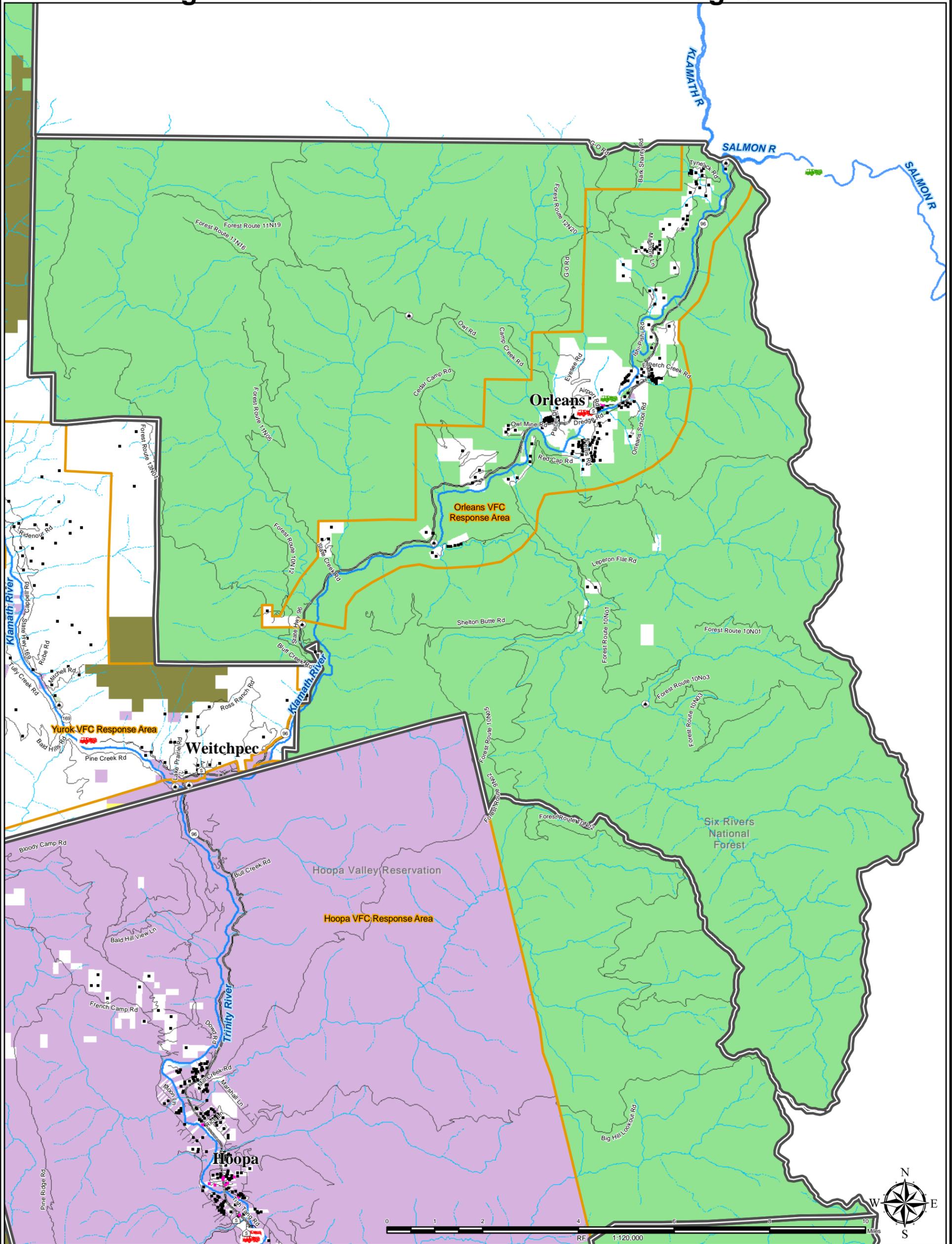
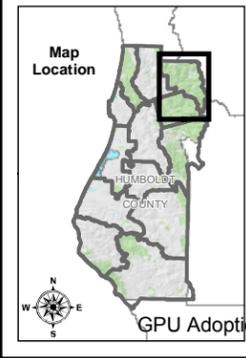


Figure IV.3-1 East Klamath Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station
 - Six Rivers Fire Station
- Hospitals and Clinics**
 - Hospital/Medical Center
 - Red Cross
- Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership**
- AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
- Cities

October 23, 2017

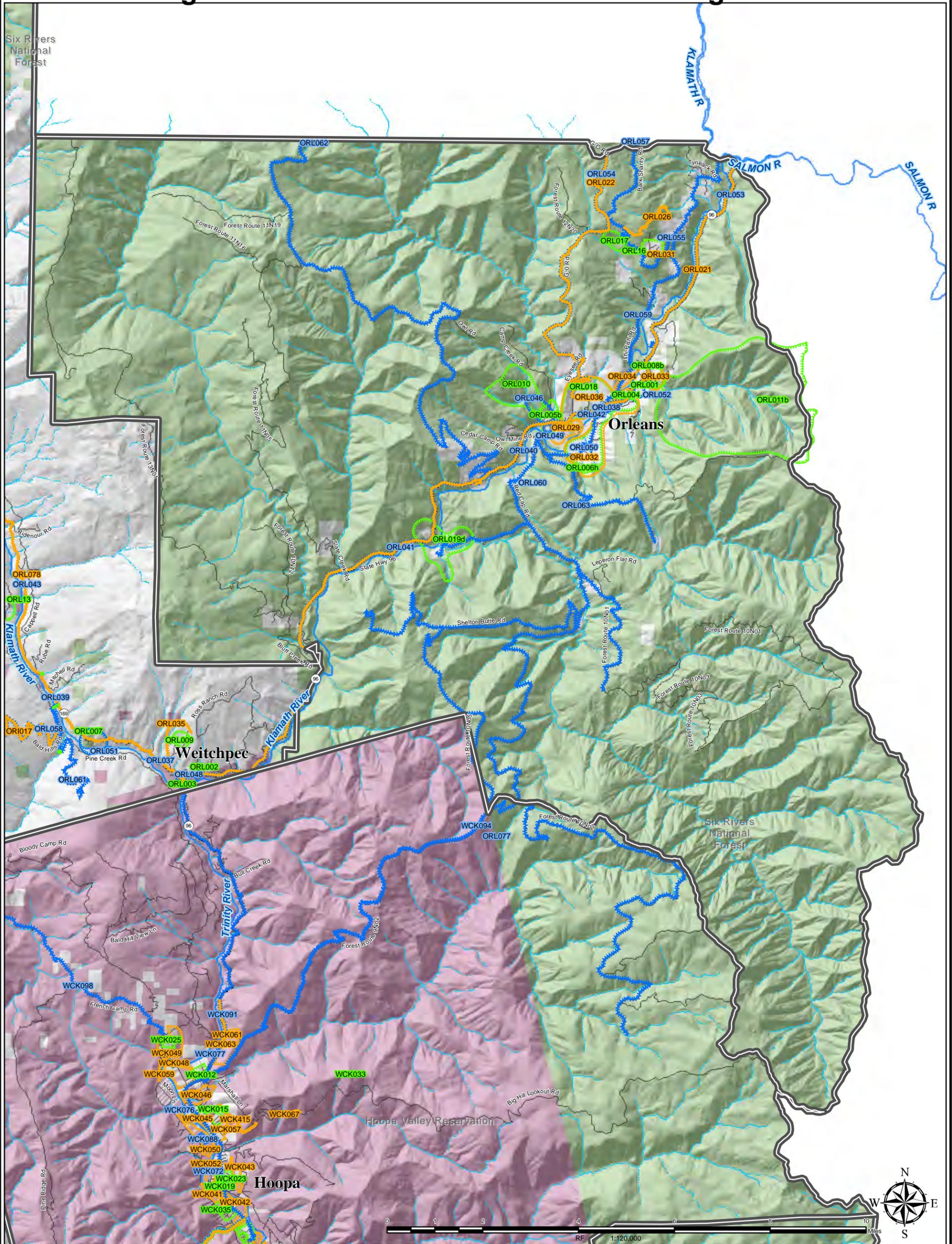


Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

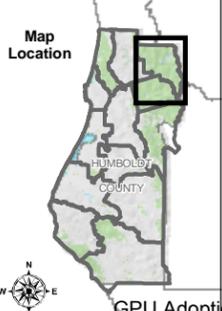
Figure IV.3-2 East Klamath Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-----------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Protection/Evacuation | Parks/Public Land | HWY 101 | Major River or Stream |
| Value/Asset | Reservation/Tribal Land | State HWY | Perennial Stream |
| Risk/Hazard | Cities | HWY or Secondary Road | Intermittent Stream |
| | | Local Road or Street | |

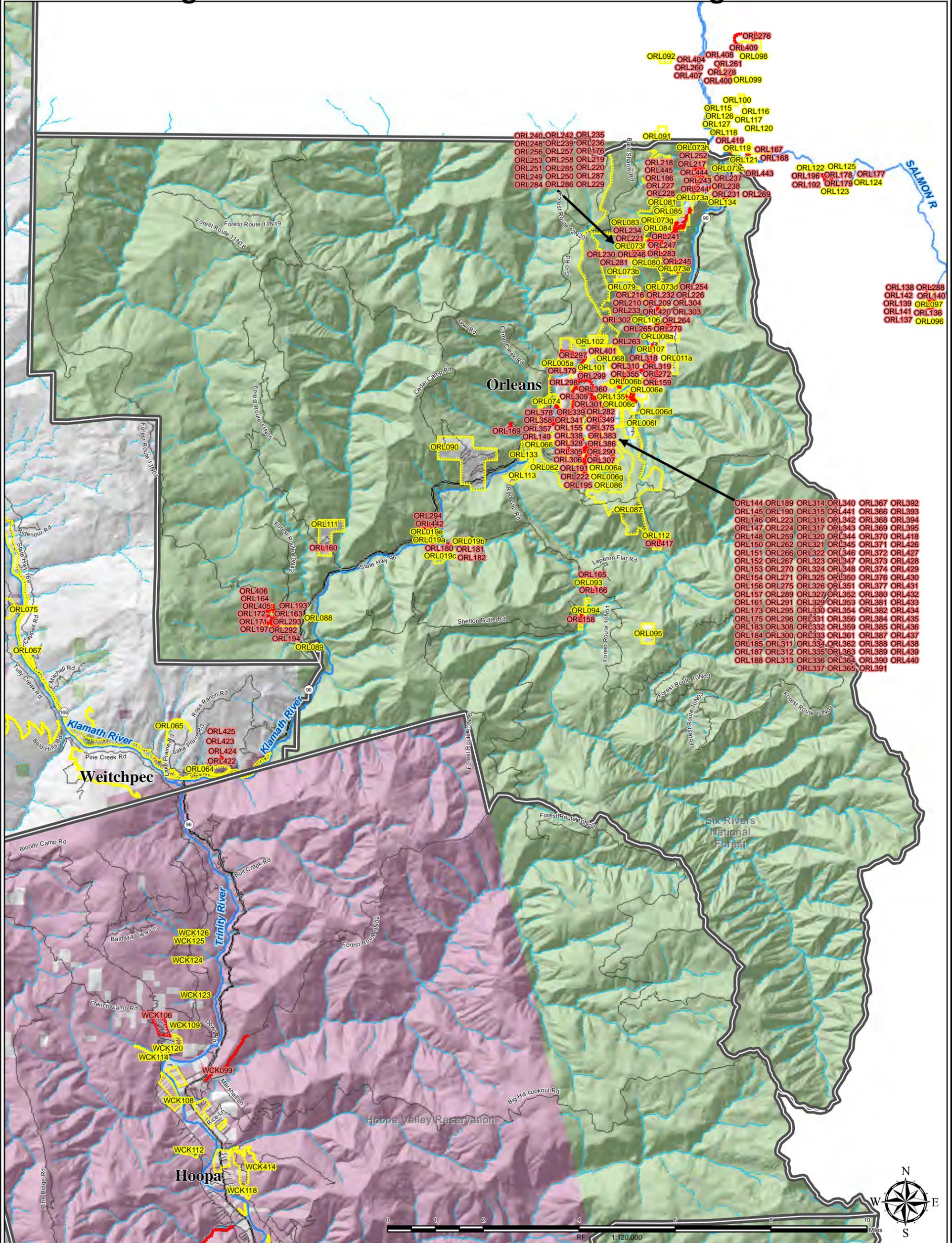


Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.3-3 East Klamath Planning Unit



CWPP - Community Identified Projects

Legend

- | | | | |
|-------------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Projects | Parks/Public Land | HWY 101 | Major River or Stream |
| Proposed Project | Reservation/Tribal Land | State HWY | Perennial Stream |
| Treated Project | Cities | HWY or Secondary Road | Intermittent Stream |
| | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us



GPU Adoption

October 23, 2017

IV.4. Hoopa Planning Unit Action Plan

IV.4.1. Hoopa Planning Unit Description

The Hoopa *Planning Unit* encompasses 114,144 acres situated in the northeastern region of Humboldt County, south of Orleans and north of Willow Creek. The Unit area is shaped like a square, with approximately 12 miles on each side. The Yurok Indian Reservation lies to the north, and Six Rivers National Forest borders the Unit's southern and eastern sides. The Unit, which consists of rugged, mountainous terrain and a broad valley, is part of the Trinity River *watershed*. The Trinity River and its *tributaries* bisect the valley, flowing in a northerly direction towards its confluence with the Klamath River near the town of Weitchpec, just north of the Unit. Highway 96 follows alongside the Trinity River and serves as the main transportation corridor in and out of the area.

The land in this Unit is encompassed within the Hoopa Valley Indian Reservation (HVIR), which "contains 90,519 acres and is the largest Indian Reservation in California."¹ The vast majority of the Unit is tribally owned, while less than 2% (1,553 acres) is private ownership. Approximately 2,600 people reside in this Planning Unit. The town of Hoopa comprises the community population center and Hoopa is, in fact, the only town within the boundaries of the Reservation. More populous areas of the Reservation include the Valley, Bald Hill, and Trinity Gorge. Other neighborhoods include Telescope Rd., Agency Field, Big Hill, Rice Lane, Upper and Lower Campbell, Hostler Field housing, and Norton Field Housing Authority.²

Most residences within this Unit exist in the *wildland-urban interface* (WUI). Average house values are approximately \$94,000, and mobile homes make up 38% of the housing on the Reservation. The Hoopa Valley has a flat-to-moderate slope; the Valley is where all of the businesses, schools, the post office, the tribal offices, and the majority of residences are located. The balance of the Reservation is characterized by mountainous terrain with about 75% of the mountain slopes exceeding 40%.³ A map of this Planning Unit can be viewed in Figure IV.4-1: Hoopa Unit: CWPP Unit Map.

