zone. The assessment team studied the challenges posed by fuel types, housing sites and materials, and other considerations that relate to mitigation of a large-scale wildfire event. The assessment participants identified common strengths enjoyed by the residents of Benbow, as well as identified conditions that could be modified to increase the area's level of wildfire readiness. The assessment team visited multiple residences within the community to conduct on-site investigations. In addition, the team studied the entire area to gain an overall sense of wildfire mitigation challenges and identify practical solutions.

## Objectives of the Assessment Tour

1. Gather information from a general site inspection of the Benbow Firewise Area that would be used to create a Community Fire Risk Assessment.
2. Identify projects that could potentially be included in the assessment recommendations, or the three-year action plan.
3. Note and photo document work that was already accomplished towards Firewise goals.
4. Note and photo document areas of specific concern.
5. Note and photo document fire suppression water resources (hydrants, standpipes, etc.)
6. Develop the prioritization order of future fuel reduction and home fire hardening goals.
7. Assist Garberville Fire and CAL FIRE in getting more familiar with the area.

Inform the community about the Humboldt County Community Wildfire Protection Plan (CWPP), particularly the Southern Humboldt Planning Unit Action Plan; the Benbow Fire Safe Community group; Firewise goals and objectives; and how they can get involved.

## Focused Observations

- General landscaping characteristics
- Common home construction types (i.e., materials used for roofs, siding, decks, etc.)
- Vulnerability of homes to embers, surface fires, and crown fires.
- Condition of the structures themselves.
- Immediate hazards within home ignition zones.
- Concerns presented by common/open space areas or adjacent public and private wildlands.
- Other hazards or characteristics required as part of the Firewise Program application.

## Humboldt County Community Wildfire Protection Plan (CWPP) Goals

This Community Wildfire Risk Assessment was developed with the intention to integrate with the Humboldt County (CWPP). The assessment detailed here represents a finer-scale effort, complementary to the countywide Risk Assessment included as Part 2 of the CWPP. During this assessment process, participants also maintained awareness of opportunities to support the following Humboldt County CWPP goals:

1. Wildfire ignition prevention: reduce human-caused wildfire ignitions.
2. Wildfire preparedness: increase community resilience and adaptation to wildfire.
3. Disaster preparedness: increase residents' ability to effectively prepare for and survive Wildfire.
4. Fire protection: support fire-protection services for people, property, communities, and Natural resources.
5. Restoration of beneficial fire: restore beneficial fire at the landscape scale.
6. Integrated planning: maximize integration of planning efforts to improve community and Ecosystem resilience to wildfire.

Furthermore, the CWPP recommends the establishment of Firewise Communities, and in Benbow in particular, among the Priority Actions of the Southern Humboldt Planning Unit Action Plan.

After the collection of the Benbow site observations and data, this assessment was drafted and collaboratively reviewed by the Benbow Firewise Committee, the Humboldt Firewise Coordinator, Garberville Fire Department, CAL FIRE, and representatives of the Humboldt County Fire Safe Council (HCFSC). The final review was offered to the Benbow residents through the Fire Safe Community organization.

# The Defined Benbow Firewise USA® Site

## The Community of Benbow, California

Benbow is a rural community located in Humboldt County, California. It is located 2 miles (3.2 km) south-southeast of Garberville, at an elevation of 440 feet (134 m). The Benbow area is located along the east side of the South Fork of the Eel River and mostly south of the East Branch of the Eel River. According to the US Census Bureau, there are 199 occupied housing units in Benbow with a population of 422 as of the 2020 census, up from 321 from the 2010 census. The housing units are almost entirely single-family homes. There are no large apartment complexes in Benbow. The Benbow Historic Inn and the Benbow KOA Holiday cabins, campground, and RV park are notable businesses with larger occupancies. The Benbow Area is surrounded by large parcels of privately owned land that is comprised of similar topography and vegetation. It is mostly unoccupied though, and access is limited. The parcels that are occupied are used for ranch lands and/or agriculture. Plans to treat these areas would be the responsibility of the landowners.

## The Firewise Community Boundary

The Benbow Fire Safe Community organization developed the Benbow Firewise Committee. Through a collaborative decision-making process, the committee delineated the Benbow Firewise Boundary. This boundary was intended to define the area that is included in this Wildfire Risk Assessment and the subsequent Three-Year Action Plan. It was decided upon strategically because of the geographic qualities that unify this community. Ingress, egress, and access to US Highway 101 are important parts of this definition.

The Benbow Firewise boundary encompasses 2,967 acres and 202 dwellings. This differs from the census count due to the Firewise Boundary including more rural homes outside of the Benbow census area. There are 413 parcels of privately owned land, ranging in size from .03 acres to 156.2 acres. The average lot size is 7 acres. This data was calculated using GIS mapping.

## Benbow Firewise GIS Mapping

A GIS map of the Benbow Firewise area was created to delineate the Firewise Boundary, to facilitate the assessment process, and to collect pertinent geographic information. This map is available (on ArcGIS online) to the Firewise Committee, the fire response personnel, and to the residents. It could continue to be utilized for future planning and documentation. It is also available as a georeferenced PDF for Avenza map viewing and data collection.

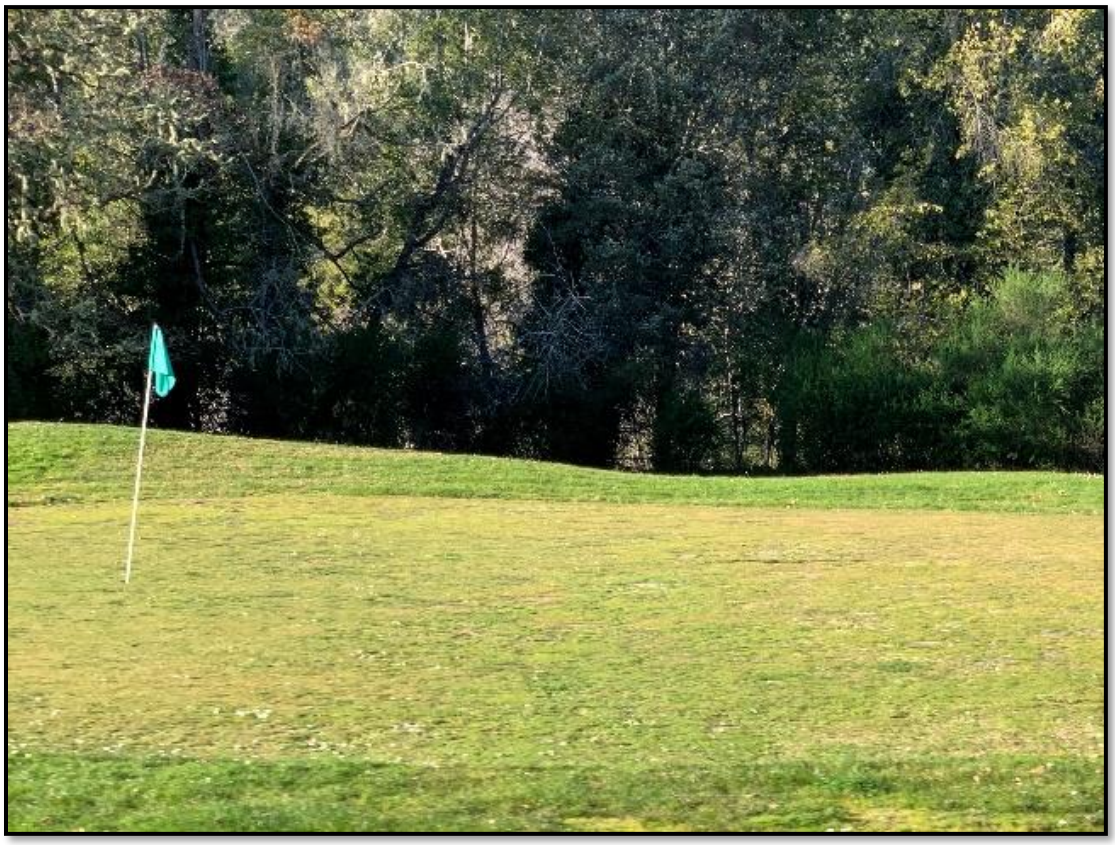
**Map Links:** AGOL Firewise Map Group  Benbow Firewise Avenza Map

## The Benbow Environment

The environment of the Benbow area is largely defined by the proximity of the South Fork of the Eel River and the steep surrounding forested hills. US Highway 101 runs along the river and is the main access to the area. The residential area starts at the river valley and climbs a large hill that is sloped southwest and northeast and becomes Reed Mountain. Along this hill are steep forested canyons and grassland meadows.

The vegetation is a mix of forest, brush, and grassland. The dominant tree species are Douglas fir, tanoak, live oak, madrone, and bay laurel. Brush species include *Ceanothus*, manzanita and whitethorn acacia. Scotch broom (*Cytisus scoparius*) and French broom (*Genista monspessulana*) are invasive bushes that are both very prevalent and highly flammable. There are both expanses of wild grassland and highly cultivated lawn in the mid and lower geo-region. The Benbow golf course takes up a considerable amount of the lower geo-region.

