

Petrolia

COMMUNITY ASSESSMENT



Introduction

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community assessment is intended as a resource to be used by the Petrolia residents for creating a wildfire safety action plan. The plan developed from the information in this assessment should be implemented in a collaborative manner, and updated and modified as needed.

Data collection for this assessment took place in the winter of 2010/2011. Those assisting with the data collection were as follows:

- Jennifer Hayes, Lower Mattole FSC and the Mattole Restoration Council
- Chris Gilda, Petrolia Volunteer Fire Department and the Mattole Restoration Council
- Seth Zuckerman, Mattole Restoration Council
- Andrew Nash, Mattole Restoration Council
- Cybell Immit, Humboldt County Community Development Service (CDS) and the Humboldt County FSC

Chris Gilda, Andrew Nash and Cybelle Immit have completed the “Assessing Wildfire Hazards in the Home Ignition Zone” training provided by the National Fire Protection Association (NFPA) and Firewise.

Definition of the Home Ignition Zone

Petrolia is located in a wildfire environment. Wildfires will happen--exclusion is not a choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of Petrolia. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

A house burns because of its interrelationship with everything in its surrounding home ignition zone---the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire's path by clearing a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

Included in this assessment are observations made while visiting Petrolia. The assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Petrolia residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. This zone principally determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings within 100 to 150 feet.

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

DESCRIPTION OF THE SEVERE CASE WILDLAND FIRE CHARACTERISTICS THAT COULD THREATEN THE AREA

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

- Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. 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.

There are many anticipated local fire events. Local volunteer firefighters have expressed concerns about home generator fires, fire spreading into local eucalyptus forest areas, and fire in the downtown area where there is the most dense clustering of homes.

SITE DESCRIPTION

Petrolia, and the surrounding area have high levels of wildland fuels, hazardous topographic conditions, earthquakes, and a history of wildland fires. Specific fire ignition risks for Petrolia include lightning strikes, unattended campfires, structure fires spreading into wildland areas, power lines, and generators. Petrolia also has camping and recreational opportunities and experiences some seasonal tourism. However there is a year round core population of about 400 people.