IV.4.2. Hoopa Community Process Summary

A community workshop was held on June 18, 2012 at the Hoopa Tribal Council building for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide community wildfire protection plan (CWPP) process. Those present discussed funding issues, plans for moving forward with the development of a Hoopa CWPP, and built upon the ongoing discussion of a potential local fire safe council (FSC). A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also

¹ Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

² County of Humboldt, Natural Resources Planning. (2006, August). Appendix G: Community Identified Values, Protection Resources, Risks and Hazards, and Projects. *Humboldt County Master Fire Protection Plan*. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fsc_mfpp_cwpp.aspx.

³ Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their community. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their community's fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.4.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.4.3. Hoopa Wildfire Environment

Approximately 94% of the Hoopa Planning Unit is zoned "Very High Fire Hazard Severity," as determined by the California Department of Forestry and Fire Protection (CAL FIRE).⁴ A small portion of the land area in the Valley, particularly along Highway 96, is zoned "High Fire Hazard Severity" (4%), while a negligible amount is zoned "Moderate Fire Hazard Severity." *Fire management* in the Reservation is divided into two Fire Management Zones (FMZs) by the Hoopa Wildland Fire Department's Prevention Plan. The first FMZ includes all the populated, WUI areas (Bald Hill, Gorge Valley, Valley West, and Highway 96) and contains 90% of the 10-year fire occurrence in just 47.3% of the Reservation acres. The second FMZ contains 52.7% of Reservation acres and only 10% of the 10-year fire occurrence; it is comprised of unpopulated, mountainous and forested areas with mostly steep terrain (Telescope, Pine, Hopkins, and Tish Tang).

The Unit is characterized by relatively wet, cool winters and dry summers. Local vegetation predominantly includes stands of Douglas-fir with white fir and red fir intermixed. Forests in the Reservation also contain "coastal redwood, giant sequoia, grand fir, western hemlock, western red cedar, incense cedar, Port Orford cedar, Jeffrey pine, ponderosa pine, sugar pine, and yew...stands of hardwoods (mostly oaks and Pacific madrone, with some pepperwood and red alder) are interspersed with the softwoods."⁵ In the prairie lands, vegetation includes grass, ferns, wild rose, and briars.

Ecosystems and *plant communities* in this region are historically adapted to regular wildfire occurrence. Hoopa tribal members have traditionally implemented intentional burns throughout the Reservation area for ecological and cultural purposes. However, a heavy *fire suppression* campaign beginning in the 1930s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire*

⁴ CAL FIRE (California Department of Forestry and Fire Protection). (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

⁵ Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

regime. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 60% of the Hoopa Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 30% of the area is condition class 2, or moderately altered from the historical range.

Responsibility for wildfire management over the years has fallen to the Bureau of Indian Affairs (BIA) and the Hoopa Valley Tribe (HVT). Strategies have continued to strongly emphasize fire suppression, due to a large fire occurrence, with a ten year average of 194 wildfires annually.

In the past decade there has been frequent wildfire activity within and adjacent to the Unit. The names, year, and acreage covered by the most recent major fire events within this Unit are as follows:

- Megram Lightning Fire, October 1999: 4,830 Reservation acres.
- Hoopa Fire, July 1999: 54 acres.
- Shelton Fire, October 2001: 10 acres.
- Big Hill Fire, September-October 2002: 184 acres.
- Supply Creek #13 Fire, August- September 2002: 410 acres.
- Deerhorn Fire, September 2008:382 acres.
- Mill Creek 4 Fire, October-November 2009: 1,942 Reservation acres.

The costs associated with wildfire and other fire incidents between the years 1999-2010 in the Reservation are totaled at \$14,157,993.⁶

Humans are responsible for nearly all fire *ignitions* in this Planning Unit. Arson has been an ongoing problem throughout the Reservation, to the extent that arson or suspicion of arson has represented 90% of fire causes in the past decade. Less common ignitions result from campfires, trash burning and brush clearing, vehicles, and fireworks. Lightning is the sole natural cause for fires reported on the Reservation and is only responsible for 0.54% of fire starts in the past 12 years.⁷ Accumulations of hardwood leaf *litter* as well as pine needle litter, tall grasses, ferns, brush and briars, large patches of huckleberry and downed woody debris can act as *hazardous fuel* that increase risk of ignition.

Dead plant matter and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and siding add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. The high percentage of mobile homes in the Unit is another concern for structural ignitability. Mobile homes are subject to the same risks as built houses regarding the accumulation of fuels on or nearby the structure; however, if ignition does occur, mobile homes have a greater propensity to burn rapidly and completely. Figure IV.4-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, "Fire Planning" section: <http://gis.co.humboldt.ca.us/>.

⁶ Hoopa Wildland Fire Department. (2012). *12 Year Hoopa Wildland Fire Analysis* [Printed handout document distributed at Humboldt County CWPP community workshop meeting on June 18, 2012 at the Hoopa Tribal Council building]. Hoopa, CA.

⁷ Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

Highway 96 is the central *ingress and egress* route, with numerous smaller roads connecting residences and neighborhoods to it. Most of the structures within the Unit are not far from the main highway, but a few neighborhood groupings are more remote. The narrowness of smaller roads leading to remote residences could create complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Landslides resulting from heavy rains falling on snow melt in the late winter and early spring could inhibit access and create hazardous road conditions.

The Hoopa Valley Public Utilities District provides potable water and *fire protection water* throughout the Hoopa Valley Reservation. Fire protection water may also be *drafted* from the following locations:⁸

- Legion Way – river access
- Tish Tang Rd.--river access
- Mill Creek
- The Mine
- Overhead fill on Supply Creek Rd.

The map in Figure IV.4-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.4.4. Hoopa Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a *wildfire* can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes and tribal facilities, along with a variety of commercial and service industries, community centers, medical and dental clinics, schools, museums, as well as infrastructure components, such as a water treatment facility. The Lucky Bear Casino is a noteworthy asset as well. The Unit also contains a prominent campground area, known as Tish Tang.

The map in Figure IV.4-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁹ Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Kimaw Medical Center, dental clinic, & rest home.
- Norton Field Housing Authority
- Cell tower on Bald Hill Rd. (TV, radio, phone)
- Bair Rd. to Hoopa (evacuation route)

⁸ County of Humboldt, Natural Resources Planning. (2006, August). Appendix G: Community Identified Values, Protection Resources, Risks and Hazards, and Projects. *Humboldt County Master Fire Protection Plan*.

⁹ Geographic Information Systems (GIS).

Timber is a highly significant commercial asset in this unit; 75,000 acres of the approximately 82,000 acres of forest are comprised of *merchantable timber*. Timber values on the Reservation are estimated in excess of \$300,000,000, and this figure does not include young, growing stock or plantations.¹⁰ The Trinity River is also an asset at risk. The Tribe relies on the River's salmon populations for subsistence and ceremonial purposes, and low water levels can have devastating impacts on their *ecosystems*.¹¹ Numerous areas throughout the Reservation are held in high regard for cultural reasons as well.

IV.4.5. Hoopa Community Preparedness

Community fire awareness and preparedness in this unit is abetted by the *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015*, which will replace the 2005-2010 Plan. The primary objective of this plan is to reduce unwanted human-caused ignitions, and it is intended to “provide direction and guidance for the implementation of wildfire prevention and hazard mitigation strategies within the boundaries of the HVIR based on the historical *wildland fire* problems.”¹²

The Hoopa Forestry Department offers guidance to residents on how to plan for fire safety in their Ten Year Comprehensive Fuels Management Plan, which has been approved by the tribal government. The Department also competes for grant funding for conducting fire *hazard mitigation* projects on the Reservation and can conduct home risk assessments throughout the community.

Despite a lack of funding from the BIA, the Hoopa Wildland Fire Department (HWFD) has developed a fire prevention strategy that emphasizes the importance of enforcement in deterring incendiary fires. However, a lack of authority to prosecute suspected arsonists has stunted the growth of the program. This prevention program was greatly abetted when the CAL FIRE Arson Task Force started operations in Hoopa, beginning in July 2008. The presence of CAL FIRE arson investigators on patrol with full arrest authority led to a dramatic decrease in human-caused ignitions during the remainder of 2008. This task force continued operations during the fire season in 2009 and 2010 with similarly positive results.

When funding is available, the HWFD has also incorporated culturally sensitive fire prevention education in local primary and elementary schools. Additionally, when affordable, the HWFD participates in public outreach events such as local and county fairs, and *Fire Safe* days.

The Hoopa Tribe recently received funds to draft a hazard mitigation plan which will include a section for a *community wildfire protection plan* (CWPP). It is hoped that the CWPP will help set priorities for wildfire mitigation projects, inspire local wildfire preparedness action, and leverage funding to support projects. The Hoopa Tribal Council is currently discussing the possibility of creating its own local *fire safe council* (FSC) to assist with CWPP development and implementation.

The Hoopa Valley Tribe and various tribal departments can be reached by calling (530)-625-4795 or by visiting their website at: <http://www.hoopa-nsn.gov/>.

¹⁰ Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

¹¹ County of Humboldt, Natural Resources Planning. (2008). *Humboldt Operational Area Hazard Mitigation Plan; Volume 2 – Planning Partner Annexes*. (pp.2-7.) Retrieved from <http://www.co.humboldt.ca.us/natural-resources/hazardmitigation/?inc=finaldraft>

¹² Hoopa Valley Tribe. (2011). *Wildfire Prevention Plan for the Hoopa Valley Indian Reservation, 2011-2015* [Draft]. Hoopa, CA.

IV.4.6. Hoopa Wildfire Protection Capabilities

The Hoopa *Volunteer Fire Company* (HVFC) is an all-risk organization with *structural fire* suppression as its primary mission. The HVFC was established by the Hoopa Valley Tribal Council and provides service to approximately 3,000 residents within 144 square miles¹³. It is made up of 14 volunteers, and their *apparatuses* include: one type-1 engine, one type-3 engine,, one rescue utility vehicle, a command vehicle, and a Yamaha jet outboard unit. The HVFC can be reached by calling (530) 625-1118.

The HVFC has a *mutual aid agreement* with the HWFD, which is primarily responsible for *wildland fires*, but can also assist in other emergency situations. CAL FIRE does not provide fire protection in the Hoopa Valley Indian Reservation, but will respond if assistance is requested. The HWFD is supported by ten full-time members, seven temporary members, and six seasonal members. Their apparatuses include: four type-3 engines, two type-4 quick attack engines, and one *water tender*. The HWFD can be reached by calling (530) 625-4366.

The HVFC is in need of more volunteers, particularly those who can be available all day, every day, as many volunteers are unavailable to respond during business hours, due to jobs or childcare responsibilities. Overgrown brush and tree limbs along roadways and in residential driveways can pose challenges to emergency response vehicle access. Similarly, brush accumulation around fire hydrants can be a hazardous issue.

IV.4.7. Hoopa Evacuation

Evacuation from the Hoopa Planning Unit will travel either north or south along Highway 96, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences and neighborhoods to Highway 96. Adequate ingress and egress along these roads is vital to residents that may need to access the main highway *evacuation route* and for firefighters responding to wildfires near these neighborhoods.

The following are potential alternative evacuation routes; however, most of these roads are narrow and windy, traversing unpopulated and steep terrain and would therefore not be ideal for massive evacuation efforts:

- Mill Creek Road, leads northeast to Orleans
- Big Hill Road, leads east into Six Rivers National Forest territory
- Bair Road, provides westward access toward Redwood Valley and 299, via Stover Road
- Bloody Camp and Dowd Roads, provide northern access
- Pine Creek Road, leads north to Bald Hill Road which connects with town of Orick

Evacuation impediments may include: landslides, fallen trees, downed power lines, overgrown vegetation, poorly marked streets and intersections, and *one-way-in, one-way-out roads* that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The

¹³Humboldt County Fire Chiefs Association. (2012). 2012 Local Fire Protection Survey.

Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.4.8. Community Identified Potential Projects

The following matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.4-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 County CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
WCK120	Bald Hill, below cell tower	Bald Hill brush removal- Hoopa	Treat- Med		Landscape	52.85			grant- landowner- Assn.
WCK112	Redwood Grove Rd near Pine Creek Rd	Redwood Grove brush removal fuels reduction- Hoopa	Treat- Med		Roadside Clearance	26.78			grant- landowner- Assn.
WCK118	Community Service Road	Community Service Rd brushing- Hoopa	Treat- Med		Roadside Clearance				grant- landowner- Assn.
WCK108	both sides of Hwy 96, center area of Hoopa	brush removal on State fee lands- Hoopa	Treat- Med		Roadside Clearance				grant- landowner- Assn.
WCK115	Telescope Peak Road	Telescope fuels reduction- Hoopa	Treat- Med		Landscape				grant- landowner- Assn.
WCK121	Campbell Creek/ Tish Tang	Campbell Creek brush removal- Hoopa	Treat- Med		Landscape				grant- landowner- Assn.
WCK114	Beaver Creek Rd/Pine Creek Rd	Beaver Creek Rd fuelbreak- Hoopa	Treat- Med		Roadside Clearance				grant- landowner- Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
WCK414	Hostler Ridge Rd	Hostler Ridge - Piles need to be burned, retreated as shaded fuelbreak	Treat-Med	2012	Roadside Clearance				
WCK109	Dowd Rd, .5 mi. N of intersect w/ French Camp Rd	water tank on Dowd Road - Hoopa	Action Need	2010	Other - Water				grant-landowner-Assn.
WCK123	Dowd Rd, 1.25 mi. N of intersect French Camp Rd	water tank on Dowd Road - Hoopa	Action Need	2010	Other - Water				grant-landowner-Assn.
WCK124	Dowd Rd, 2.1 mi. N of intersect French Camp Rd	water tank on Dowd Road - Hoopa	Action Need	2010	Other - Water				grant-landowner-Assn.
WCK126	Dowd Rd, 2.88 mi. N of intersect French Camp Rd	water tank on Dowd Road - Hoopa	Action Need	2010	Other - Water				grant-landowner-Assn.
WCK125	Dowd Rd, 2.67mi. N of intersect French Camp Rd	water tank on Dowd Road - Hoopa	Action Need	2010	Other - Water				grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
WCK116	Telescope Peak Road	develop water source & tank Telescope Peak Rd- needs hardware- Hoopa	Action Need	2010	Other - Water				grant- landowner- Assn.
WCK411	Heck Creek drainage, Hoopa	Break up continuity of hazardous fuel buildup	Treat- Med	2012	Landscape				
WCK412	Tish Tang Campground, Hoopa	Hazardous vegetation clearance around campground	Treat- Med	2012	Landscape				
WCK413	Tish Tang North Campground, Hoopa	Hazardous vegetation clearance around campground north	Treat- Med	2012	Landscape				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
WCK416	Campbell Field Road, Hoopa	High winds and fuel buildup. Highest fire occurrence in last 10 yrs - Needs Fuel clearance	Treat- High	2012	Landscape				

IV.4.9. Hoopa Action Plan

The following items are the initial priorities for community action for the Hoopa Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Sustainable Fire Departments:** Community members within this Planning Unit should support their local fire department¹⁴ through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services.
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Neighborhood and road associations and/or *Firewise* Communities work with local fire departments to develop a “*Blue Dot*” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed. Focus initial efforts in the following areas:
 - Neighborhood along Telescope Peak Road.
 - Dowd Road, west of Highway 96, north of town.