The Benbow area experiences a drastic range of weather conditions over the annual season. Wet, cold, and stormy winter months are followed by hot and dry summers. This leads to vegetation growth that then dries out due to low seasonal moisture. The prevailing winds are influenced by the river valley and the adjacent hilly terrain to create unique air current patterns that affect the Benbow area.



Here is an example of the extreme fuel load differences between the highly landscaped grass golf course and the surrounding densely forested wildland.

## Firefighting and Emergency Response Resources

The Garberville Fire Department is the closest local emergency response agency. The Benbow area is not currently included in the Garberville Fire Protection District but is in the district's "Goodwill Response Area." The process to include Benbow in the Garberville Fire Protection District has been initiated and is expected to be completed in 2023. Once this has been completed, the plan is to establish a station with multiple fire apparatus in the Benbow area. This could decrease response time and increase initial attack capabilities.

Benbow is in the California State Responsibility Area (SRA). In the SRA, CAL FIRE is tasked with wildfire protection and emergency response. The Garberville CAL FIRE station is located 3.6 miles north of Benbow with a response time of approximately 10 minutes.

## Description of Local Wildland Fire Characteristics

Fire intensity and spread rate depend on the fuel type and vegetation condition (live/dead), the weather conditions prior to and during ignition, and the topography.

- Fine fuels like dry grasses ignite more easily and spread faster with higher intensities than coarser fuels such as dead wood. For a given fuel, 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 fire 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 configuration 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 and intensity.

An example was given by multiple residents of a historic fire that started along a lower region road that quickly raced up the grassland and threatened both possible routes of egress for the upper residents. This incident was controlled without loss, but was seen as a learning experience, and one to prepare for in the future.

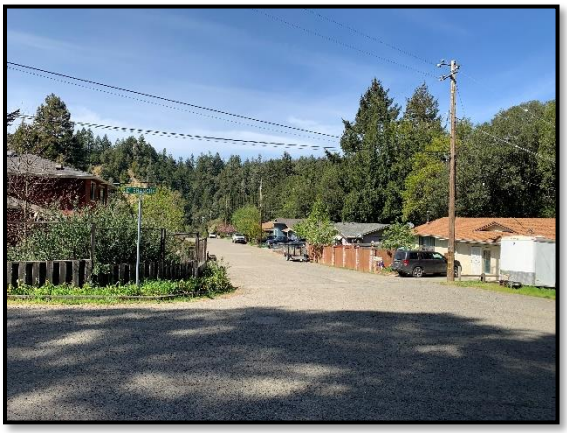
Benbow is in a wildland-urban interface (WUI) environment. The wildland–urban interface is a zone of transition between wilderness and land developed by human activity. This is an area where a built environment meets or intermingles with a natural environment. Human settlements in the WUI are at a greater risk of catastrophic wildfire in large part due to the higher volume of combustible vegetation. This dynamic also increases the complexity of fire suppression and evacuation efforts. The "fire triangle" of ignition refers to the three required components of fire: fuel, oxygen, and heat. The reduction of fuel is the element that we can affect most around the Home Ignition Zone.

We must recognize the other two components as well, understanding that wind and high temperatures are major contributors to destructive wildfire.

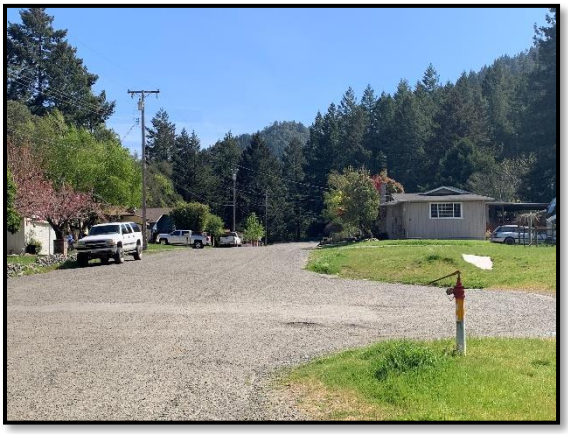
## Wildland Fire Threat from the Northeast

The threat of a catastrophic wildfire is likely to be wind driven, and specifically from a northeastern wind. The Benbow area is affected by atmospheric high pressure that is built over the Great Basin, then turns into a wind that cascades over the Sierra Nevada Mountains. As this wind is drawn towards lower pressure areas, it increases in temperature and decreases in humidity. The result is a strong, dry, hot wind that blows from the northeast. This is a consistent component of the fires that have burned over 200 acres in the Southern Humboldt region.

In this potential scenario, the fire threat is likely to be in the form of fire embers that are being carried by the wind, potentially from a large distance away. The picture to the left shows the view from the upper region of Benbow towards the northeast. The East Branch South Fork Eel River flanks the Benbow Firewise Boundary and could function as a potential fire control line. This is unlikely to stop wind driven embers though.



A northeastern wind-driven fire event that was able to jump the East Branch would threaten the entire Benbow area. It would be difficult and dangerous to fight the fire on the steep and forested eastern facing hills. The next likely control line attempt would be E. Blue Rock Road. The areas of Benbow that would face this potential assault are the Benbow Drive residential neighborhood, a privately owned area of steep forested hillside, a relatively flat grassy area that is home to the local rodeo grounds, and the Palomino residential neighborhood, also a relatively flat meadow area. As seen in the photos to the right, the Palomino area has decent access and fire water resources, as do the rodeo grounds. The Benbow Drive area would be harder to defend because it is located on the northeast side of the East Branch. The privately-owned, steep and forested hillside would also be more difficult to defend.



# Benbow Home Ignition Zone Observations

The Firewise USA® program places importance on addressing the "Home Ignition Zone." The Home Ignition Zone (per NFPA) consists of a dwelling and the first 100 feet or more around the home, depending on slope and vegetation. Proactive mitigation in this area will have the greatest impact on reducing the potential for ignition from wildfire embers or other ignition sources. Conversely, a well-maintained Home Ignition Zone can prevent fires in and around the home from spreading into surrounding wildlands. It is delineated into three categories: the Immediate Zone, the Intermediate Zone, and the Extended Zone. These are also referenced as Zone 0, Zone 1, and Zone 2. The Home Ignition Zone is an important part of this assessment in that it is where the prioritization starts for direct actions that residents can take to prepare for wildfire.

## Immediate Zone (Zone 0)

The Immediate Zone or Zone 0 is the home and the area 0-5' from the furthest attached exterior point of the home. The recommendation is that this should be a non-combustible area, meaning that all combustible materials are absent from this area. Science tells us this is the most important zone to take immediate action on as it is the most vulnerable to embers. It is generally recommended that residents begin with this zone then move into the surrounding landscaping within the Immediate Zone.

It was observed that greater than 75% of the dwellings in the Benbow Firewise area have non-combustible Class A roofs made of either metal, tile, or asphalt shingles. Approximately 50%-74% of the homes have non-combustible siding that is either concrete board, stucco, or metal. The remainder of the homes are mostly sided with wood, either as a shiplap, board and batten, or T1-11 exterior plywood siding. A large percentage (greater than 75%) have multi-paned windows. Greater than 75% of the homes observed had metal gutters, and greater than 50% of those seemed to have cleaned and maintained the debris from the gutters and roof. Very few of the homes observed (less than 25%) have non-combustible soffits with screened vents, and most of the homes have wooden attachments (decks, arbors, etc.). Also, only about 25%-50% have non-combustible skirting around the base of the dwelling. Of the homes that were observed, it appears that only about 25% had sufficiently created a combustion free area in the Immediate Zone of 0-5 feet.

The following are the NFPA general recommendations to treat this zone:

- Clean roofs and gutters of dead leaves, debris and pine needles that could catch embers.
- Replace or repair any loose or missing shingles or roof tiles to prevent ember penetration.
- Reduce embers that could pass through vents in the eaves by installing 1/8-inch metal mesh screening.
- Clean debris from exterior attic vents and install 1/8-inch metal mesh screening to reduce embers.
- Repair or replace damaged or loose window screens and any broken windows Screen or box-in areas below patios and decks with wire mesh to prevent debris and combustible materials from accumulating.

- Move any flammable material away from wall exteriors – mulch, flammable plants, leaves and needles, firewood piles – anything that can burn. Remove anything stored underneath decks or porches.

## Intermediate Zone (Zone 1)

The Intermediate Zone or Zone 1 is the area 5-30' from the furthest exterior point of the home. This zone is treated with landscaping and hardscaping. By employing careful landscaping, the resident can create breaks that can help influence and decrease fire behavior.

In Benbow, it was observed that 50%-74% of residents had treated the Intermediate Zone. There was evidence that fuel reduction education had influenced homeowners to clear brush and ladder fuel in this zone and the Extended Zone (Zone 2). Many of the dwellings had started with site clearing in this zone. The hazards that exist in this area are primarily from highly flammable landscape plants (like bamboo, lavender, rosemary etc.), wooden auxiliary structures such as tool sheds, or the lack of cleaning out dead plant matter. Another concern is the occurrence of large wildland trees that are 30' away, but due to the geography and large limbs, they still pose a threat in the case of a crown fire. These trees often pose technical difficulties and are often very expensive to remove.