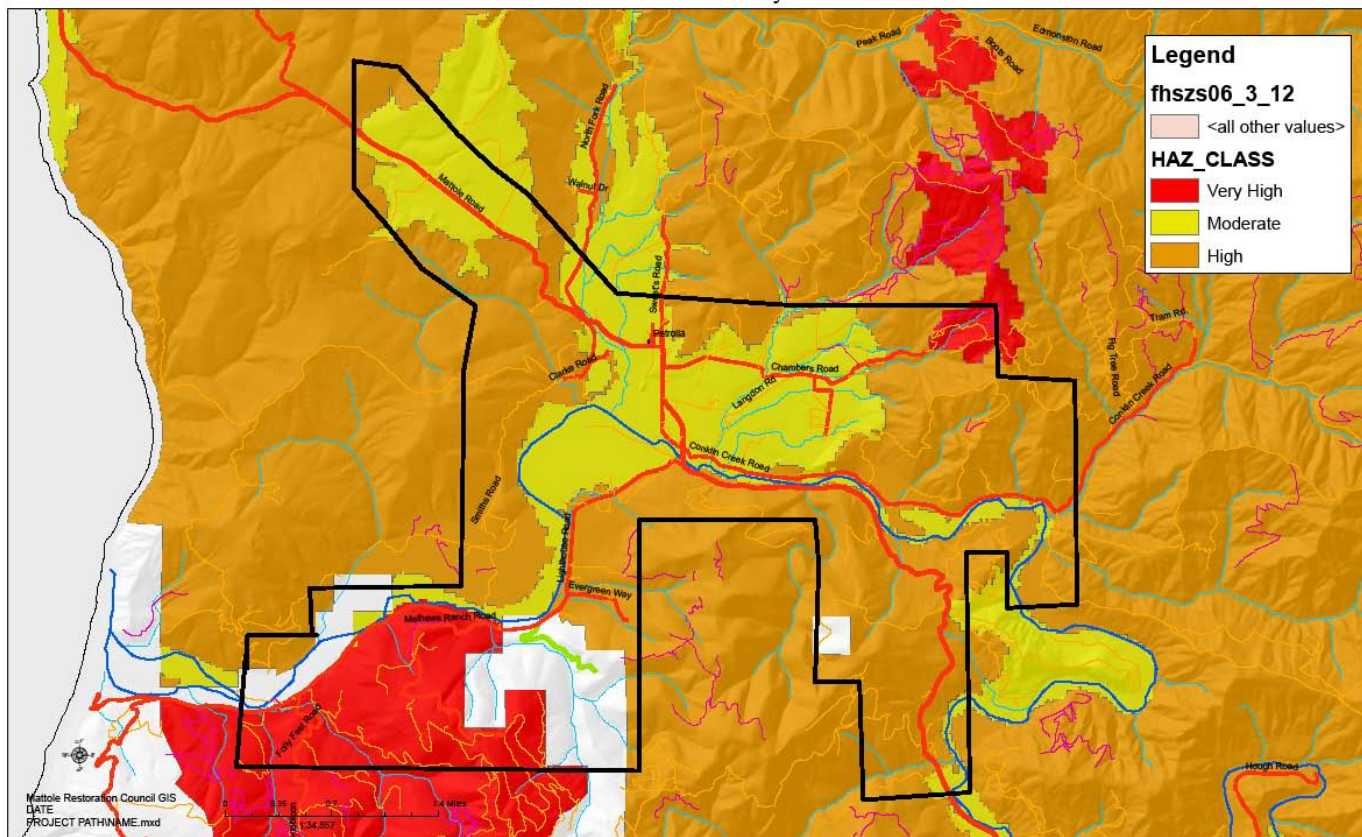
The history of Petrolia began with Native American bands of the Mattole tribe inhabiting the area. White settlement began in the late 1850's, mainly with agricultural, ranching and tanbarking. From the 1940s to the 1970s, intensive timber harvest provided great expansion of the area, in population and jobs, as well as hundreds of miles of poorly built roads. Many of these roads are still in use today.

Today there are a few small private timber harvest operations nearby. The current economy of the area relies on local small businesses and nonprofits, the local school, the general store, a few operating remnant orchards, specialty agriculture, and many commute to jobs in the Eureka area.

High to moderate fire hazard severity dominates the Petrolia Firewise Area in this FRAP modeling map. Fire risk is determined by combining data on Fuel Rank and Fire Rotation for a given severe weather condition in each area or "strata" of the Mattole.

Layout: Mattole Restoration Council GIS

Petrolia Firewise Area Fire Hazard Severity Zones - FRAP



In the past decade there have been several large wildfires in the Mattole watershed. The Honeydew Fire of 2003 burned 13,778 acres and cost 13.6 million dollars in suppression efforts (USDOI, 2004). Most of the fires over the last 50 years have started from lightning strikes in drought conditions.

The characteristic terrain around Petrolia is mountainous with steep valleys, formed from tributaries to the Mattole River. In general, the upland areas are dominated by Oak and Fir, with shrubs and grass on the hotter south sloping hills, ridges and valleys, and the river valley areas are dominated by hardwood trees such as alder, willow and cottonwood.

Petrolia experiences moderate summers. The town is 4 miles from the mouth of the Mattole River and the Pacific Ocean. The majority of the Petrolia population, of about 400 people, lives in a few rural neighborhoods, and some live in very remote areas not associated with a neighborhood. Many homes in Petrolia are very spread out into parceled-off, retired timber lands. There is one campground in the Petrolia assessment area, the BLM Mattole Beach Campground. The center of Petrolia consists of a small general store, a post office, the Mattole Valley Community Center, the PFD hall, the Mattole Valley School, and the downtown neighborhood.