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program with neighborhood groups in developed areas adjacent to the wildland, particularly where there are many residences located along dead-end roads. Actively implement and maintain the Firewise action plan on an annual schedule.

Reducing Wildfire Fuels (Flammable Vegetation)

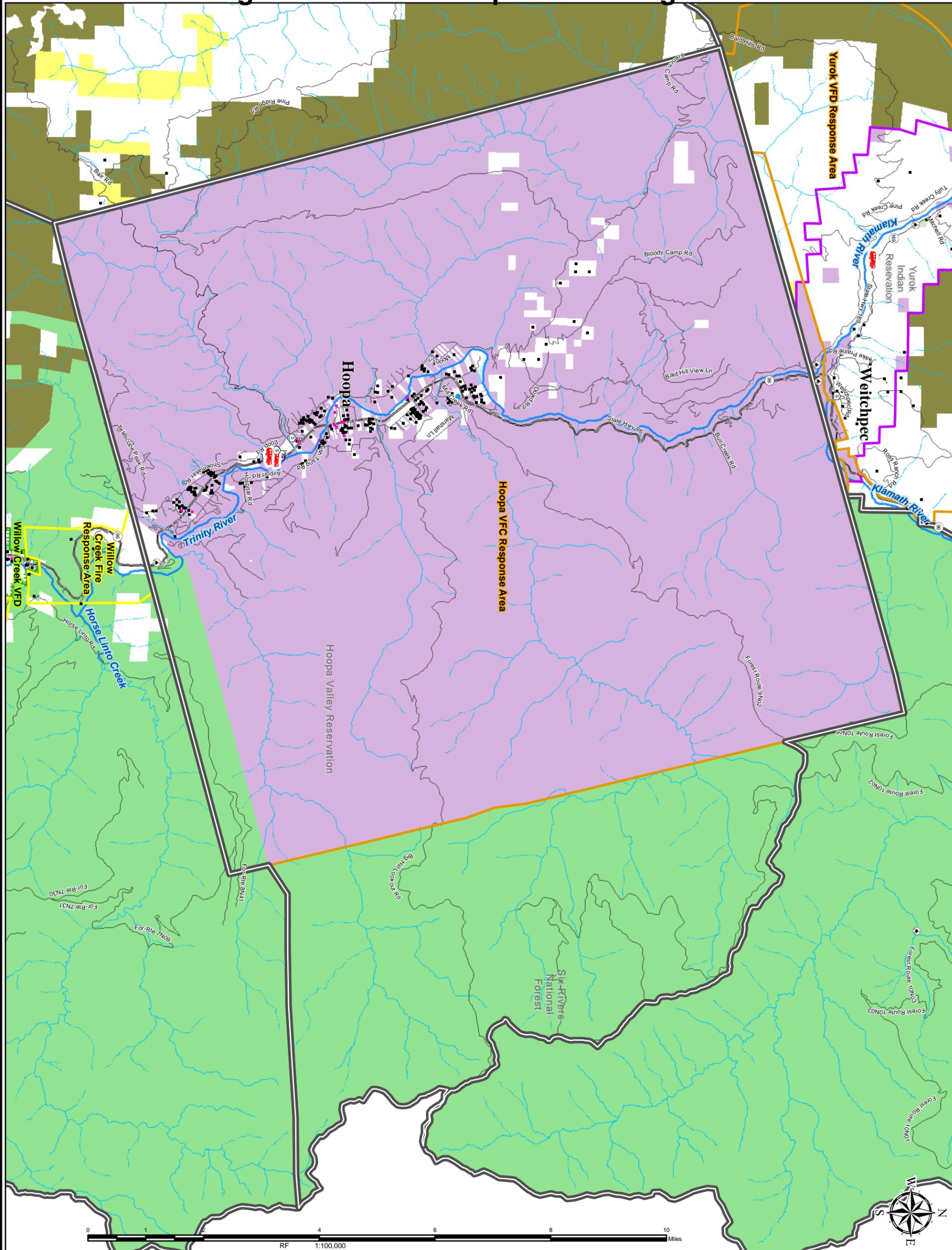
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Focus initial efforts along the following roads:
 - Redwood Grove Road, near Pine Creek Road.
 - Community Service Road.
 - Both sides of Highway 96.
 - Hostler Ridge Road.
 - Beaver Creek Road, near Pine Creek Road.
- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers

¹⁴ All local fire departments within this unit are listed above with their contact information in the “Wildfire Protection Capabilities” section.

may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:

- Hazardous vegetation clearance in and around Tish Tang Campgrounds.
- Break up continuous fuels near Heck Creek drainage.
- Fuel clearance around Campbell Field Road, an area with high winds and high fire occurrence.

Figure VI.4-1 Hoopa Planning Unit



CWPP Unit Map

Map Location

<p>Legend</p> <p>Emergency Response</p> <ul style="list-style-type: none"> Local Fire Station CAL Fire Station Six Rivers Fire Station <p>Hospitals and Clinics</p> <ul style="list-style-type: none"> Hospital/Medical Center Red Cross <p>Lookout, Lights, Radio</p> <ul style="list-style-type: none"> Lighthouse School 	<p>Local Fire Organization Response Area</p> <ul style="list-style-type: none"> District Out of District Non-Tax (Volunteer Fire Company (VFC)) Proposed District Annexation Area (PDAA) <p>Improved Parcels</p> <ul style="list-style-type: none"> Improved Parcel (not actual location of improvement) Commercial or Industrial Lot (not actual location) <p>Airports</p> <ul style="list-style-type: none"> Landing Strip 	<p>Highways and Roads</p> <ul style="list-style-type: none"> HWY 101 State HWY HWY or Secondary Road Local Road or Street <p>Hydrography</p> <ul style="list-style-type: none"> Major River or Stream <p>Infrastructure</p> <ul style="list-style-type: none"> Gauging Station Water Tank or Source Historic Locations 	<p>Land Ownership</p> <p>AGENCY</p> <ul style="list-style-type: none"> Bureau of Land Management National Park Service State Park or Other State Lands Six Rivers National Forest U.S. Fish and Wildlife Service <p>Private</p> <ul style="list-style-type: none"> Private Industrial Timber <p>Cities</p> <ul style="list-style-type: none"> Reservation Boundary
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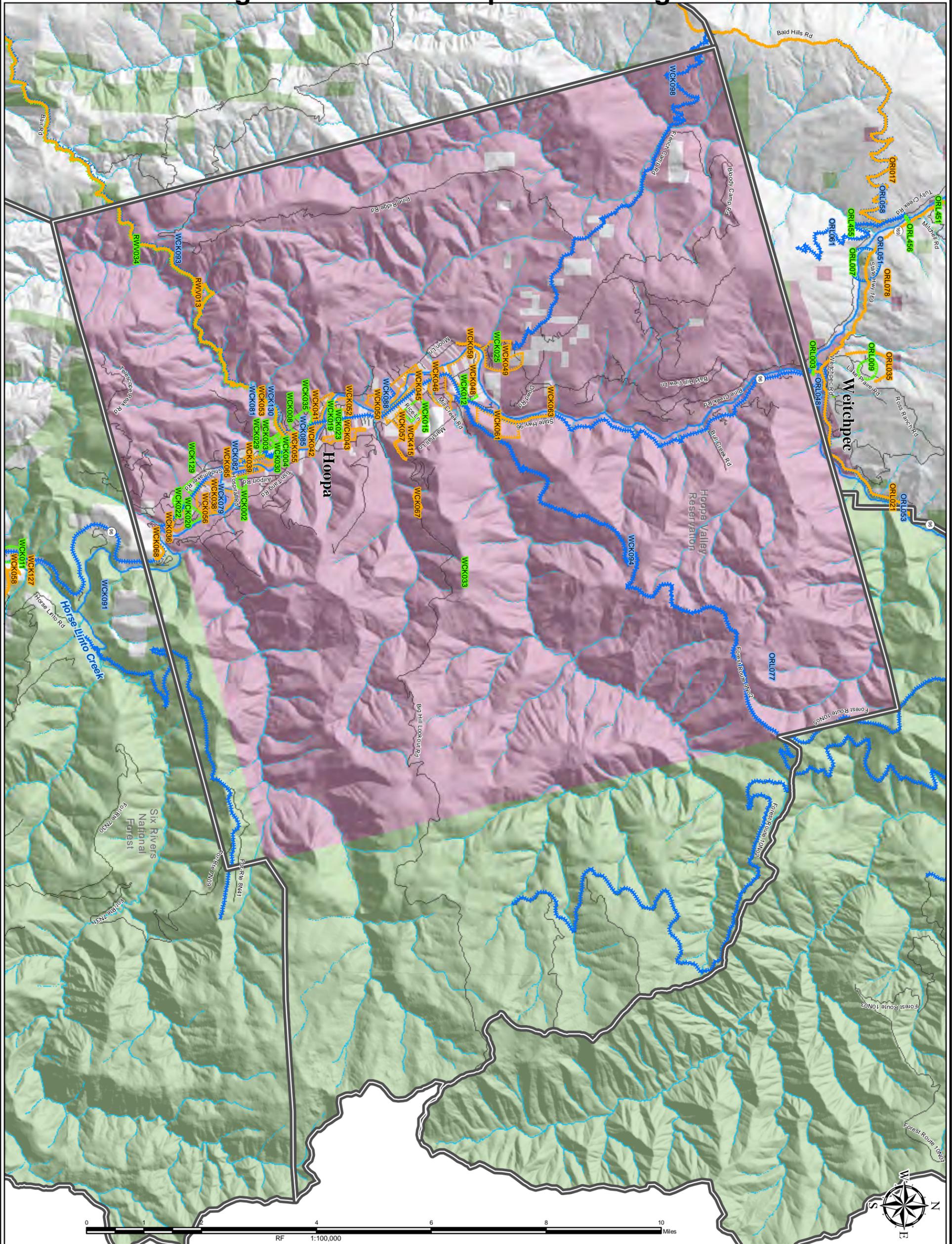
Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan.

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

October 23, 2017

Figure VI.4-2 Hoopa Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-------------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Parks/Public Land | HWY 101 | Major River or Stream |
| Protection/Evacuation | Reservation/Tribal Land | State HWY | Perennial Stream |
| Value/Asset | Cities | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |



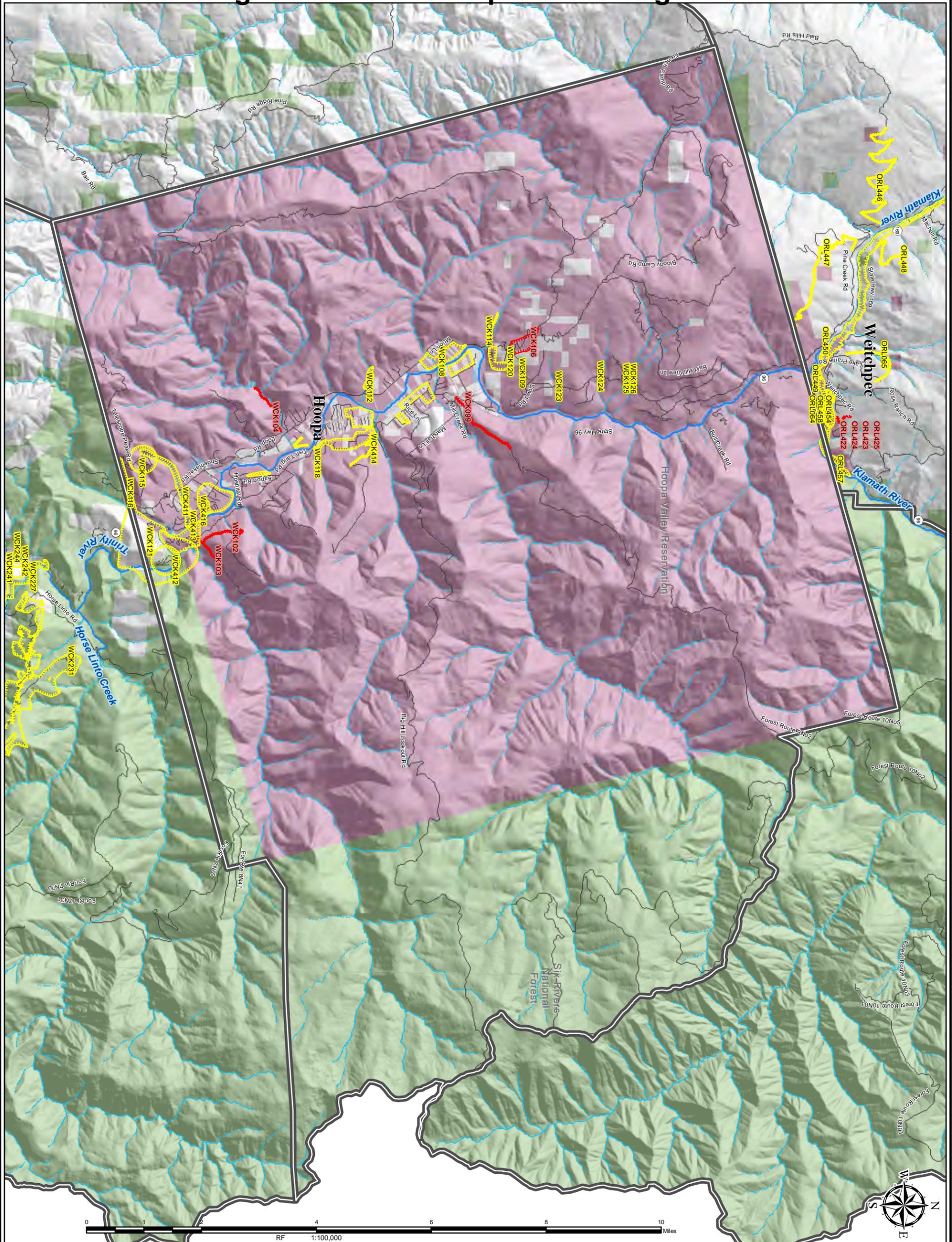
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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