The following are the NFPA general recommendations to treat this zone:

- Clear vegetation from under large stationary propane tanks.
- Create fuel breaks with driveways, walkways/paths, patios, and decks.
- Keep lawns and native grasses mowed to a height of four inches.
- Remove ladder fuels (vegetation under trees) so a surface fire cannot reach the crowns. Prune trees up to six to ten feet from the ground; for shorter trees do not exceed 1/3 of the overall tree height.
- Space trees to have a minimum of eighteen feet between crowns with the distance increasing with the percentage of slope.
- Tree placement should be planned to ensure the mature canopy is no closer than ten feet to the edge of the structure.
- Trees and shrubs in this zone should be limited to small clusters to break up the continuity of the vegetation across the landscape.

## Extended Zone (Zone 2)

The Extended zone extends from 30 feet to 100 feet out from buildings, structures, decks, etc. or to the property line, whichever is closer. Through careful landscaping and fuel reduction, the intensity of wildfire can be reduced. The goal here is not to eliminate fire but to interrupt fire's path and keep flames smaller and on the ground.

Approximately 50% of the homes had treated vegetation in the Extended Zone (30-100 feet). This work requires continuous maintenance due to brush regrowth and the fact that tanoak, a common tree species in the area, aggressively sprouts back into a dense flammable bush after being cut. After fuel reduction work, if the area is opened to sun exposure, it will re-grow as heavy brush,

grass, vetch, and young tree sprouts. Therefore, it is often better to choose a shaded fuel break method, which creates the lowest continual maintenance requirement. The area that connects the extended zone and the private driveway is important for egress but is often overlooked. It should also be noted that the 100' zone often offers limited protection due to the size and quantity of the surrounding forest fuel loads. This is especially true when there are steep slopes close to the dwelling, as is often the case.

The following are the NFPA general recommendations to treat this zone:

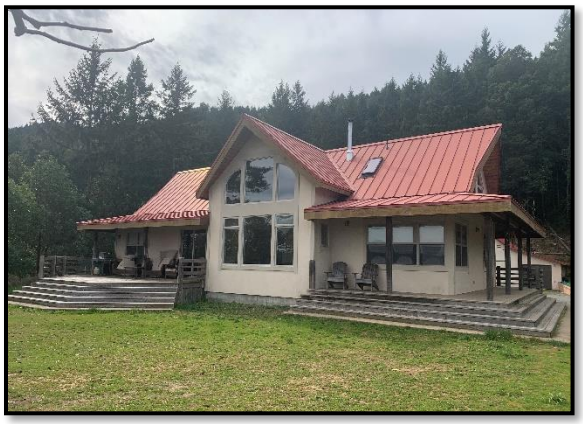
- Dispose of heavy accumulations of ground litter/debris.
- Remove dead plant and tree material.
- Remove small conifers growing between mature trees.
- Remove vegetation adjacent to storage sheds or other outbuildings within this area.
- Trees 30 to 60 feet from the home should have at least 12 feet between canopy tops.*
- Trees 60 to 100 feet from the home should have at least 6 feet between the canopy tops.*

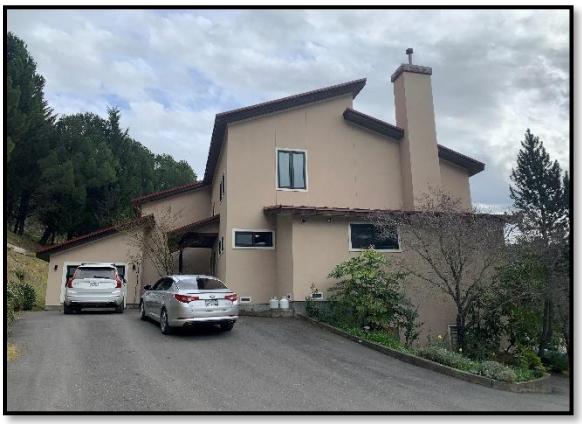
**The distances listed for crown spacing are suggested based on NFPA 1144. However, the crown spacing needed to reduce/prevent crown fire potential could be significantly greater due to slope, the species of trees involved and other site-specific conditions. Check with your local forestry professional to get advice on what is appropriate for your property.*

Due to these observations, it can be concluded that non-combustible skirting, and soffits are the most needed home hardening improvements in the Benbow area. It is also clear that extra emphasis on the Immediate Zone, and the complete clearing of combustibles out of this zone should be also a high priority.

## Successful Firewise Modifications

When adequately prepared, a house can likely withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both Firewise and compatible with the area's ecosystem. The Firewise Communities/USA program is designed to enable communities to achieve an elevated level of protection against WUI fire loss even as a sustainable ecosystem balance is maintained. A homeowner/community must focus attention on the home ignition zone and eliminate the fire's potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low-intensity fire that could occur around it.





Examples of successful fire hardened homes in Benbow.

# Benbow Community Observations

## Ingress and Egress

While conducting the assessment tour, both residents and fire response personnel noted that evacuation routes and ingress and egress in general are of major concern. In the upper region of the Benbow area there is a road loop that is created by the connection of E. Blue Rock Road and Red Rock Road. The assessment tour followed this route because it is the main ingress and egress for a substantial portion of the Benbow residents who live "up the hill." Along this loop are smaller access roads and private driveways. In the long-term planning for fire safety, the vegetation along these two main roads should be aggressively treated. The condition of the fuel loads along this loop will have major influence on the safety of the fire response personnel coming to suppress fire, as well as the safety of the residents in an emergency evacuation situation. Long-term goals could include connecting the residents personal Extended Zone and driveway fuel reduction work to the primary evacuation routes.

## Address Signage

Garberville Fire and CAL FIRE personnel agreed that there was an almost complete lack of consistent address signage, especially in the upper region. This makes it more difficult to find the scene of an emergency call, and that increases the response time. This could be the difference between a successful initial attack where the fire is suppressed while it is still small, and a fire that grows into a large, potentially catastrophic complex. It also has the potential to affect medical response with life and death consequences.

## Risk of Electric Line Fire

There is a risk of fire being ignited due to trees and branches falling on electric lines in the lower region of Benbow. This risk is increased during high wind events. There are areas where the tree limbs are very close to the electric lines. Residents voiced concerns about the lack of maintenance that seemed to be happening to keep the trees trimmed to avoid an electric fire. This is an issue that could benefit from the organizational efforts of the Benbow Fire Safe Community and the Firewise Committee.

## Fire Suppression Water Resources

One objective of the Community Wildfire Risk Assessment tour was to gain knowledge of the available water resources for fire suppression in the Benbow area. The available water resource GIS files (from CAL FIRE) were added to the Firewise GIS map. This was then used as a georeferenced Avenza map on the assessment tour to collect "pins" that mark the coordinates of water resources that were observed along the route. This was not completed exhaustively and is likely to be redundant work that is in process by CAL FIRE, but it did show proof of concept of the potential for crowdsourcing local logistical information. It could be useful for residents and local emergency response for planning purposes and for double-checking information.

Water resources in the Benbow area can be split into two categories, municipal and private. The lower region is mostly served by the Del Oro Water Company and has municipal fire hydrants.

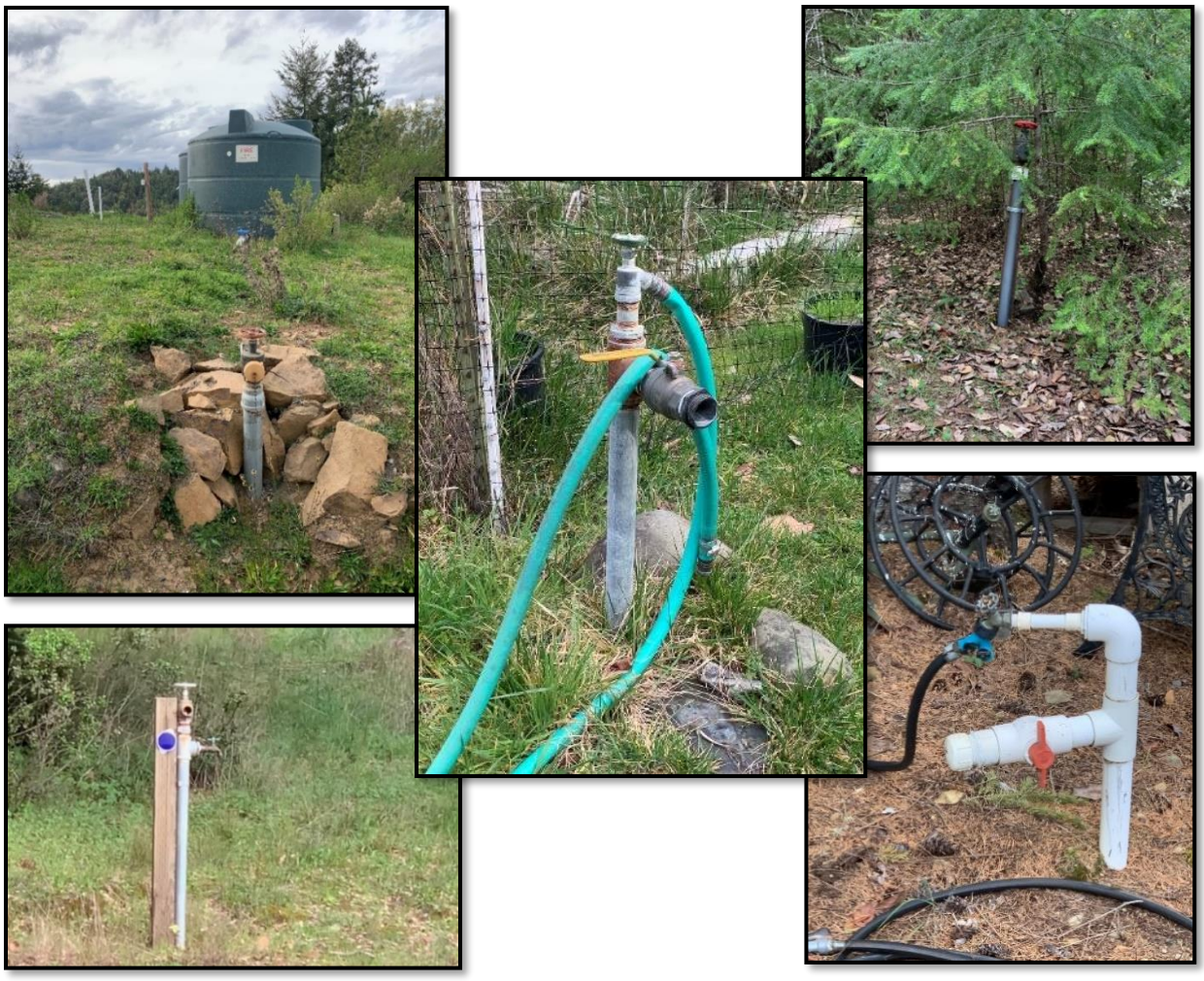
The upper region is mostly private water systems with water tank storage. In the upper region, roughly 25%-50% have water resources available for fire suppression.