The Mattole River flows through Petrolia. The Mattole Watershed is an extremely geologically active and unstable watershed. Most of the lower river area is choked with sediment, which reduces its capacity to support fish and other aquatic organisms. Catastrophic fire poses a dangerous threat to the remaining river habitat, with potential for massive sedimentation.

The Mattole watershed is located in one of the most geologically active places in North America. Three tectonic plates meet offshore, the North American, the Gorda, and the Pacific, forming the Mendocino Triple Junction. A network of faults produces many earthquakes, including the large and devastating events of 1952 and 1992. Rates of uplift in the BLM's King Range are among the highest anywhere in North America. Both of the large earthquakes in recent history led to structure fires in the area. In fact, the Petrolia store and firehouse were both burned to the ground during the 1992 earthquake. Fire preparedness is a crucial part of earthquake preparedness for the Petrolia area.

Local fire protection is provided by the Petrolia Volunteer Fire Department (PVFD), the operational wing of the Petrolia Fire Protection District, and Cal Fire. PVFD responds to both structural and wildland fires. The volunteers are trained and outfitted for both types of fire response. Mutual Aid agreements are in place with neighboring jurisdiction. All local departments respond to calls inside and outside their response areas and district boundaries.

The Lower Mattole Firesafe Council (LMFSC) works to reduce risks and minimize damage to life, property, and the environment from wildfire, by coordinating efforts to fund and implement fire-safe education and projects in the Lower Mattole. The Goals and Objectives of the LMFSC are to:

1. Reduce wildlands fuel load in and around our neighborhoods, thus reducing the danger to life, property, and the environment.
2. Increase availability of water resources for wildland firefighting by strategic placement of water tanks and ponds.
3. Assist local firefighting agencies in creating, maintaining, and distributing a Firefighter's Information Atlas.
4. Promote healthy forest and rangeland ecosystems by reduction of hazardous fuels.
5. Promote creation of shaded fuel breaks in appropriate locations.
6. Educate and assist private landowners in prioritizing and implementing fire-safe practices.
7. Enhance communication between our community and firefighting agencies.
8. Implement the Lower Mattole Fire Plan with ongoing monitoring and evaluation.
9. Assist those in the community who need help fire-safing their homes and property.