October 23, 2017

Figure VI.4-3 Hoopa Planning Unit



CWPP - Community Identified Projects

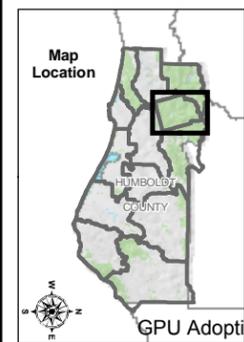
Legend

- CWPP Planning Unit Boundary
- Community Identified Projects - Proposed Project
- Community Identified Projects - Treated Project

- Land Ownership**
- Parks/Public Land
- Reservation/Tribal Land
- Cities

- Highways and Roads**
- HWY 101
- State HWY
- HWY or Secondary Road
- Local Road or Street

- Hydrography**
- Major River or Stream
- Perennial Stream
- Intermittent Stream



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

IV.5. Trinidad Planning Unit Action Plan

IV.5.1. Trinidad Planning Unit Description

The Trinidad *Planning Unit* encompasses 67,379 acres situated on the northern coast of Humboldt County. The Planning Unit is bordered by Redwood National Park on the northeastern side, the Pacific Ocean to the west, and the unincorporated town of McKinleyville to the south. Highway 101 is the main transportation route, which runs north-to-south, parallel to the ocean. The Trinidad *watershed* is the smallest watershed in the county, with 83,684 acres spread along the Pacific coastline; it contains Maple Creek and Little River as its primary freshwaterways, both of which reach less than 20 miles inland.

The City of Trinidad, which was incorporated in 1870, comprises the community population center of this Planning Unit. Although the local population is small, containing less than 400 people, “the City of Trinidad acts as the commerce hub for around 1,500 inhabitants in the surrounding unincorporated communities, including Westhaven, Patrick’s Point and Big Lagoon.”¹ More than 350 years ago, the Tsurai Indians settled this area and established a village along the bluff at Trinidad Head. Today, Trinidad is bordered by the Trinidad Indian Rancheria, where descendants from the Yurok, Weott, and Tolowa peoples make up the Cher-Ae Heights Indian Community. During the 1849 California Gold Rush, Trinidad underwent rapid economic growth as a main supply stop for gold seekers. The town’s harbor also facilitated economic activity in the area as a whaling station, a seaport for shipping lumber, and as a fishing destination. Well-known for its picturesque coastline and harbor, Trinidad and its surrounding areas, including Patrick’s Point State Park and other public beaches, make this Unit a popular tourist destination.

The Community of Westhaven is another population center within this Unit. Westhaven is an unincorporated area that roughly encompasses the coastal area just north of Moonstone Beach and south of the City of Trinidad. The majority of the population resides within or adjacent to the boundary of the Westhaven *Community Services District* (WCSD). The WCSD is approximately 384 acres in size and serves a population of approximately 500.

The western portion of the Unit is lined with private parcels containing dense clusters of structures surrounded by industrial timber lands from Westhaven up to Stone Lagoon, with a single tract of ranchland located east of Westhaven. Parcels in this Planning Unit span a variety of types, from “million dollar” homes with stellar ocean views, to rental units and RV parks near the freeway. Parcel sizes range anywhere from one-eighth of an acre to seven acres. The majority of homes are stick built, any many have been upgraded within the last decade. The entire central and eastern portions of the Unit are comprised of timberlands managed by Green Diamond Resource Company. State Park areas such as Patrick’s Point, Trinidad Beach, and Big Lagoon are scattered along the coastline. A map of this planning unit can be viewed in Figure IV.5-1. Trinidad Unit: CWPP Unit Map.

IV.5.2. Trinidad Community Process Summary

A community workshop was hosted by the Westhaven Fire Company at their fire hall on June 14, 2012 for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide *community wildfire protection plan* (CWPP) update process. Participants included residents, volunteer

¹County of Humboldt, Natural Resources Planning. (2008). *Humboldt Operational Area Hazard Mitigation Plan; Volume 2 – Planning Partner Annexes*. (p. 9-1.) Retrieved from <http://www.co.humboldt.ca.us/natural-resources/hazardmitigation/?inc=finaldraft>

firefighters, a representative from the Trinidad Public Works Department, personnel from both the Trinidad and Elk Camp California Department of Forestry and Fire Protection (CAL FIRE) Stations, a Green Diamond Resource Company representative, and a representative from the Regional Training Institute on Community Disaster Preparedness from Humboldt State University.

A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by *wildfire*. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their community. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their community's fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.5.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.5.3. Trinidad Wildfire Environment

Approximately 32% of the Trinidad Planning Unit is zoned “Moderate *Fire Hazard Severity*,” as determined by CAL FIRE,² including all of the populated areas along the coastline. Nearly the entire remaining Unit area containing timberlands is zoned “High Fire Hazard Severity” (68%). The Unit is composed of coastal headlands and bluffs overlooking the ocean, as well as *riparian* areas and mountainous forests.

Climate in this Planning Unit is heavily influenced by its proximity to the Pacific Coast and high humidity prevails throughout the year. There are distinct rainy and dry seasons as well as frequent fog. Local vegetation predominantly includes redwood forests, along with some oak woodlands and pine forests.³ Although the climate is dominated by moist, cooler temperatures, every 25-50 years the area experiences severe summer/fall droughts, accompanied by strong, dry offshore winds which have a warming, Mediterranean-like effect on the microclimate—a phenomenon known as the Klamtanans. The Klamtanans likely play a role in the presence of

² CAL FIRE (California Department of Forestry and Fire Protection). (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

³County of Humboldt, Natural Resources Planning & Humboldt County Fire Safe Council. (2012). *Humboldt County Hazardous Fuels Reduction Plan Update 2009-2010*. (p.87.) Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/

Bishop Pines in this Planning Unit, which favor coastal environments but are not typically found this far north.⁴

Traditional forest management methods used by Native Americans in this region typically incorporated low-intensity, intentional burns that helped facilitate the production of cultural and ecological resources. However, a national policy beginning in the 1930s that emphasized *fire suppression* in forest management systems has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Logging operations in the area that incorporated clear-cuts have also contributed to alterations in *stand compositions*. Forest *ecosystems* adapted to low-intensity fires that would burn off *brush* and newer starts in the understory are now threatened by overcrowded forests and accumulated fuels in some areas of the Unit.

In recent years, Green Diamond Resource Company (GDRCo) has undertaken efforts to help reduce risk of fire occurrences on their properties. Firefighting equipment is maintained at logging operations and inside all vehicles; harvesting operations are suspended at specified levels of low *relative humidity*; and logging crews are required to make daily fire inspections after work is done during *fire season*. Furthermore, the company maintains fire trucks and heavy equipment for wildfire emergencies and GDRCo Forestry staff, logging and maintenance crews, and contractors are all available to respond to fire emergencies on the company's timberlands and to assist CAL FIRE at their request. The company also treats logging fuels in a variety of ways to help reduce *fire hazards*. Their methods include piling and burning, *broadcast burning*, mastication and on-site chipping; they also employ *biomass* recovery for power generation with the vegetative debris produced by these activities.

Fortunately, there have been very few major fire events in this Planning Unit within recent decades. The A-Line Fire in 1936 was one of the last major wildfire events in this area, burning a substantial 1,628 acres in total.

Humans, vehicles, and lightning strikes are the most probable *ignition sources* here. Human-caused fire starts are more likely to occur in populated areas and recreation spots, and buildup of roadside fuels increases the likelihood of fire starts from vehicles. Downed power lines are also potential ignition sources. Much of the land in this Unit is seismically active, with the Trinidad and Big Lagoon faults located close to shore; this creates the potential for electrical fire starts that may follow any earthquakes that occur in the area.

Dead plant matter and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and siding add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Although the high levels of humidity and precipitation within the coastal climate help prevent thorough drying-out of vegetation, it is important that communities in this area do not become complacent about the risk of wildfire. The Luffenholz Fire in 1908 covered 690 acres and managed to burn the community to the ground. *Hazardous fuel loads* in the form of brush and timber *litter* produced by logging activity can increase the potential for ignition and rapid spread of wildfires.

Some homes throughout the Unit are surrounded by steep slopes that can limit their defensible areas, put structures in the line of up-hill spreading wildfires, and limit emergency access of firefighting resources. The majority of residences in this Unit exist within the *wildland-urban interface* (WUI), where there is an increased likelihood that *structure fires* will

⁴ Madrone, S. (June 2010.) *Factors supporting an isolated stand of pinus muricata around Luffenholtz Creek, near Trinidad California*. Unpublished manuscript, Humboldt State University, California.

spread to the wildland, and vice versa. Figure IV.5-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Highway 101 is the central *ingress and egress* route, with smaller roads winding through the communities, connecting neighborhoods and residences to the main highway. Many of these smaller roads are narrow and windy, and some have sections that are un-paved and one-lane only. These types of conditions on smaller roads that lead to remote residences could create complications for emergency response vehicles trying to gain access during simultaneous home evacuations. Many routes are also grown over with vegetation and many properties have inadequate *turn around spaces*. County fire-safety standards require roads to be of a certain width to assist access during emergencies. However, one community member expressed his concerns about the potential for increased fire danger to result from the widening of county roads to meet fire-safety standards. Although widening the road improves access, this process can also open up the overstory canopy to sunlight, which can enable the encroachment of fire-prone vegetation, such as huckleberry and scotch broom. Maintaining roadside vegetation clearance is important for keeping ignition risk low and protecting the communities that depend on these roads. The potential for landslides along steep slopes in this area could also inhibit access.

The City of Trinidad’s Water Department provides potable water to residents within the city limits and has 30 hydrants available for provide fire protection water.⁵ The WCSD supplies drinking water to customers and maintains 11 hydrants. Residents outside of this *service area* obtain water through other means, such as drawing from nearby creeks and holding tanks. Fire protection water may also be *drafted* from the following locations:⁶

- Big Lagoon
- Two Ponds (1million gallon total; dip or draw)
- Azalea Glen Pond
- Big Lagoon Mill Pond
- Trinidad Water Tanks (300,000 gallons)

The map in Figure IV.5-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.5.4. Trinidad Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller

⁵ City of Trinidad. (2012). *Water Department*. Retrieved from www.trinidad.ca.gov/departments-a-services/water.html.

⁶ County of Humboldt, Natural Resources Planning. (2006, August). Appendix G: Community Identified Values, Protection Resources, Risks and Hazards, and Projects. *Humboldt County Master Fire Protection Plan*. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fsc_mfpp_cwpp.aspx

timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes along with a variety of commercial and service industries, community centers, schools, fire stations, churches, as well as infrastructure components, such as water treatment facilities. The Cher-Ae Heights Casino is a noteworthy asset as well.

The map in Figure IV.5-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁷ Portal, “Fire Planning” section:

<http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Big Lagoon Rancheria
- Patrick’s Point State Park
- Trinidad Head, Cell Phone Towers
- Two Creeks (Municipal Watershed)
- Little Red Inn – historical site
- Westgate Community Development

Other assets include the state and county beaches within the Unit, and the expanses of timberland that dominate the region, which have significant commercial and ecological value. Several *special-status wildlife species* are present throughout this Planning Unit; they include: the southern torrent salamander, tailed frogs, the red tree vole, as well as chinook and coho salmon, and steelhead trout.⁸

IV.5.5. Trinidad Community Preparedness

No local *fire safe councils* (FSC) exist in this Planning Unit and none of the communities has achieved national *Firewise* recognition. However, during the community outreach process, the communities of Trinidad and Westhaven both expressed an interest in forming a local FSC. Given their proximity and their shared interest in this goal, there is good potential for collaboration amongst these two communities in this endeavor. Currently, efforts to educate community members about fire safety and to improve emergency preparedness within this Unit are guided by the local fire protection service providers, CAL FIRE, Humboldt County Office of Emergency Services (OES), and the Humboldt County FSC.

IV.5.6. Trinidad Wildfire Protection Capabilities

Community fire protection within the Unit is provided by the Trinidad *Volunteer Fire Department* (TVFD) and the Westhaven Volunteer Fire Department (WVFD), which provide fire protection as well as medical and rescue services to communities in the area. The TVFD has 10 volunteer and their *apparatuses* include: two type-1 engines and a rescue vehicle. The WVFD has 12 volunteers, whose apparatuses include: a 750 gallon type-1 engine, a 250 gallon type-4 attack engine, a 2,500 gallon *water tender*, and a rescue truck.⁹ These VFDs are supported by donations and fundraising events within their communities. The TVFD, can be reached by calling (707) 677-0224, or by email at: tvfdchief@gmail.com; additional

⁷ Geographic Information Systems (GIS).

⁸ Dyett & Bhatia. (2002, September). Trinidad Watershed. *Humboldt 2025 General Plan Update: Natural Resources and Hazards; Vol. 2: Detailed Watershed Characteristics and Regulatory Framework Analysis*. (p.116.) Retrieved from <http://www.co.humboldt.ca.us/gpu/documentsbackground.aspx>

⁹ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx

information may be found at the City of Trinidad’s website at: <http://www.trinidad.ca.gov/>. The WVFD can be reached by calling (707) 677-0388.

Having enough water presents the biggest difficulty for providing fire protection services to the Westhaven community. A lack of water tanks within the community contributes to this complication. All the VFDs in this Unit are in need of more volunteer members, particularly people who are available during business hours, when many volunteers have responsibilities to jobs or children both of which can make it difficult to respond to emergency calls. Additional and improved firefighting equipment would also benefit these VFD stations in a meaningful way.