The main observations about water resources had to do with making privately owned water systems more available to fire response personnel. Residents expressed interest in being prepared to offer water resources. They had questions about how to create effective fire "standpipes" and where to place them. An educational outreach program aimed at informing residents on how to install proper fire standpipes and how to use home fire suppression systems to effectively suppress small fire ignitions.

The Garberville Fire Chief acknowledged that water resources are among the district's highest priorities to identify and develop in the upper region. This is a very achievable goal and is consistent with SRA Fire Safe Regulations.

## Examples of Private Fire Suppression Standpipes

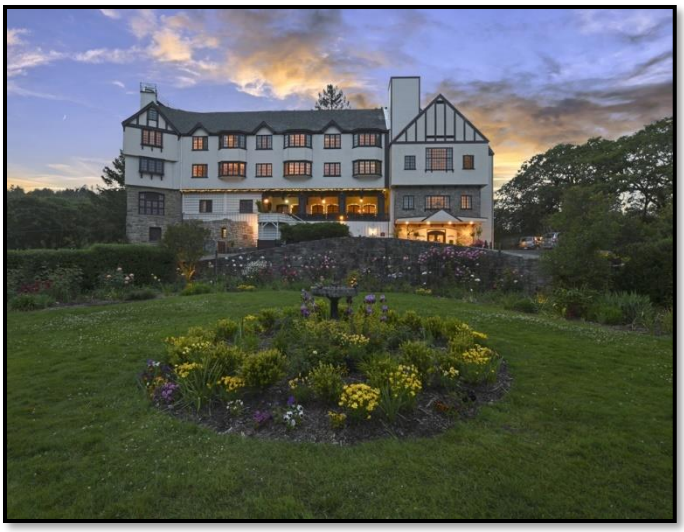
As seen here, there are many ways to make water available to fire response personnel. The two most important features are: at least 1 ½" pipe and valve ending in a brass 1 ½" NST / NH Fire Hose Thread fitting.



# Community-Identified Local Assets

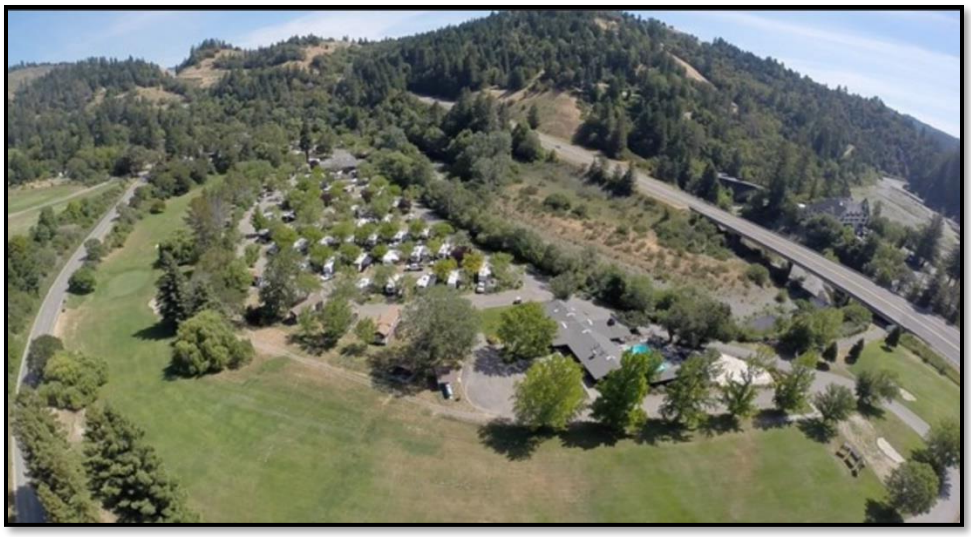
The Benbow area includes local assets of cultural value. These include the Benbow Inn, the KOA Holiday Campground, Cabins, and golf course, and the Daishu-In West Buddhist temple.

The Benbow Inn is a historic building that was constructed with a distinctive Tudor design and opened in 1926. It is on the National Register of Historic Places and a proud member of Historic Hotels of America. This historic inn hosts special events including weddings, attracts tourists, and is a local employer. As such, this building and complex is recognized as a high value asset in the Benbow community. Wildfire protection of this asset is therefore a priority.



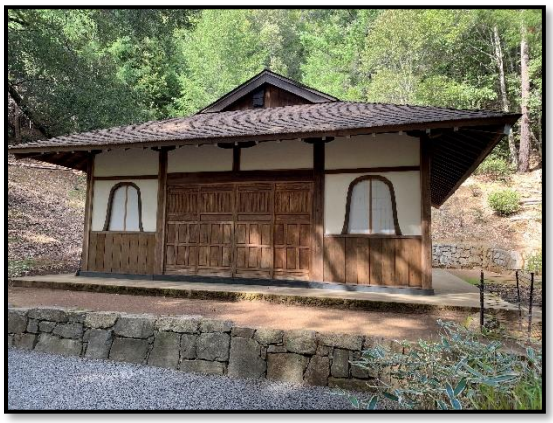
The historic Benbow Inn.

The KOA Holiday Campground, Cabins, and golf course is another high value asset in the Benbow community. This is a multiple building complex and includes a pool. It is surrounded by the golf course and has municipal fire hydrants available for fire suppression. Wildfire protection of this asset is also a priority.



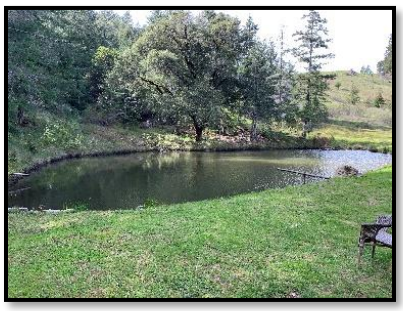
The KOA Holiday Campground, Cabins, and golf course.

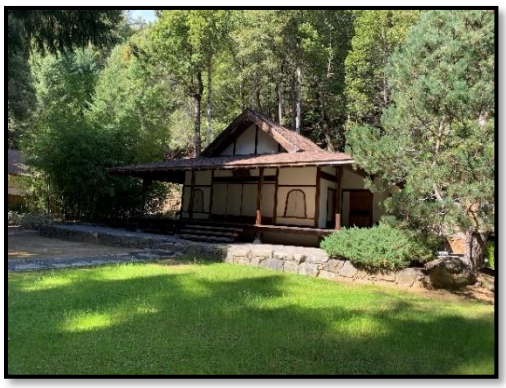

Daishu-in West is a Rinzai Zen Buddhist temple located in the upper region of Benbow along E. Blue Rock Road. A branch of the Myoshin-ji sect of Japanese Rinzai Zen Buddhism, the temple was founded in 1994 by the abbot of Daishu-in in Kyoto, Soko Morinaga Roshi. Daishu-in West offers the traditional Rinzai monastic schedule to all visitors. Daishu-in West has a Zendo (meditation hall), and Hondo (Dharma Hall) built using traditional Japanese joinery, a traditional Japanese bath, and well-maintained grounds. Under the leadership of Karl Bareis as head carpenter and the support of the Sangha in America and Japan, the Hondo was completed in 1996. Construction of the Zendo was completed in early 2002. Soko Morinaga Roshi and Daijo Osho are interred at Daishu-in West.