ACCOUNTS OF FIRES & LESSONS LEARNED

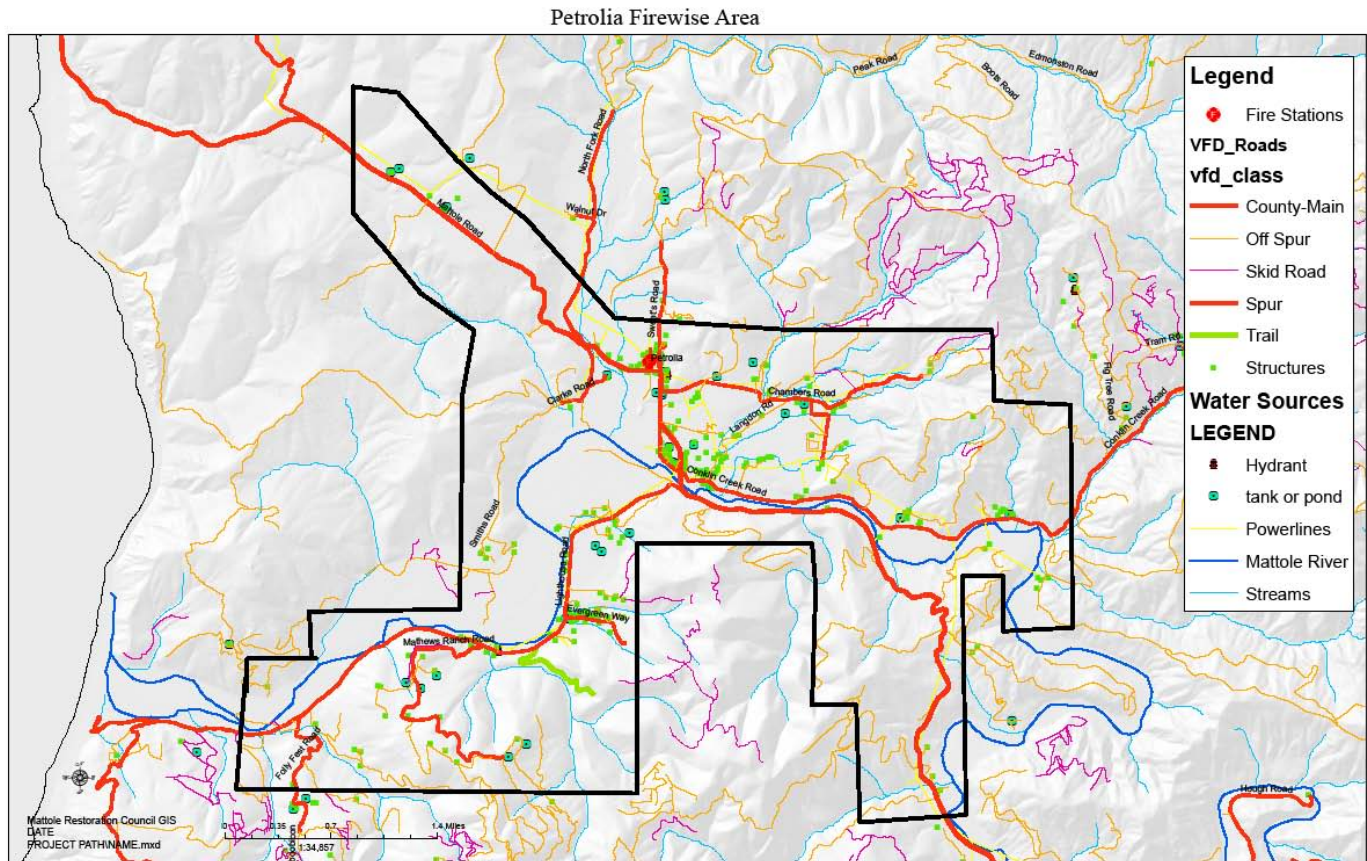
Many local residents have encountered fire in the Petrolia area. Some have worked hard to save their homes from a spreading fire, while others have seen smoke nearby and have wondered what to do next. While speaking to local residents, who live near where the last fire in the Petrolia area burned, comments included relief that the fire was contained within a short time, gratitude that Cal Fire was available and not fighting another fire at the time, and many were surprised by how close the fire seemed, because of how the smoke was traveling, even though it was many miles away. Some local residents mentioned feeling surprised, because though one may be prepared for a fire, when a fire doesn't happen for a while, it is easy to forget that it could happen at any moment.

Accounts from local volunteer firefighters about a midsummer fire in downtown Petrolia (known as the Chambers Incident) highlight the importance of defensible space and water capacity. In this case, weather conditions were influencing the fire with strong evening winds, which increased the rate of spread for the fire. This fire was in a small wildland urban interface (WUI) neighborhood. The Honeydew Volunteer Fire Company joined the attack and increased the water capacity which ultimately helped to save a home. This was the first time the Fire Atlas was used for fighting a fire. While the Atlas proved to be helpful it also inspired some of the revisions that have been made in the new edition. Defensible space varied greatly throughout the neighborhood. This limited the ability of firefighters to safely protect many homes.

Accounts from local volunteer firefighters about an accidental fire in downtown Petrolia reveal the importance of proper fire safety and planning, of clearance and defensible space, and communication during a fire. This fire got out of control quickly in the middle of a hillside of scotch broom. There was trouble with the fire engine's water pump and difficulty managing hose lays through the scotch broom, which lead to difficulty keeping up with the rate of spread of the fire. Citizen's with bulldozers and a Cal Fire Air attack helped bring the fire under control. Communication with non firefighting personnel operating bulldozers was difficult, yet effective.