This Planning Unit is also home to the Trinidad CAL FIRE Station, which provides year-round fire protection services to communities within *County Service Area #4* through an Amador agreement with the County of Humboldt. CAL FIRE has *mutual aid agreements* with volunteer fire departments in the surrounding areas. These entities may call upon each other for additional support when responding to structural or wildland fires. Even with statewide obligations during fire season, at least one fire engine is guaranteed to remain in Trinidad at all times.

IV.5.7. Trinidad Evacuation

Evacuation from the Trinidad Planning Unit will travel either north or south along Highway 101, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. Several smaller roads connect residences and neighborhoods to Highway 101, and adequate ingress and egress along these roads is vital to residents that need to access the main highway *evacuation route*.

Evacuation impediments may include: landslides, fallen trees, overgrown vegetation, downed power lines, and poorly marked streets and intersections.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.5.8. Trinidad Community Identified Potential Projects

The following list and matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found

at the end of this Unit Action Plan (Figure IV.5-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

Non-geographic community identified proposed projects based on community workshop notes:

- Create a local fire safe council.
- Implement a community-wide mobile *Chipping Program*.
- Implement a *Big Red Truck Program*, where fire department representatives visit residents and help them identify priority areas, such as those with high fuel loads and *one-way-in, one-way-out roads*.
- Increase Hazard Awareness with public outreach and education; demonstrate good examples with local models of fire safe landscaping.
- Conduct a “boilerplate” Firewise Assessment as a public outreach tool to gauge local interest in becoming a Firewise Community.
- Install a fire hydrant at Moonstone Beach.
- Recruit more volunteers for the local fire departments.
- Create more volunteer firefighter training opportunities.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
FIE045	Community of Fieldbrook	Old Railroad Grade North Clearance	Treat-Med	2012	Roadside Clearance				grant-landowner-Assn.
ORI055	McDonald Creek Rd and Kane Ridge Rd neighborhoods	Post address signs; encourage maintaining defensible space and providing water for fire protection.	Treat-Med Action-Needed	2012	Defensible Space and Other-Education				
TRI056	Trinidad Neighborhoods	1 million gallon water tank for greater Trinidad area	Action Need	2012	Other - Water				grant-landowner-Assn.
TRI061	Trinidad Neighborhoods	Luffenholtz shaded Fuelbreak	Treat-Med	2012	Roadside Clearance	27.61			grant-landowner-Assn.
TRI065	Trinidad and Westhaven Neighborhoods	Inter-tie between Westhaven and Trinidad water systems	Action Need	2012	Other - Water				grant-landowner-Assn.
TRI066	Fox Farm Rd Community	Fox Farm Rd.: Fire safe road options for pilot project (fire safe regulations alternative)	Action Need		Roadside Clearance and Other - Access	28.70			grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
TRI067	Parcels on Fox Farm Rd. near power pole	Power pole (PG&E) fuel reduction	Treat-Med		Roadside Clearance	2.17			grant-landowner-Assn.
TRI068	Fox Farm Rd and Stumptown Rd	Alternate Access from Fox Farm Rd to Stumptown Rd - Evacuation	Action Need	2012	Other - Access				grant-landowner-Assn.

IV.5.9. Trinidad Action Plan

The following items are the initial priorities for community action for the Trinidad Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Sustainable Fire Departments:** Community members within this Planning Unit should support their local fire departments¹⁰ through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services. Focus initial efforts on the following priorities:
 - Develop a recruit strategy for adding more volunteers to the local fire departments.
 - Support the efforts of the WVFD to take the necessary steps for improving its Insurance Services Office (ISO) classification. An improved ISO classification could help to reduce the fire insurance rates paid by local property owners. These improvements will also increase the level of service provided to the community.
- **Road Improvements:** Upgrade and/or repair roads that hinder access by emergency responders. Begin by systematically identifying and mitigating such access impediments. The following priority access issue was identified at a community workshop and is recommended for initial action in this plan:
 - Devise an alternative evacuation route for residents on Fox Farm Road.
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks, particularly in areas outside of the CSD boundaries. Neighborhood and road associations and/or Firewise Communities work with local fire departments to develop a “Blue Dot” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed. Focus initial efforts in the following areas:
 - Greater Trinidad community areas.
 - Westhaven neighborhoods.

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program with neighborhood groups in developed areas adjacent to the wildland, particularly where there are many residences located along dead-end roads. Use information from this Unit Action plan as a starting point for the development of a template Firewise Assessment that can be used to gain interest in the Firewise process.

¹⁰ All local fire departments within this unit are listed above with their contact information in the “Wildfire Protection Capabilities” section.

Actively implement and maintain the Firewise action plan on an annual schedule. Target the following neighborhoods on edges of communities in the higher risk interface areas:

- Hammond Truck Road
- Fox Farm Road
- Skyhorse Ranch/Brindle Lane
- Ox Lane
- Driver Road
- Moonstone Cross Road
- Crannell Road

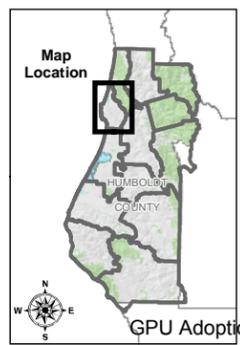
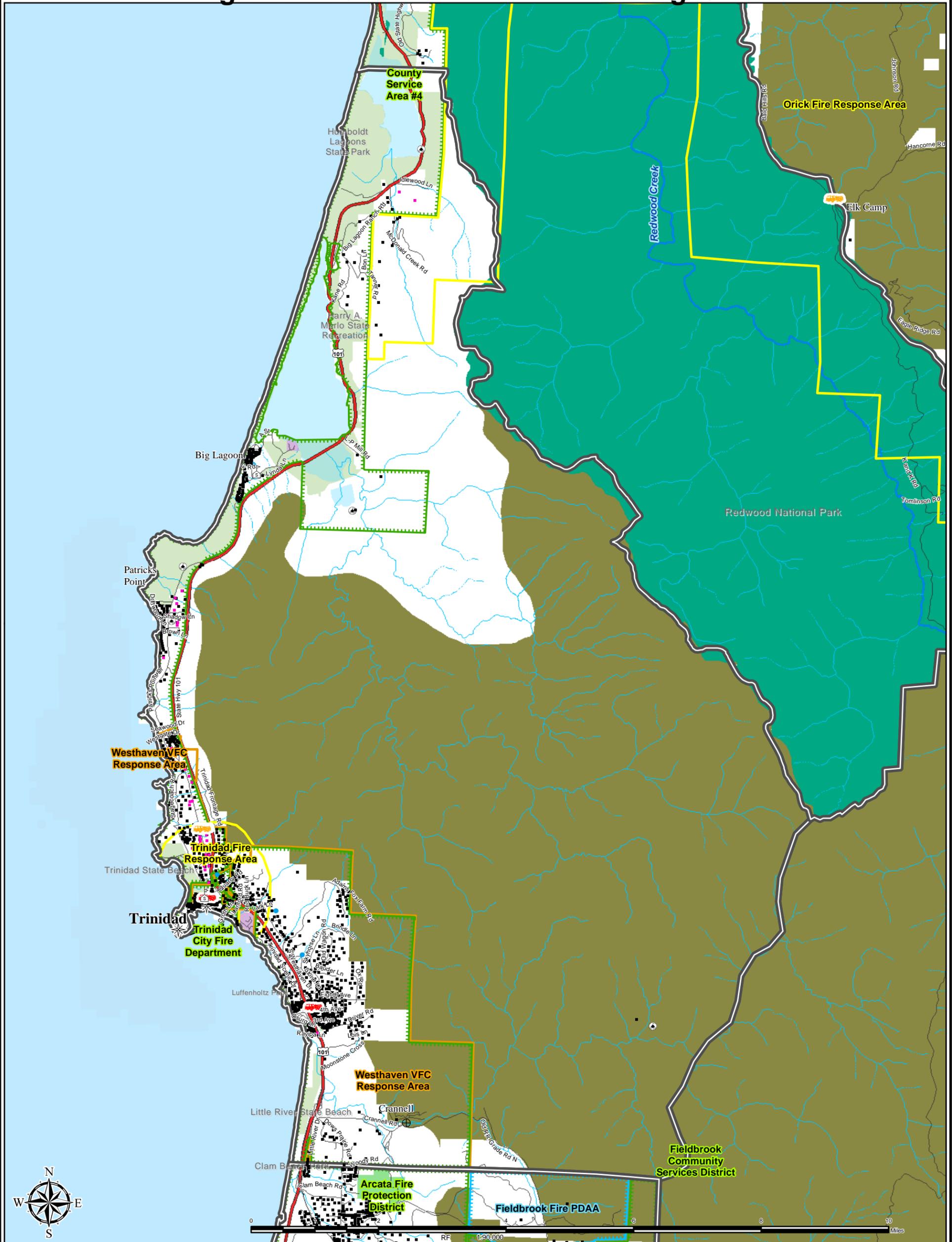
Promoting Fire Safe Education

- Conduct public education and outreach efforts regarding strategies for fire safety, maintaining defensible space, and evacuation planning. Send out informational material in mailers throughout the communities. Consider involving Boy Scouts and Girl Scouts of America in outreach efforts. Focus initial educational efforts on the following priorities:
 - Big Red Truck Program, where local firefighters visit residences and offer advice for improving fire safety on the property.
 - Increasing awareness about the risk of wildfire occurrence to inspire action. Education will help residents understand that there is a seasonal window of opportunity when the conditions are just right for severe wildfire and it only takes an ignition during that time to threaten local communities.

Reducing Wildfire Fuels (Flammable Vegetation)

- **Defensible Space:** Those residents living in areas within this Planning Unit that are at risk to wildfire should manage the flammable vegetation within their home ignition zone. Maintaining *defensible space* through vegetation treatments should be a routine and ongoing practice for all homes and *landscapes*. Community *Chipper Days* can facilitate this process by helping landowners get rid of *slash* and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the planning unit. The following priority areas were identified at community meetings and are recommended for treatment in this plan:
 - Neighborhoods along MacDonald Creek Road and Kane Ridge Road.
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. *Shaded fuelbreaks* should be considered as a method for roadside vegetation management to inhibit the re-growth of vegetation and to promote forest health. Focus initial efforts along the following roads:
 - Old Railroad Grade North
 - Luffenholtz Lane
 - Fox Farm Road

Figure IV.5-1 Trinidad Planning Unit



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
- Local Fire Station
- CAL Fire Station
- Six Rivers Fire Station
- Hospitals and Clinics**
- Hospital/Medical Center
- Red Cross
- Lookout, Lights, Radio**
- Lighthouse
- School

Local Fire Organization Response Area

- District
- Out of District
- Non-Tax (Volunteer Fire Company (VFC))
- Proposed District Annexation Area (PDAA)
- Improved Parcels**
- Improved Parcel (not actual location of improvement)
- Commercial or Industrial Lot (not actual location)
- Airports**
- Landing Strip

Highways and Roads

- HWY 101
- State HWY
- HWY or Secondary Road
- Local Road or Street
- Hydrography**
- Major River or Stream

Infrastructure

- Gauging Station
- Water Tank or Source
- Historic Locations

Land Ownership

- AGENCY**
- Bureau of Land Management
- National Park Service
- State Park or Other State Lands
- Six Rivers National Forest
- U.S. Fish and Wildlife Service
- Tribal Lands
- Private
- Industrial Timber
- Cities