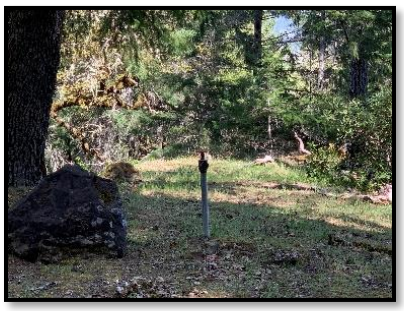


The Daishu-in West temple is a unique and valuable community asset in Benbow. The methods of construction of the temple buildings create a special atmosphere that cannot be created in other ways. The rural location was very intentionally picked for the serene quality that it offers. This also increases the risk of wildfire loss. This community asset is available to all who choose to appreciate it, and is financially supported through alms.

The temple buildings have rock and concrete foundations that are immaculately cleaned of all flammible debris. The walls are stucco and solid wood. The roofs are all non-combustible material. Rice paper window and sliding door coverings pose ignition risk. During the risk assessment, fire-resistant material coverings were discussed. There are two ponds and a water storage tank system with a fire standpipe. It is noted that the second abbot, Shaku Kojyu, is a member of the Benbow Firewise committee, and is proactively working towards protecting the temple, and Benbow from the risks of wildfire.







# Benbow Community Wildfire Risk Summary

During the assessment process it was observed that over 75% of the homes visited had non-combustible roofs, double-paned windows and metal gutters or no gutters at all. It was also observed that of these homes, 50-74% had cleaned and maintained their roofs and gutters. There is also a high percentage of non-combustible siding present in Benbow. These are positive attributes that show some significant success in structure fire hardening.

However, improvements could be made regarding non-combustible skirting and soffits. These two important fire hardening factors are present in a minor percentage (25-50%) of the dwellings visited. Less than 20% of the homes observed had no wooden attachments like decks, pergolas, and arbors. This clearly shows that the priorities for structure fire hardening in the Benbow area are skirting, soffits and non-combustible decking. As to the clearing of combustible materials in the three zones, the 0-5' Immediate Zone of most homes is the area that needs the most work with only 25-50% being adequately treated. This improvement can often be made by the resident as part of basic home maintenance and without the need for expensive contractors. Overall, the dwellings in the Benbow area are of average to above average condition. As homes are improved and remodeled over time, there will be considerable opportunity for fire hardening, especially regarding skirting and soffits. The landscaping in the home ignition zones looks to have been affected by prior fuel reduction education but could be refined and developed using the more in-depth analysis offered by the Humboldt County Fire Safe Council's Home Risk Assessment.

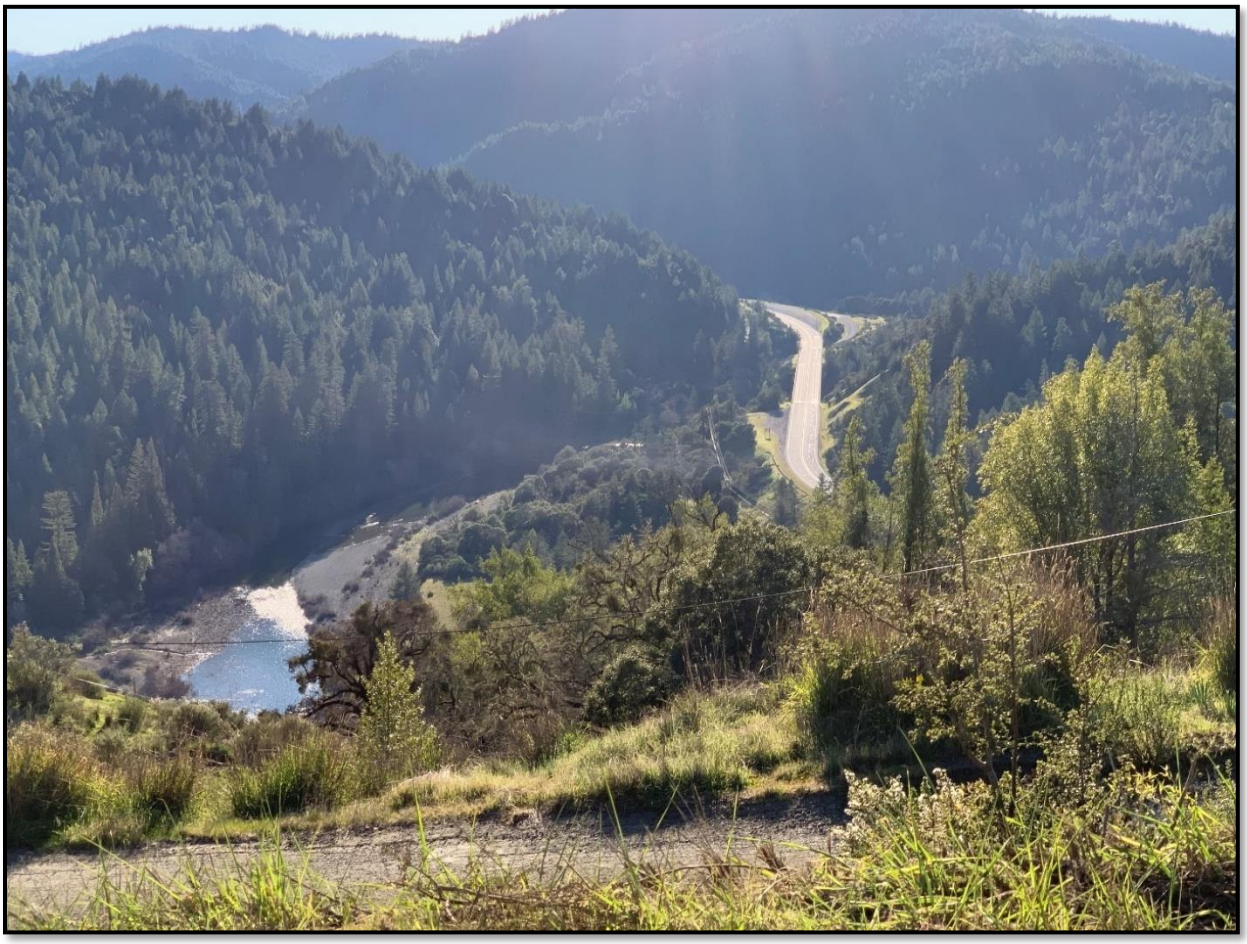
Benbow has considerable risk of wildfire damages to human habitation and possibly, loss of human life. The wildfire risk is increased due to the wildland-urban interface. The local weather conditions add to the wildfire risk, especially in the late spring, summer, and fall. This is the "fire season" due to the low humidity and heat that enable the conditions to be inclined towards ignition and fast spread. As the grass dies and dries out (observable by the transition from green to brown), it ignites easily, and the fire can move extremely fast. The larger vegetation continues to dry as well, as the ground water becomes less available, and the dead material loses moisture stored over winter.

The fact that the Benbow community is located next to the US Highway 101 is both a benefit for the potential need for evacuation, and a risk in that it could be a source of ignition. The lower region also poses an increased risk of ignition due to higher levels of human activity. If a terrain driven fire is ignited at the lower regions of the Benbow area and travels up towards the mountainous area, egress could be limited. This is also a consideration for any ignition in the lower region and is an example of the extra danger faced by the dwellings in the upper hills.

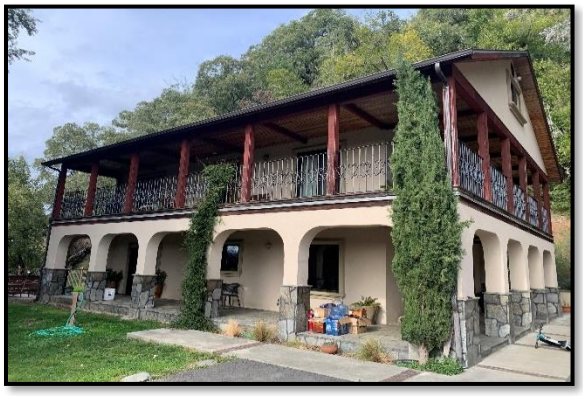
As is true for the entire Southern Humboldt area, there is also considerable risk of a large-scale northeastern wind driven fire impacting the Benbow area. This could start as a fire in Garberville or along Alderpoint Road. The condition of the overall wildland that the residential areas are interfaced with needs considerable fuel reduction to reduce the chance of catastrophic crown fires.

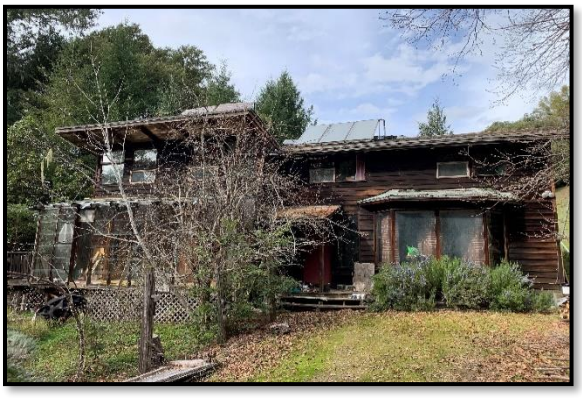
# Photographic Observations

The following photos were taken on the Community Wildfire Risk Assessment Tour on March 2nd, 2022. Photos of residences are used with permission from the homeowner.