Accounts from local volunteer firefighters about an escaped burn pile reveal the importance of proper burn pile clearance. The burn pile escaped because of improper clearance and spread though light fuels. The fire moved slowly enough for firefighters to keep up with piss packs and hand tools, and the fire was put out quickly.

ASSESSMENT PROCESS – The community assessment took place over the course of two different days. On January the 10th, 2011, representatives from the County of Humboldt, PVFD, the Mattole Restoration Council (MRC) and the Lower Mattole Fire safe Council (LMFSC) did an initial community assessment in Downtown Petrolia. Later, on January 27th, 2011, a community assessment covering the remaining firewise areas in Petrolia took place over the next week, with representatives from the MRC, the PVFD, and the LMFSC. The community assessment template was reviewed and maps and satellite images were used to plan the tour of the area. The assessment team drove around the community documenting observations of hazardous conditions as well as good examples of firewise practices.



IMPORTANT CONSIDERATIONS

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.

Three issues to support:

- 1- Petrolia is surrounded by steep mountain sides, with heavy fuel loads, many of which are owned by private individuals who do not have the means to maintain them. This is a major threat to many homes and community assets.



- 2- Many roads are not maintained properly to allow access to firefighting apparatus, nor are they labeled with address or water storage. It has become apparent that some residents do not know what their home address is, and in some cases what the official name of the road is. A few homemade address signs like this were observed in the area, however this address sign does not face the road it is referencing.



- 3- Petrolia is very rural. When additional firefighting help is needed, it takes 1.5 hours for Cal Fire to get to Petrolia from Fortuna. There are two roads in and out of Petrolia. All of the roads have proven treacherous and cross through many high fire hazard areas, and could become easily impassible.

OBSERVATIONS AND RECOMMENDATIONS

Flammable debris next to structures:

The assessment team observed homes with flammable debris in direct contact with structures, including fire wood piles, fencing, scrap wood and leaf debris. These materials can easily ignite from falling embers and radiant heat, and can lead to a structure fire. Residents should remove these flammable materials from around homes and other structures.



Leaf litter and moss growth on roofs and in gutters:

Leaf litter and moss growth on roofing was observed, to some degree, on nearly every home and structure. This material can easily ignite from falling embers. Fires that start on a roof easily spread to other parts of a structure. Cleaning roofs and gutters is a simple step all residents need to take to reduce their risk of a structure fire. This should be one of the first steps taken when preparing for fire season in the Spring, or when a fire is threatening the area.

Flammable siding and roofing:

The assessment team observed that many homes in the area have wood siding and some wood roofing. Flammable roofs are a top cause of home loss in urban wildland fires, because embers can travel through the air from miles away, then land and ignite a roof. In overlapping home ignition zones, flammable roofs can jeopardize homes nearby. Replacing flammable roofs is a major project, requiring much time and money. Awareness about flammable roofing needs to be improved in the local community. A fire resistant roof is one of the most important investments a homeowner can make to improve the survivability of a home during a wildfire. Anyone working on new home and structure construction should use fire resistant roofing.

Flammable siding was also observed on many homes in the area. Many of the homes in the Petrolia area are either original homes from the turn of the century to the 1950's, or they are homes build during the more recent homestead era of the 1970's till the 1990's. In the later case these homes are usually rough structures made of almost entirely wood. Replacing siding with fire resistant materials also requires a large investment of time and money. Fire resistant materials should be considered with any new construction. If fire resistant



materials cannot be used, or if roofing and siding cannot be replaced, then it is all the more important to maintain the surrounding home ignition zone and especially keeping the roof and gutters free of debris as well as the area just around the perimeter of the home.