CWPP Unit Map

October 23, 2017

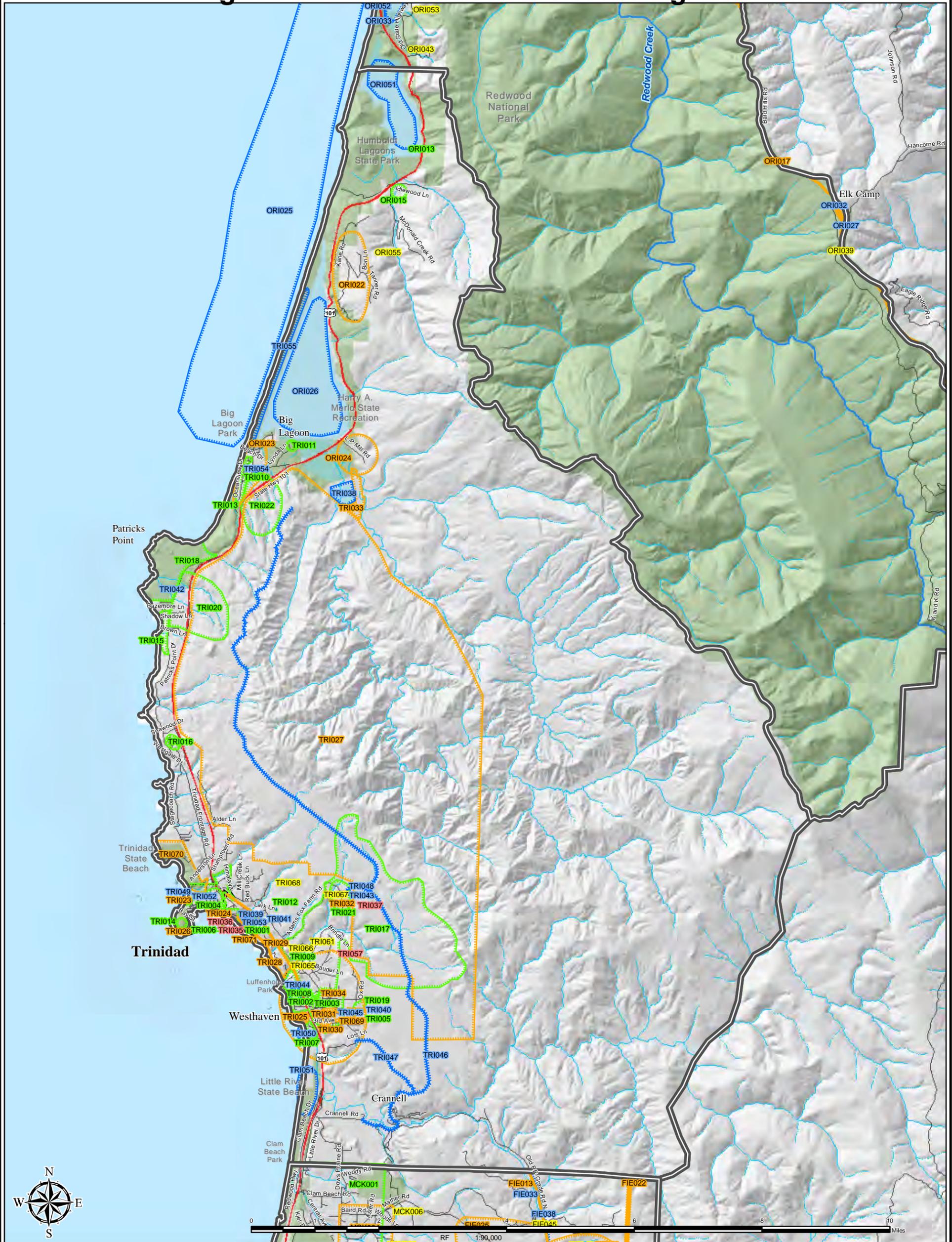


Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.5-2 Trinidad Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-------------------------------|-----------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Parks/Public Land | HWY 101 | Major River or Stream |
| Protection/Evacuation | Cities | State HWY | Perennial Stream |
| Value/Asset | | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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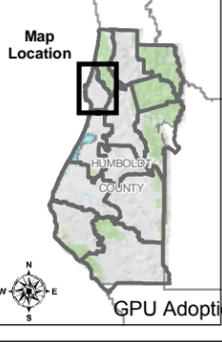
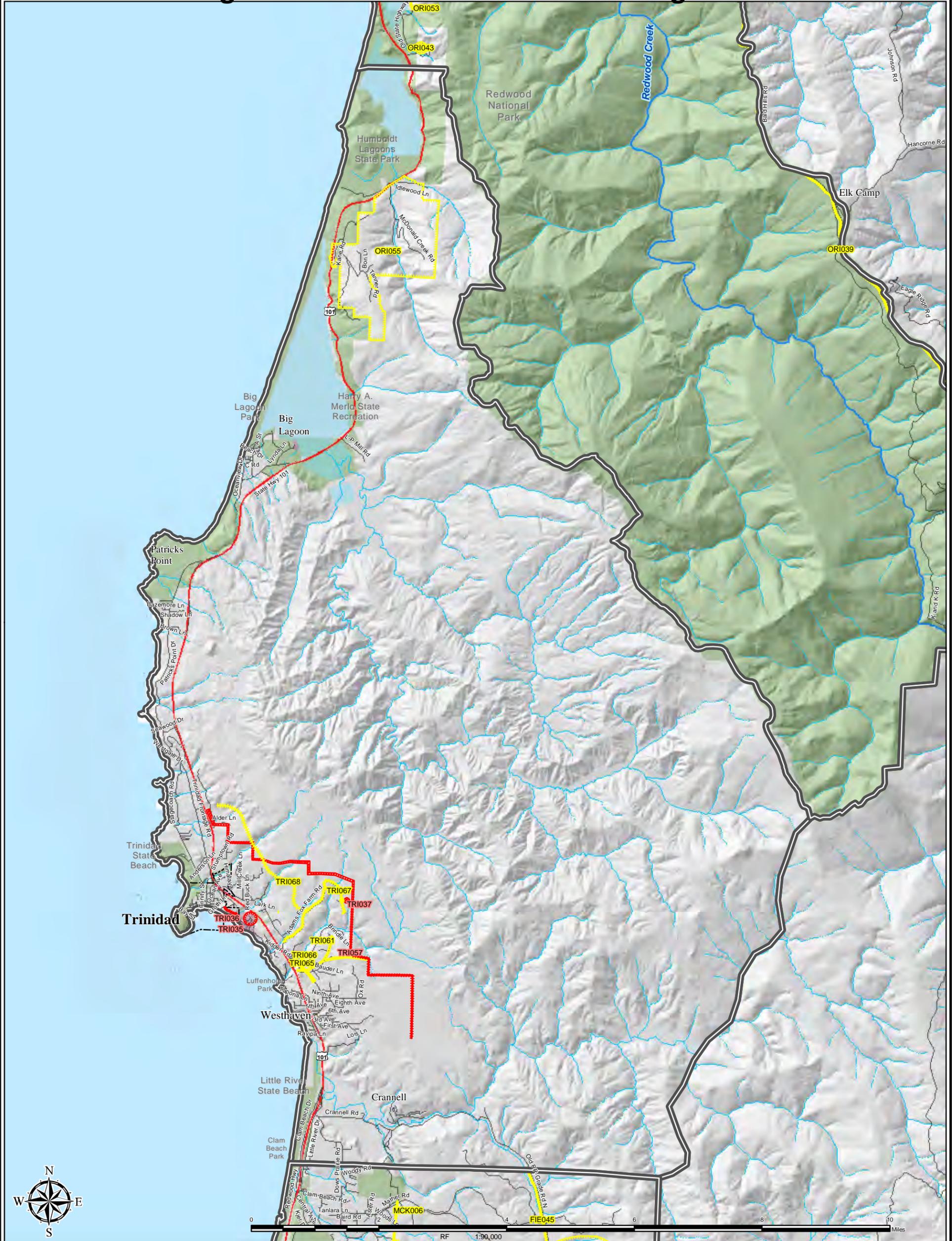


Figure IV.5-3 Trinidad Planning Unit



CWPP - Community Identified Projects

Legend		Land Ownership	Highways and Roads	Hydrography
	CWPP Planning Unit Boundary			
	Proposed Project			
	Treated Project			



Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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IV.6. Redwood Creek Planning Unit Action Plan

IV.6.1. Redwood Creek Planning Unit Description

The Redwood Creek *Planning Unit* encompasses 190,070 acres situated in the northern heart of Humboldt County; the Unit lies south of Redwood National Park and the Hoopa and Yurok Indian Reservations, east of Blue Lake, and west of Willow Creek. Highway 299 is the main transportation route through the area and winds across the middle of the Unit in an east-to-west direction. This Planning Unit encompasses a substantial part of the Redwood Creek *watershed*, from its headwaters to the southern Redwood National Park boundary. Redwood Creek flows across the eastern side of the Unit in a northerly direction towards Orick, where it meets the Pacific Ocean. Other major waterways include the North Fork of the Mad River in the western area, and Canon creek in the southwestern area.

This Planning Unit is sparsely populated and lacks any designated towns or cities. Three prominent neighborhood groupings are identifiable though: the Redwood Creek community, clustered in the northern portion of the Unit along Stover Road; the Titlow Hill community, which is dispersed throughout the eastern portion of the Unit on Titlow Hill Road, just south of Highway 299; and the Chezem Road community, west of Titlow Hill Rd. Numerous outlying inholdings are also scattered throughout the Unit, branching off of Highway 299 and the smaller roads throughout the southern region of the Unit, such as Bald Mountain Road and Snow Camp Road.

Private land is the dominant ownership pattern in this Planning Unit, with the majority of land owned and managed by Green Diamond Resource Company. Barnum Timber Company and Eel River Saw Mills are also industrial timber proprietors with considerable land ownership in the northern Unit area. Rural residential parcels cluster along Highway 299, particularly in the Titlow Hill Rd. area, and smatterings of inholdings exist throughout the western portion, south of Korbel as well. A few parcels of Bureau of Land Management (BLM) land lie west of the Hoopa Indian Reservation, and a small part of the southeastern Unit area includes Six Rivers National Forest territory, which is managed by the U.S. Forest Service. Primary land uses are timber and livestock production. A map of this Planning Unit can be viewed in Figure IV.6-1. Redwood Creek Unit: CWPP Unit Map.

IV.6.2. Redwood Creek Community Process Summary

A community workshop was held on May 12, 2012 at the Green Point School for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide *community wildfire protection plan* (CWPP) update process. A luncheon fundraiser for the school followed the workshop. Approximately 20 community members were in attendance; main discussion points centered on 1) the area's lack of a local fire protection service, 2) identifying ways to improve access for emergency response vehicles, and 3) making available water sources visible for firefighters and ensuring that water sources are equipped with the proper fittings for fire engines. A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion

among community members about potential actions that could be taken to reduce fire risk in their community. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their community's fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.6.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.6.3. Redwood Creek Wildfire Environment

The majority (68%) of the Redwood Creek Planning Unit, particularly the eastern half, is zoned "Very High *Fire Hazard Severity*," while 38% of the Unit, including most of the western half and some of the more populated areas on the eastern side (such as Titlow Hill) are zoned "High *Fire Hazard Severity*," as determined by the California Department of Forestry and Fire Protection (CAL FIRE).¹ The Unit consists of mostly mountainous, forested terrain comprised of "relatively steep, unstable hillslopes, very steep inner gorge slopes along much of the mainstem, and some *tributaries*, and narrow valley bottoms,"² with elevations ranging from 1,100 to about 5,300 feet.

The Unit is characterized by a Mediterranean climate, with mild, wet winters and warm, dry summers. Local vegetation in the Unit is dominated by coniferous forests, containing coastal redwoods and Douglas fir, as well as several hardwood species, including bigleaf maple, red alder, tanbark oak, madrone and bay. Grassland prairies and oak woodlands are also commonly featured on south- and west-facing slopes and ridgetops.³

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early agricultural settlers in the late 1800s used intentional burning to clear and maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1930s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. Intense timber harvests during the 20th century further exacerbated damages to forest ecosystem health.

The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 44% of the Redwood Creek Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 25% of the area is condition class 2, or moderately altered from the historical range.

1 CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

2 Dyett & Bhatia. (2002, September). Redwood Creek Watershed. (p.81.)

3 Dyett & Bhatia. (2002, September). Redwood Creek Watershed. (p.82.)

Possible *ignition sources* include human-related causes, such as arson, poorly maintained campfires or brush piles, smoking, equipment use, and vehicles or vehicular accidents. Lightning and downed power lines are other potential fire starters. Other factors that are likely to have a future impact on fire risk within this Unit include: large fuel increases resulting from the spread of *Sudden Oak Death*, which has already been detected in areas of the watershed and climate change, which is likely to extend the dry season when fire risk is greatest.

All residences in this Planning Unit exist within the *wildland-urban interface* (WUI), where *wildland fires* can easily become *structural fires*, and vice versa. *Dead plant matter* and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and sidings add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Many homes in this Unit are surrounded by steep slopes that can limit their defensible areas and put structures in the line of up-hill spreading wildfires.

Figure IV.6-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Notable hazards identified by community members include:

- Long dead-end roads with only one way in and one way out.
- Slash buildup resulting from timber harvest activities adjacent to residential properties.
- Significant unpermitted constriction that is not in compliance with Humboldt County Fire Safe Regulations, particularly in Titlow Hill neighborhoods.

Highway 299 is the central *ingress and egress* route, with numerous smaller roads connecting residences and neighborhoods to it. Poor or complete lack of *signage* at roads and intersections pose potential problems for ingress and egress. Most of the residences in this Unit are remote and many are only accessible via narrow, steep, roads, some of which have no alternative exit route. The narrowness of these smaller roads leading to remote residences could create serious complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Routes may also be overgrown with vegetation, and many properties have inadequate *turn around spaces*. The potential for landslides in the area could also inhibit access.

No municipal water sources service the neighborhoods within this Planning Unit. Rather, residents obtain water through other means, such as drawing from nearby creeks and holding tanks. *Fire protection water* may also be *drafted* from the following locations:

- Chezem Rd. --creek access (Chezem Flat)
- Green Diamond water hole access
- Creek Pool at bridge on Bair Rd.
- Mill Creek Bar (Green Diamond)

The map in Figure IV.6-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.6.4. Redwood Creek Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for

their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes, neighborhood areas, and ranchlands, as well as infrastructure components such as *access roads/evacuation routes* and a transfer station. Timberland resources are also valuable assets at risk to loss from wildfire. Environmentally significant assets at risk include *stands* of old growth redwoods at Stover Ranch and on BLM land. The *habitat* provided by the Redwood Creek watershed is also a significant environmental asset, which includes at least 33 species of wildlife that are identified as species of special concern (*species threatened, endangered or sensitive* to human activities), five of which are fish species.⁴

The map in Figure IV.6-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁵ Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Green Point School
- Camp Anderson -- historical site
- Redwood Creek Camp/Adventist Cookson Ranch
- Chezen Flat RV Sites
- Korbel Mill – Green Diamond mill site, nursery, log deck, offices
- Barnum Ranch House "Bair House" Stage Coach Stop

IV.6.5. Redwood Creek Community Preparedness

No local *fire safe council* (FSC) exists in this Planning Unit and none of the communities has achieved national *Firewise* recognition. However, during the community outreach process the Redwood Valley community expressed interest in forming a local FSC. The Green Point Elementary Scholl does provide some emergency preparedness information to students and their families and would serve as an effective focal point for communitywide emergency preparedness efforts and activities. Currently, efforts to educate community members about fire safety within this Unit are provided by the Willow Creek and Humboldt County FSCs; these efforts have been limited thus far.

IV.6.6. Redwood Creek Wildfire Protection Capabilities

No local fire protection services exist for this Planning Unit. CAL FIRE is the entity primarily responsible for providing emergency response in this area. However, responders must travel all the way from Trinidad, which takes about 55 minutes. Additionally, these communities rely on the “*goodwill service*” of Blue Lake and Willow Creek *Volunteer Fire Departments*. Blue Lake and Willow Creek fire resources will usually respond to emergency calls outside of their

⁴ Dyett & Bhatia. (2002, September). Redwood Creek Watershed. *Humboldt 2025 General Plan Update: Natural Resources and Hazards; Vol. 2: Detailed Watershed Characteristics and Regulatory Framework Analysis*.(p.82) Retrieved from <http://www.co.humboldt.ca.us/gpu/documentsbackground.aspx>.

⁵ Geographic Information Systems (GIS).

designated districts, so long as their services are not required within their immediate districts at the time. In addition, the towns of Blue Lake and Willow Creek are far enough away from the neighborhoods within this Unit that *response times* can take as long as 30 minutes or more for emergency services to reach the incident site.

The lack of any local fire protection entity within this Planning Unit, whose communities and residences are remote and embedded within the WUI, is a high priority concern. The likely potential for lengthy response times from out-of-the-area fire protection and emergency services should be acknowledged by the communities within this Unit and a strong emphasis should be placed on proactive, preventative measures, such as maintaining *defensible space* and knowledge about which community members have experience or training in first aid and medical response.