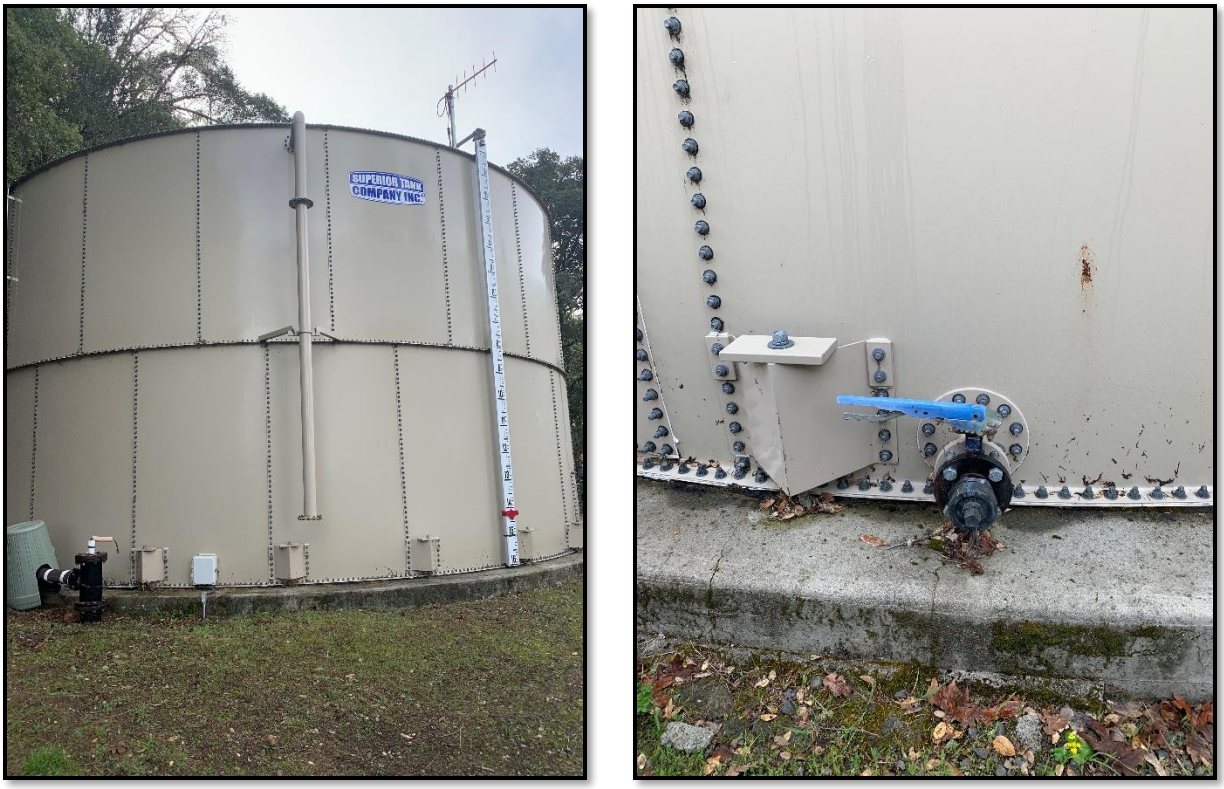


The view from the upper region of US Highway 101 and the Eel River. Notice the steep topography.

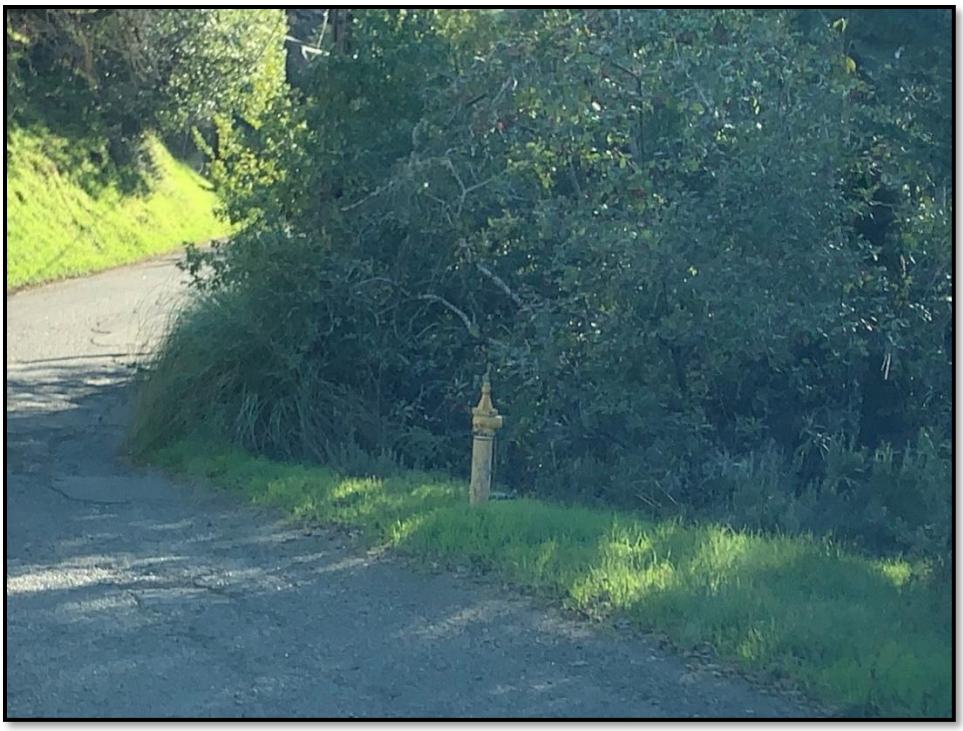




Examples of two residential buildings in Benbow.

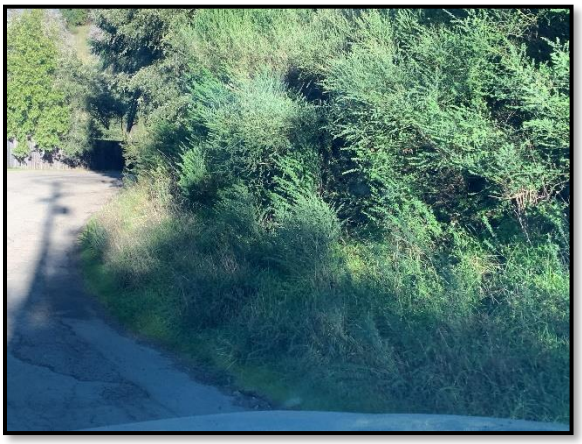



Benbow municipal water infrastructure located in the lower region



Municipal fire standpipe along Blue Rock Road.

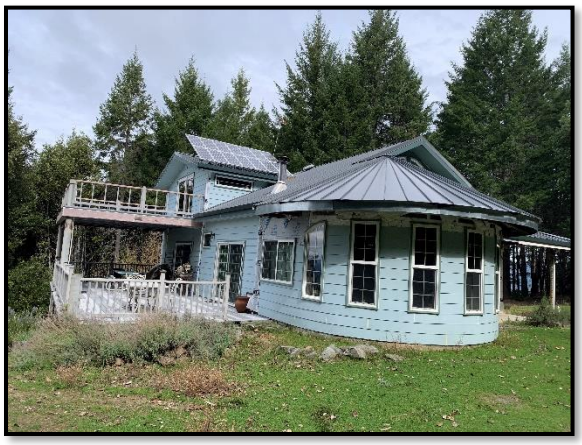
View of E. Blue Rock Road.

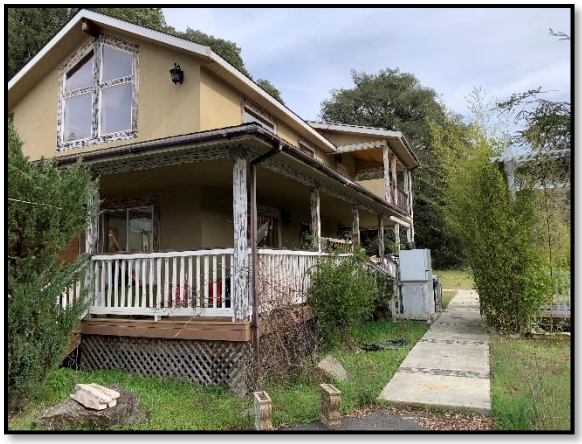


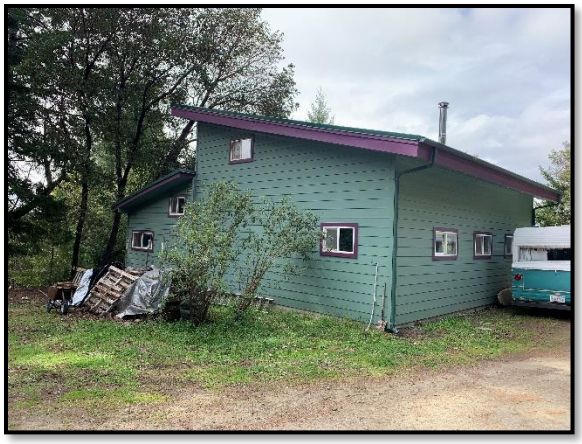
Views of French broom and other bushes growing along E. Blue Rock Road.