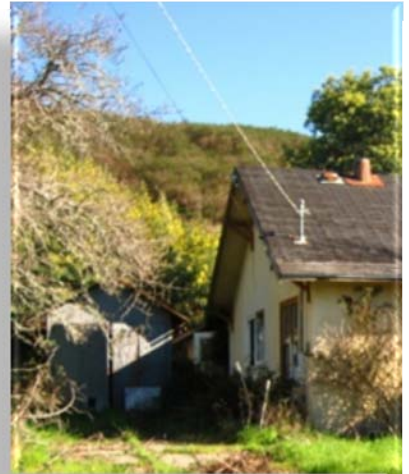


Fuel storage and generators use:

Many homes use a generator as their main source of electricity. Grid power can go out for days at a time during storms, earthquakes and other disasters. Such events often leave many residents running generators. Fuel storage, generator misuse, and generator malfunction have caused fires in the past, and this threat continues. Properly storing fuel, as well as the safe use and placement of generators is a very important step in fire prevention and protection. More community awareness is needed to help residents with this.

Abandoned homes and absentee landowners:

Many properties are owned by absentee landowners. These properties often go neglected, and become overgrown with high fuel loads. Many of these properties are adjacent to other properties where home ignition zones are well maintained. However, because of the neglect of the absentee landowners, there is still a high fire danger for the neighbors. Absentee landowners should find local help to keep their properties fire safe. Maintaining defensible space is hard work for even the most dedicated property owner but its vitally important, not only for one's own property, but for that of the neighbors and the community at large.



8) 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 a high 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. The following photographs were taken in [name of site] and are examples of good firewise practices.



Defensible space around a home, with a clearly marked address number visible from the road

Many landowners and renters work very hard to maintain their home ignition zone. It is always an ongoing project, and every little bit of progress helps.

Road Signs and street numbers

Many landowners have figured out their address number from the county, and have made a variety of street address signs. Most of the county roads are labeled with street signs, and some private roads are also labeled.



Fuels reduction along roads and near neighborhoods

Many landowners have worked on reducing fuels around their properties and along private roads. While some have done this work on their own, others have received assistance from the FLASH program. (More details about FLASH on the next page.)

Fire Water Storage Tanks

Water storage is crucial to have on hand in the case of a fire. Many landowners and neighborhoods have invested in fire water storage.



Fire adapted Landscapes and Safe Homes (FLASH)

FLASH is a program funded by the USDA Forest Service, administered by the County of Humboldt and locally implemented by the Mattole Restoration Council and the Lower Mattole Fire Safe Council. This program helps Mattole landowners with fuel reduction by reimbursing them a share of the cost associated with managing hazardous vegetation around their homes, along access routes, and high risk areas on their property. Over the entire Mattole watershed area over 50 acres have been completed and landowners have agreed to complete 90 more acres by the end of 2011.

(Before)

(After)



9) NEXT STEPS –

After reviewing the contents of this assessment and its recommendations, the Lower Mattole Firewise Board in cooperation with the Petrolia Fire Department will determine whether or not it wishes to continue seeking Firewise Communities/USA recognition. The Firewise Communities/USA representative will contact the Firewise Board representative by [date] to receive its decision.

If the site assessment and recommendations are accepted and recognition will be sought, the Lower Mattole Firewise Board will create agreed-upon, area-specific solutions to the Firewise recommendations and create an action plan in cooperation with the PDF.

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 board, task force, committee, commission or department that maintains the Firewise Community program and status.
- Enlist a WUI specialist to complete an assessment and create a plan from which it identifies agreed-upon, achievable local solutions.
- Invest a minimum of \$2.00 annually per capita in its Firewise Communities/USA program. (Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose.)
- 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.

Petrolia 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 firebrands. The assessment team recommends the establishment of a ‘fire free zone’, allowing no fire to burn within ten feet of a house by removing fuels located there. It is a bad idea for fire to touch a house during a wildfire. Remember that, while wildfire cannot be eliminated from a property, it can be reduced in intensity.

Homeowners are reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zones does. They should identify the things that will ignite their homes and address those first.

Weather is, of course, of great concern during wildfire season. At such time as fire weather is severe, homeowners should remember not to leave flammable items outside. This includes rattan doormats, flammable patio furniture, firewood stacked next to the house, or other flammables.

Contact Information for key participants involved in the development, review, and editing of this assessment:

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