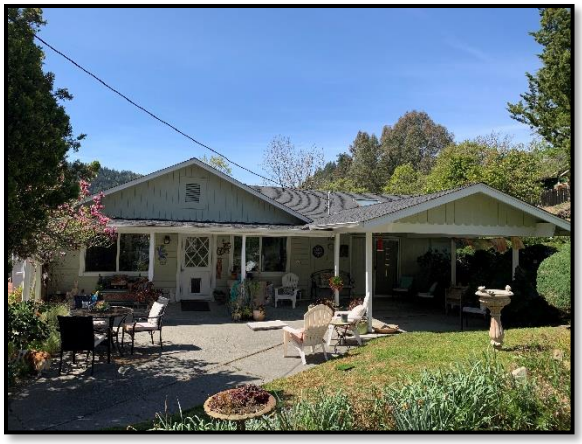
## Photos of Benbow Dwellings

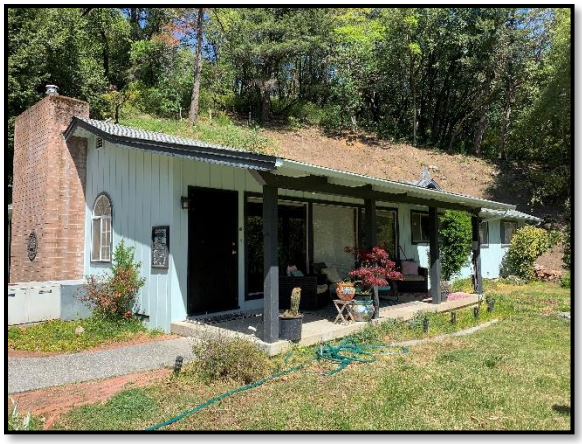
Examples of the various levels of home hardened dwellings.





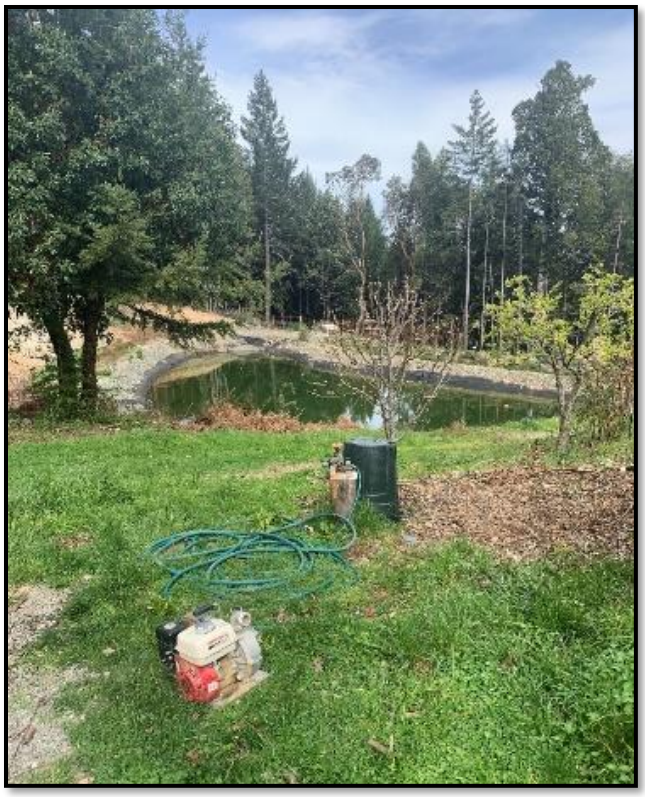


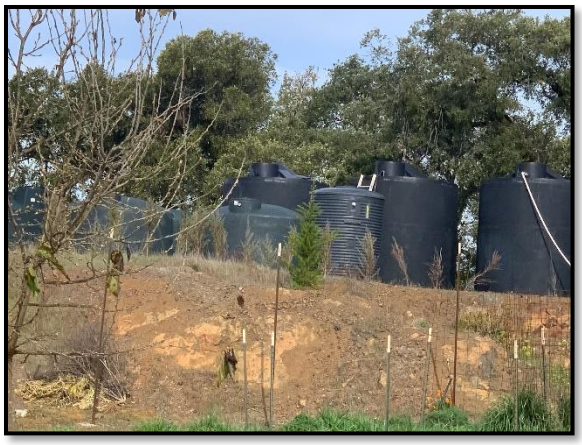


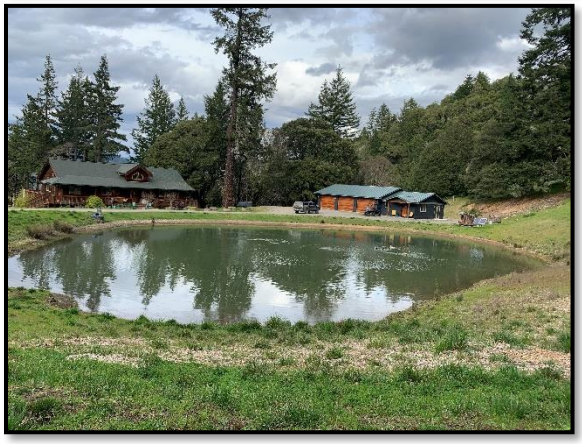


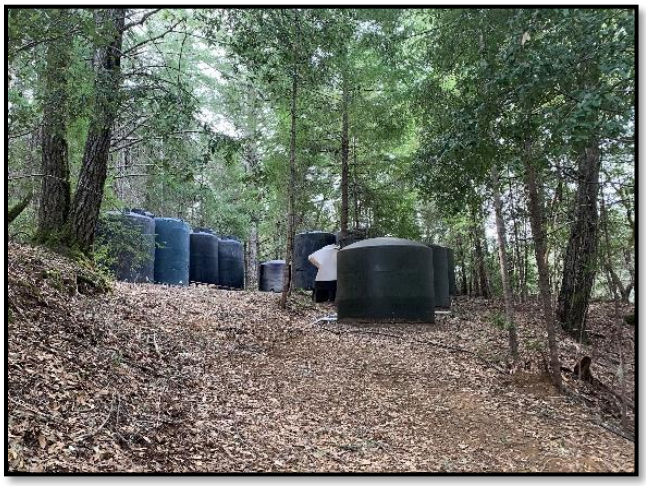
## Water Resources in the Upper Region

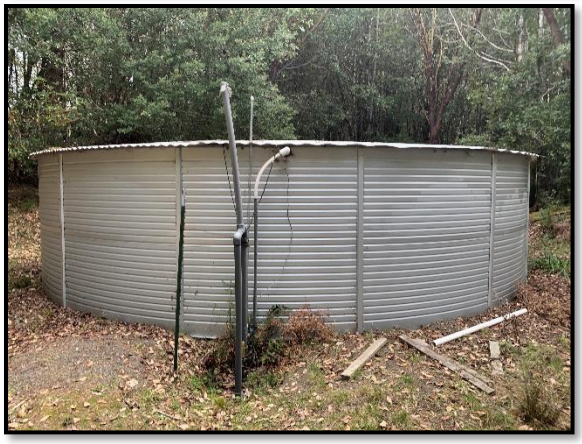
Photos of private water storage.









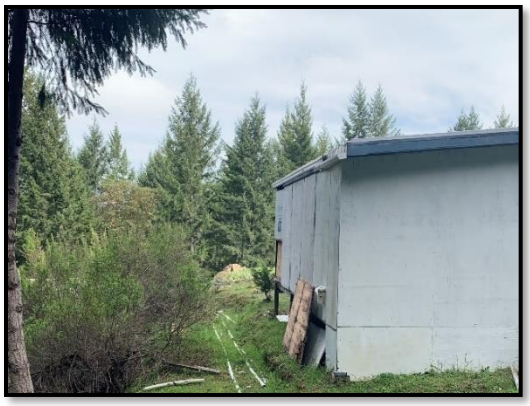


# Community Wildfire Risk Assessment Recommendations

Through the process of creating this Community Wildfire Risk Assessment, the Firewise Committee has collected the following recommendations to facilitate the prioritization of possible action items in the three-year plan to be developed.

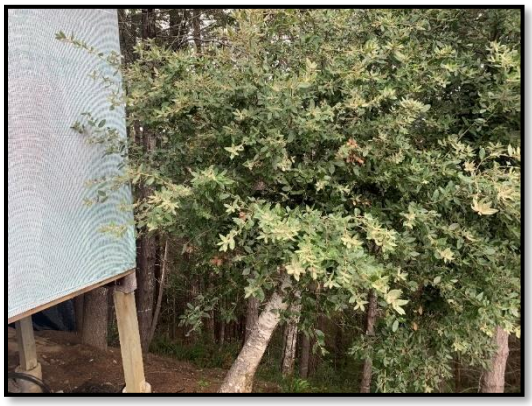
## Home Ignition Zone Recommendations

**Prioritize treatment of the Immediate Zone of the Home Ignition Zone.**



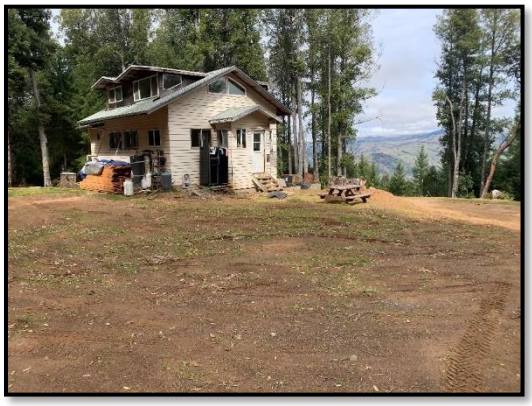
Educational outreach is likely to be the best mechanism for achieving this objective and should clearly communicate to residents that the 0'-5' area around their dwellings should be cleared of all combustible materials. This includes landscaping, mulch, building materials, and other flammable items.

**Actively encourage residents to enclose their foundations with non-combustible skirting, and to install non-combustible soffits with vent screening.**



It was observed in multiple circumstances that buildings had non-flammable roofing and treated vegetation but were built on post and pier foundations with no skirting. This could allow embers to land underneath the building and then to ignite the floor structure. This is especially true if there are combustible materials under the structure. Re-used corrugated metal could be an affordable and effective material to use for skirting. Concrete board is another example of a non-combustive material that could be used.

**Promote fuel reduction and fire-resistant landscaping in the Intermediate Zone.**



Some homes are in the process of aggressive zone treatment. There were inquiries into landscaping methods that will continue to be fire resistant. The development of an event or program that educates residents on landscaping options after they have cleared could help reduce the replacement of wild vegetation with highly flammable landscaping.

**Promote the importance of water storage and standpipes for fire-suppression. Establish a "Blue Dot" recognition program.**

Although many residents did have water resources available for fire response personnel, it is recommended that water storage and standpipes continue to be promoted. This was expressed as a highest-level priority by the local fire agency. A focused educational outreach program would help residents design and implement their home fire suppression water systems. These private systems should then be documented for fire response personnel use. It is also recommended that every resident have and identify with a blue reflective dot, a dedicated water storage tank for fire suppression purposes, and that all water storage is equipped with a fire standpipe for quick access.

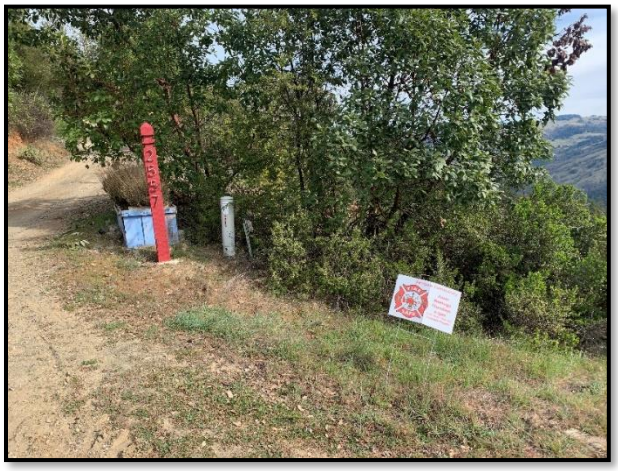
**Direct fuel reduction efforts to protecting fire-suppression infrastructure.**

On multiple occasions, there were fuel loads that pose fire damage risk to important infrastructure, like water tanks, often in the Intermediate Zone. Trees should be limbed up to reduce ladder fuel, and brush eliminated, around all fire suppression infrastructure to reduce the chance of wildfire damaging it.

**Connect the Extended Zone treatment to the driveway ingress / egress.**

Safe egress in the case of a wildfire event could be impacted by the fuel along a resident's private driveway. This will also affect whether the fire suppression personnel will feel that it is safe enough to defend the residence. Therefore, it is recommended that after the Home Ignition Zone is treated, the fuel along the resident's driveway also be addressed. This area can be treated in a similar way as the Extended Zone. Remove flammable brush and small trees to remove fuel continuity, and then remove the limbs of larger trees up to at least 6'. This is to reduce what is called "ladder fuel." This treatment should be a minimum width of 8' from each side of the driveway.

## Benbow Community Recommendations



**Develop the accuracy and completeness of the Benbow address system.** A systematic approach to ensuring that each residence is properly and effectively identified with an address sign will help fire response personnel reduce their response time during an emergency. This could affect the outcome of inevitable uncontrolled fires, whether it is suppressed as a small fire or grows to a larger more destructive fire.

**Organize E. Blue Rock Road and Red Rock Road Loop fuel reduction project to fire safe evacuation routes.** It is recommended that the residents of Benbow research and plan a community wide, grant funded fuel reduction project, potentially addressing the ingress/egress fuel loads to ensure safe evacuation routes and better firefighting capacity. The E. Blue Rock Road and

Red Rock Road Loop is an important escape route for the majority of the upper region residents. These two roads are also the primary access for emergency response.

**Develop a fuel reduction project on the northeast region with the objective of preparing for a northeastern wind driven fire event.**

It has been recognized that a northeastern wind driven wildfire event could pose a significant threat to the Benbow area. It is therefore recommended that attention be addressed to the northeastern area of Benbow to proactively prepare for this possibility. Seen below is a satellite image facing the area that would be the first to be impacted by this hypothetical event. The privately owned area of steep forested hillside located between Jump-Up Court, and Greycliff Road (seen in the middle of the image below) would be a priority fuel reduction location to reduce the opportunity for wind driven embers to ignite a spot fire. It is also recommended the Benbow Drive neighborhood be considered for a project location since it is on the north side of the East Branch South Fork Eel River and ignition of those residences would increase the threat to the rest of Benbow.

The privately owned area of steep forested hillside would be a priority fuel reduction location to reduce the opportunity for wind driven embers to ignite a spot fire.

# Recommendation Summary

## Home Ignition Zone

- Prioritize treatment of the Immediate Zone of the Home Ignition Zone.
- Actively encourage residents to enclose their foundations with non-combustible skirting, and to install non-combustible soffits with vent screening.
- Promote fuel reduction and fire-resistant landscaping in the Intermediate Zone.
- Promote the importance of water storage and standpipes for fire-suppression. Establish a "Blue Dot" recognition program.
- Direct fuel reduction efforts to protecting fire-suppression infrastructure.
- Connect the Extended Zone treatment to driveway ingress / egress.

## Benbow Community

- Develop the accuracy and completeness of the Benbow address system.
- Organize E. Blue Rock Road and Red Rock Road Loop fuel reduction project to fire safe evacuation routes.
- Develop a fuel reduction project on the northeast region with the objective of preparing for a northeastern wind driven fire event.
- Continue organization of the Fire Safe Community and the Firewise program.
- Educational outreach events to inspire and organize the resident community.

## Important Considerations

Benbow residents are reminded to be conscious of keeping high-intensity fire more than 100 feet from their homes. It is important for them to avoid fire contact with their structures. This includes embers and firebrands. Remember that, while the risk of wildfire cannot be eliminated from a property, the potential for negative impacts can be greatly reduced.

Homeowners are also reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zone does. The Firewise Communities/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.

Vegetation management in high-fuel areas is recommended to improve both forest health and ecological sustainability. The reduction of the volume of vegetation will have two benefits. Not only will it mitigate the fire hazard, but it can also be accomplished in a way that will reflect an interest in maintaining a healthy ecosystem during periods of extended drought. Even with home ignition zones potentially providing fire protection, a wildfire in Benbow will create a significant volume of embers and firebrands. To lower the ignition potential of homes, residents should inspect their roofs

and the ground immediately adjacent to their homes for fine fuels and remove them regularly. Fine fuels include leaves and needles, grasses, and other dry vegetation.

### Community Partnership

As the saying goes: "it takes a village." Each resident and property owner who volunteers and invests is not only helping themselves but is also contributing to the greater good and risk reduction for the whole community. By adopting the Firewise Communities/USA program and continuing the great work the community has already accomplished, residents can create a balance that will allow them to safely co-exist with wildfire while maintaining the natural forest setting that the residents desire. Most people have chosen to live in Benbow in part because of the quality of the environment, climate, wildlife, and aesthetic appeal. It is important for the residents to understand the implications of the choices they are making regarding fire safety. These choices, such as home siting, building materials selection, landscaping, and proper maintenance of the home, directly relate to the ignitability of their home and surrounding environment during a wildfire event.

## Next Steps

After reviewing the contents of this assessment and its recommendations, the Benbow Firewise Committee in cooperation with the Garberville Fire Department and CAL FIRE will create agreed-upon, area-specific solutions to the Firewise recommendations and create a three-year action plan.

Assuming the assessment area seeks to achieve national Firewise Communities/USA recognition status, it will integrate the following standards into its plan of action:

- Sponsor a local Firewise committee, which maintains the Firewise Community program and status.
- Complete an assessment and create a three-year plan from which it identifies agreed-upon, achievable local solutions.
- Invest a minimum of one volunteer hour or equivalent investment annually per dwelling in its Firewise Communities/USA program.
- Observe a Firewise Communities/USA Day each spring that is dedicated to a local Firewise project.
- Submit an annual report to Firewise Communities/USA. This report documents continuing participation in the program.

**The Firewise program uses recognition as an incentive and an inspiration for community planning and action. Let it be recognized that this has already achieved results!**

# BENBOW FIREWISE BOUNDARY MAP