IV.6.7. Redwood Creek Evacuation

Evacuation from the Redwood Creek Planning Unit will travel either east or west along Highway 299, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences and neighborhoods to Highway 299. Adequate ingress and egress along these roads is vital to the majority of the community that may need to access the main highway *evacuation route* and for firefighters who will be using the same roads to access wildfires burning in up-slope areas.

For residents located along Stover Rd, an alternative evacuation route may be accessed via Bair Rd., leading northeast toward Hoopa. Residents living along Snow Camp, Ward, and Barr Roads could access Bald Mountain Road as an alternative route, west towards Korbel. Titlow Hill residents would most likely require permission and assistance from the United States Forest Service (USFS) to utilize alternative evacuation route USFS6N08 Rd. into Six Rivers National Forest territory, with access to Highway 299 and Willow Creek.

Evacuation impediments may include: landslides, fallen trees, downed power lines, overgrown vegetation, poorly marked streets and intersections, and *one-way-in, one-way-out roads* that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.6.8. Redwood Creek Community Identified Projects

The following list and matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.6-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

Non-geographic community identified proposed projects based on community workshop notes:

- Start a local fire department or collaborate with Blue Lake Fire Department to expand their service area. Possibly get surplus equipment from other fire departments in the area.
- Develop a community Phone Tree list; compile a list of contacts to call in case of emergency or when help is needed from (or in) other areas. As another form of emergency communication train a few community members to use the HAM Radios that are currently housed at the school.
- Improve signage throughout the community. Make home addresses and road signs more visible and add mile markers along main roads.
- Encourage evacuation planning and talk to property owners about supplying keys to locked gates on private properties in case emergency access is needed.
- Hold a “Living on Shaky Ground” course.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with Location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
FIE042	Community of Fieldbrook	Sawdust Trail - Shaded Fuelbreak	Treat-Med		Roadside Clearance				grant- landowner- Assn.
RWV042	Bair Road	Bair Rd Bridge to Hwy 299 Shaded Fuelbreak	Treat-Med		Roadside Clearance				grant- landowner- Assn.
RWV043	Stover Rd	Stover Rd. (from school to end) Shaded Fuelbreak	Treat-Med		Roadside Clearance				grant- landowner- Assn.
RWV044	Beaver Flat @ Stover Rd	Beaver Flat brush clearing & helicopter landing zone	Treat-Med		Landscape	15.45			grant- landowner- Assn.
RWV046	Redwood Creek before Lacks Creek	Summer Dam; Redwood Creek before Lacks Creek	Action Need	2010	Other - Water				grant- landowner- Assn.
RWV047	Stover Rd. @ Beaver Flat	Water Storage @ Beaver Flat	Action Need	2010	Other - Water				grant- landowner- Assn.
RWV053									

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with Location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
RWV054	Road off Hwy 299 across from Bald Mtn Rd	Shaded understory, clearing as needed	Treat-Med	2012	Roadside clearance				grant- landowner- Assn.
WCK139	Upper Redwood Valley Ranch Road Community	Understory clearing and road improvements for access along Upper Redwood Valley Ranch Rd.	Treat-Med	2010	Roadside Clearance				grant- landowner- Assn.
WCK153	Hwy 299 west	Hwy 299 fuel Reduction - WC	Treat-Med	2011	Roadside Clearance				grant- landowner- Assn.
WCK221	Old Three Creeks Rd.	Old Three Creeks Rd. Clearance - Roadside Brushing/ Shaded Fuelbreak	Treat-Med		Roadside Clearance	40.29			grant- landowner- Assn.
WCK222	Titlow Hill Neighborhood	Titlow Hill Neighborhood: Encourage landowners to make Defensible Space	Treat-High	2010	Defensible Space				grant- landowner- Assn.

IV.6.9. Redwood Creek Action Plan

The following items are the initial priorities for community action for the Redwood Creek Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Adequate Fire Protection:** Explore potential options for providing local fire protection to the communities within this Planning Unit. Community members should join in discussions pertaining to the possible expansion of the Blue Lake Fire Protection District boundaries and advocate for the inclusion of these communities in that expansion. If that is not feasible, consider developing a local fire brigade or department.
- **Signage:** To aid emergency responders, residents and road associations should improve road and address signage throughout their communities. Make signs larger and reflective to increase visibility and install road and address signs where they are missing. Less noticeable but more sentimental address signs may remain but it is important to also post reflective signs with lettering at least three inches in height. Focus initial efforts in the following priorities:
 - Post address signs at the bottom of long driveways branching off of the main roads.
 - Install mile markers along Stover Road and Titlow Hill Road.
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Neighborhood and road associations and/or Firewise Communities work with nearby fire departments and CAL FIRE to develop a “Blue Dot” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed. Focus initial efforts in the following area:
 - Titlow Hill Road
 - Stover Road
 - Develop a firefighting water source on Stover Road at Beaver Flat

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program with neighborhood groups in developed areas adjacent to the wildland, particularly where there are many residences located along dead-end roads. Actively implement and maintain the Firewise action plan on an annual schedule. Focus initial efforts in the following area:
 - Stover Road residents in coordination with Green Point Elementary School
- **Community Collaboration and Communication:** Develop a Phone Tree List containing contact information for residents within the Planning Unit, as well as contacts outside of the area. This contact list can be used to spread and share information throughout the community and request help in emergency situations.

- **Fire Safe Regulation Compliance:** Property owners should coordinate with the Humboldt County Planning and Building Department to achieve compliance with County codes and regulations.

Preparing Communities for Emergencies

- **Community Emergency Response Teams:** Organize a *Community Emergency Response Teams* (CERT) training session for residents interested in improving the community's emergency preparedness. These training opportunities equip community members with basic disaster response skills for dealing with a variety of emergency situations. Such skills become extremely valuable in situations where professional responders cannot act immediately. CERT participants gain experience implementing collaborative problem solving and develop a greater sense of community cohesion.

Promoting Fire Safe Education

- Conduct public education and outreach efforts regarding strategies for fire safety, maintaining defensible space, and evacuation planning. Send out informational material in mailers throughout the communities. Consider involving Boy Scouts and Girl Scouts of America in outreach efforts. Focus initial educational efforts on the following priority:
 - Evacuation Preparedness
 - Reducing hazards in the *Home Ignition Zone*
 - Effective communication while calling 911; particularly in relation to explaining the incident location.

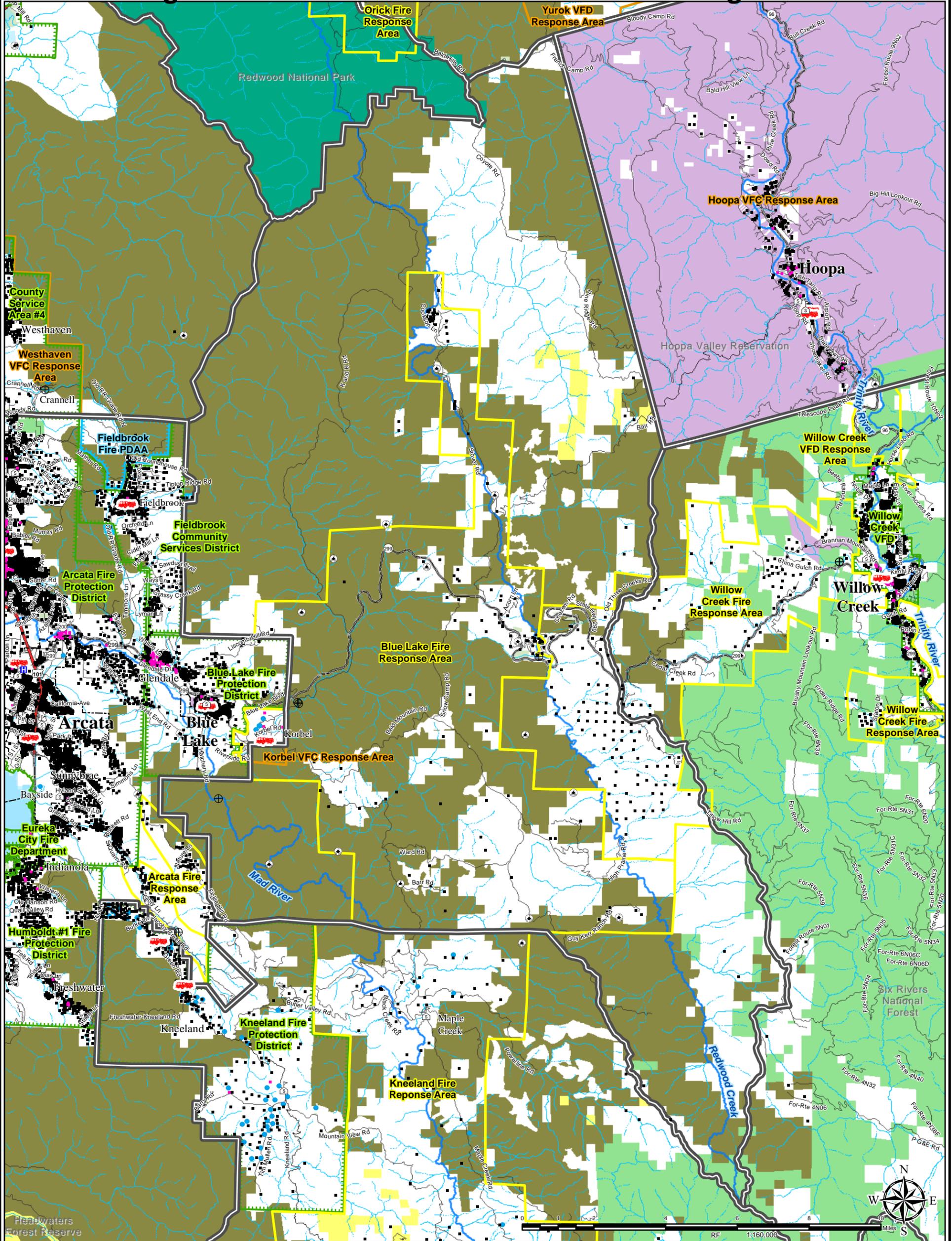
Reducing Wildfire Fuels (Flammable Vegetation)

- **Defensible Space:** Those residents living in areas within this Planning Unit that are at risk to wildfire should manage the flammable vegetation within their Home Ignition Zone. Maintaining *defensible space* through vegetation treatments should be a routine and ongoing practice for all homes and landscapes. Community *Chipper Days* can facilitate this process by helping landowners get rid of slash and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the planning unit. The following priority areas were identified at community meetings and are recommended for treatment in this plan:
 - Neighborhoods along Titlow Hill Road.
 - Neighborhoods along Stover Road
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Focus initial efforts along the following roads:

○ Sawdust Trail	○ Upper Redwood Valley Ranch Road
○ Bair Road, bridge to Highway 299	○ Old Tree Creeks Road
○ Stover Road	
- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:
 - Brush clearing and creation of a helicopter landing area on Stover Road at Beaver Flat.

- Create a buffer between Green Diamond and Barnum Timber lands and adjacent residential properties to protect both the community and the resource lands.

Figure IV.6-1 Redwood Creek Planning Unit



CWPP Unit Map

Legend

- CWPP Planning Unit Boundary
- Emergency Response**
- Local Fire Station
- CAL Fire Station
- Six Rivers Fire Station
- Hospital/Medical Center
- Red Cross
- Lookout, Lights, Radio**
- Lighthouse
- School

- Local Fire Organization Response Area**
- District
- Out of District
- Non-Tax (Volunteer Fire Company (VFC))
- Proposed District Annexation Area (PDAA)
- Improved Parcels**
- Improved Parcel (not actual location of improvement)
- Commercial or Industrial Lot (not actual location)
- Airports**
- Landing Strip

Highways and Roads

- HWY 101
- State HWY
- HWY or Secondary Road
- Local Road or Street
- Hydrography**
- Major River or Stream
- Infrastructure**
- Gauging Station
- Water Tank or Source
- Historic Locations

Land Ownership

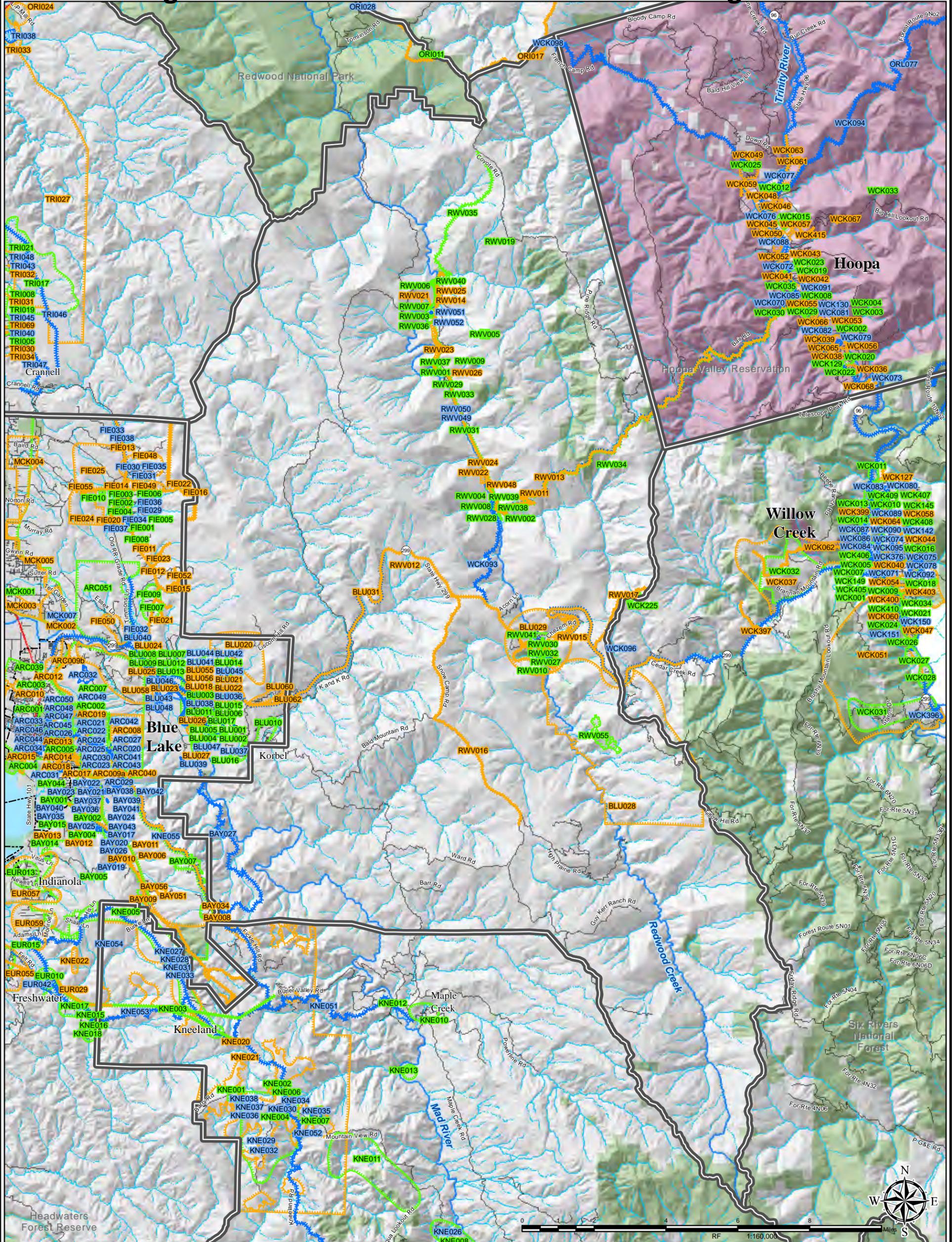
- Bureau of Land Management
- National Park Service
- State Park or Other State Lands
- Six Rivers National Forest
- U.S. Fish and Wildlife Service
- Tribal Lands
- Private
- Industrial Timber
- Cities

Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents, local, state, and federal fire service personnel, and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.6-2 Redwood Creek Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

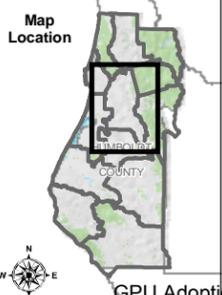
- | | | | |
|-----------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Protection/Evacuation | Parks/Public Land | HWY 101 | Major River or Stream |
| Value/Asset | Reservation/Tribal Land | State HWY | Perennial Stream |
| Risk/Hazard | Cities | HWY or Secondary Road | Intermittent Stream |
| | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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Map compiled by County of Humboldt, March 2013
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IV.7. Trinity Planning Unit Action Plan

IV.7.1. Trinity Planning Unit Description

The Trinity *Planning Unit* encompasses 168,362 acres situated in eastern Humboldt County within the south-central Klamath Mountains, bordering Trinity County. The boundaries of this Planning Unit were partly determined by the area described in the Willow Creek Greater Area *Community Wildfire Protection Plan* (CWPP), which includes communities located in Trinity County. Thus, the southeastern quadrant of this Planning Unit actually falls within the boundaries of Trinity County; however, the recommended action items described in this Unit Action Plan will focus on those items pertinent to Humboldt County, specifically. The two main transportation routes are Highway 299, which leads southeast towards Weaverville or west towards Arcata, and Highway 96, which follows the Trinity River north into Hoopa. These primary roads intersect in the central town of Willow Creek, about 35 miles from the Pacific coast. Part of the Trinity River *watershed*, the Unit is made up of mostly steep and mountainous terrain with deep valleys formed by the Trinity River and its *tributaries* dissecting the area. "The New River, the South Fork of the Trinity, and Willow Creek all confluence with the main stem of the Trinity along with numerous streams, creeks, and unnamed water courses."¹ Elevations in this unit range from 440 to 9,025 feet above sea level.

Willow Creek comprises both the geographic center as well as the central community of this Unit. Several neighborhoods exist in the area surrounding Willow Creek; among them are the neighborhoods of: Bigfoot, Clover Flat, Hodgson, Kimtu, Knights, McIntosh, Riteway Lane, Rowley, Terrace, and The Farms.² The majority of communities in this Planning Unit exist along Highway 299, including: Salyer, Hawkins Bar, Burnt Ranch and Cedar Flat, as well as the neighborhoods of Oden Flat, Gray Flat, and Suzy Q. All of these are identified *communities at risk* of wildfire,³ where homes are located within the *wildland-urban interface* (WUI). Although the majority of the population has access to phone and electrical services, there is limited cellular phone reception and many residents live "off-the-grid."⁴

The majority of this Planning Unit falls within Six Rivers National Forest boundaries and is managed by the U.S. Forest Service (USFS). The distribution of private and public lands within this Unit is somewhat like a checkerboard, with private in-holdings interspersed throughout Forest Service land. A large portion of private land in this Unit is owned by timber industries. Other private ownerships include residential parcels as well as ranchlands. The area also supports a few small produce and specialty farms, as well as some local vineyards. Dominant land uses include recreation, timber, fisheries, wildlife *habitat*, and grazing. A map of this planning unit can be viewed in Figure IV.7-1. Trinity Unit: CWPP Unit Map.

IV.7.2. Trinity Community Process Summary

A community workshop was held on May 24, 2012 at the Trinity Valley Elementary School in Willow Creek for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the

¹Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area Community Wildfire Protection Plan* (CWPP). (p.6.) Retrieved from <http://willowcreekfsc.org/cwpp.html>.

² County of Humboldt, Natural Resources Planning. (2006, August). Appendix G: Community Identified Values, Protection Resources, Risks and Hazards, and Projects. (p.G-7.) *Humboldt County Master Fire Protection Plan*. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fsc_mfpp_cwpp.aspx

³ California Fire Alliance. (2012). *Communities at Risk List* Retrieved from www.cafirealliance.org/communities_at_risk/communities_at_risk_list.

⁴ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 6.)

communities in this Unit, and to provide information about the countywide community wildfire protection plan (CWPP) update process. Attendees included members of the local volunteer fire department (VFD), several members of the Willow Creek Fire Safe Council, USFS, and California Department of Forestry and Fire Protection (CAL FIRE) representatives, as well as the Grange Master of the district. A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their community. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their community's fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.7.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.7.3. Trinity Wildfire Environment:

Nearly the entire Trinity Planning Unit (97%) is zoned "Very High *Fire Hazard Severity*," as determined by CAL FIRE,⁵ although fire risk tends to be slightly lower in the flatter and less vegetated areas. The mountainous terrain and steep river canyons that are characteristic of this region, combined with long, hot summers that generate *fuels* with low *moisture levels* can amplify the rate that fires spread and their level of intensity. The Trinity County Board of Supervisors has expressed concern about these issues and notes that, "exorbitant amounts of money are spent each year fighting fires."⁶

Local *vegetation types* include mixed evergreen, *conifer forests*, Klamath mixed conifer forests, and White Oak forests. Riparian areas are dominated by grasslands and hardwoods such as oak, alder, and willow.⁷

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early agricultural settlers in the late 1800s used intentional burning to clear and maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1940s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. This change from the natural *fire regime* has also altered *vegetation*

⁵CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

⁶ Trinity County Board of Supervisors. (2008, February 5). Resolution No. 2008-006 Declaring a state of emergency related to the extreme wildfire risk in Trinity County. In: Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*.

⁷ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 8.)

composition and the ecological structure of forests in these areas, such that the majority of ecosystems in this area are "out-of-whack" and susceptible to losing key ecosystem components.⁸ Intense timber harvests during the 20th century have further exacerbated damages to forest ecosystem health. The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 56% of the Trinity Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 32% of the area is condition class 2, or moderately altered from the historical range.

The Fire History Map within the Willow Creek Greater Area CWPP shows some of the more widespread fires. Although several of these fires burned in the Shasta-Trinity National Forest (NF) area, outside of Humboldt County, the proximity of these fires was near enough for the communities within this Planning Unit to experience their impacts, particularly in the form of degraded air quality. Fires in and adjacent to this Planning Unit include⁹:

- The Megram Fire, in 1999: 57,727 acres
- The Onion Fire in 1999: 15,949 acres (Shasta-Trinity NF)
- The Friday Fire in 2003: 389 acres
- The Half Fire in 2008: 9,095 acres
- The Ziegler Fire, in 2008: 2,349 acres (Shasta-Trinity NF--part of the Iron Complex)
- The Ironside Fire in 2008: 12,720 acres (Shasta-Trinity NF--part of the Iron Complex)
- The Cedar Fire in 2008: 25,398 acres (Shasta-Trinity National Forest--part of the Iron Complex)

Humans have been the primary cause of fires in the last 50 years. Most fires have occurred along main road systems, down in the river valley, and near residences and recreation areas. Lightning strikes are another cause of fire, but they are spread more evenly throughout the Unit, often occurring at higher elevations and in remote locations. Numerous wildfires may be generated from multiple strikes within the same lightning storm, which can put a strain on firefighting resources. Vehicles are also a potential *ignition source*, with higher risks resulting from roadside fuels built up along town streets, back roads, and highways. Recreation operations draw in an increased population during the summer months, which can create a higher ignition risk as well. Additional ignition risks include: unattended campfires, *structure fires* spreading into the *wildlands*, arson, and power lines.¹⁰

The risk of *structural ignitability* is exacerbated in many cases by wooden roofs and sidings, which are common to houses in this area. This risk is greatly increased by the accumulation of leaves, needles and small dead branches on rooftops and in gutters. It has been observed that many homes in the planning area have dense vegetation growing in the *Home Ignition Zone*. Additionally, homes with woodpiles, fences, gates and wood lattice in contact with the structure are susceptible to combustion and, if lighted, could ignite the home as well. Figure IV.7-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, "Fire Planning" section: <http://gis.co.humboldt.ca.us/>.

⁸ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 9.)

⁹ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 14.)

¹⁰ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 2.)

Topographical features of the Unit such as narrowed winding roads, and hilly terrain create potential problems for orderly evacuation and delivery of emergency services. The terrain also poses problems for water delivery in fire protection. Many private roads originating off of Highways 299 and 96 serve back woods residences but do not provide a secondary emergency *evacuation route*. This problem of *one-way-in-one-way-out roads* is prevalent throughout the Unit and poses a serious potential risk to firefighter access, particularly if home evacuations are occurring simultaneously. One prominent example is the bridge on Country Club Road, which serves as the only way for residents of the Bigfoot Subdivision, Seely McIntosh, Patterson Road, and Oak Lane neighborhoods to get across the river to Highways 299 and 96. These neighborhoods are otherwise surrounded by the steep, dense forests of Six Rivers National Forest.¹¹

The Willow Creek *Community Service District*, which was formed in 1967, provides water to about 2,000 customers with 935 service connections. The District's critical facilities include a water treatment plant, pump stations, and six water tanks, three of them redwood and three metal, with a storage capacity of 1.2 million gallons.¹² Water for fire protection may also be drawn from the following locations:¹³

- Big Rock - USFS river access
- Bigfoot golf course (drafting)
- Kimtu Beach - drafting area
- Burnt Ranch Mill water intake
- Hennessey Creek
- Skycrest Lake (on private property)

The map in Figure IV.7-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, "Fire Planning" section: <http://gis.co.humboldt.ca.us/>.

IV.7.4. Trinity Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes and communities, along with a variety of commercial and service industries, community centers, medical and dental clinics, schools, churches, fire stations, as well as infrastructure components such as a water treatment facility. Several small organic farms and local wineries within this Unit are also considered assets at risk.

The map in Figure IV.7-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be

¹¹ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 13.)

¹² County of Humboldt, Natural Resources Planning. (2008). *Humboldt Operational Area Hazard Mitigation Plan; Volume 2 – Planning Partner Annexes*. (p.14-2.) Retrieved from <http://www.co.humboldt.ca.us/natural-resources/hazardmitigation/?inc=finaldraft>

¹³ Willow Creek Fire Safe Council. (2011). Appendix 1: Matrix of Community Identified Features and Maps. *Willow Creek Greater Area CWPP*.

used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS¹⁴ Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Burnt Ranch Veterans Hall- Indian Hall
- Knights neighborhood/Trailer Park
- Burnt Ranch Campsite – Burnt Ranch Falls USFS
- Commercial District - US Post Office
- Willow Creek repeater
- Cell Tower

Natural resource assets such as waterways, forests, fisheries and wildlife are highly valued by residents in these communities. These assets contribute positively to local quality of life and to the tourist-related economy as well. Many culturally sensitive sites of special importance to Native Americans exist throughout the Unit as well.¹⁵

IV.7.5. Trinity Community Preparedness

Three distinct *fire safe councils* (FSCs)--the Willow Creek Fire Safe Council (WCFSC), Humboldt County FSC, and Trinity County FSC-- support communities in this Unit by providing fire preparedness education and programs to residents. These FSCs also compete for grants to help fund *fire hazard* mitigation efforts within the area, such as *fuel reduction* projects.

The mission of the WCFSC is: “to reduce wildfire risk and increase survivability by implementing fuels reduction projects and encouraging residents of the Willow Creek area to make their homes, neighborhoods, and communities *fire safe*.”¹⁶ The WCFSC is very active and has secured grant funding to put on an annual Fire Safe Day and Youth Ecology Fair. Also with grant money, the WCFSC has held *Chipper Days* in order to help landowners get rid of brush, and they have implemented the “*Blue Dot Program*,” which makes water sources available for fire protection more apparent to firefighters. In addition to constructing their own website through which community members can access fire safety information, the WCFSC has produced a “Living With Fire” publication. The WCFSC works in coordination with the Willow Creek Volunteer Fire Department (WCVFD) to provide community education, and with CAL FIRE to conduct a Fire Prevention program.

The WCFSC also had a prominent role in developing the Willow Creek Greater Area CWPP, which was completed in 2011. It encompasses the communities of Willow Creek, Salyer, Hawkins Bar, Burnt Ranch, and Cedar Flat. Some of the main objectives of the plan are: to improve the protection of lives and properties from wildfire; merge the goals of landowners with community needs regarding *wildfire risk* reduction; coordinate fire protection strategies across property boundaries; and provide a tool to help coordinate grant funding for such efforts. The plan is also aimed at increasing public awareness of good fire safety practices for living in the WUI and providing residents with resources to help them reduce fire risk on their own properties.¹⁷

The WCFSC can be contacted by calling (707) 499-0767, by email at: admin@willowcreekfsc.org, or by visiting their website at: www.willowcreekfsc.org.

The community of Willow Creek has also all received national recognition as a *Firewise* community. Some successful Firewise modifications include: *hazardous vegetation management* around homes, roads, parks, and businesses; eliminating *ladder fuels* in the home ignition zone;

¹⁴ Geographic Information Systems (GIS).

¹⁵ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (pp. 18-19).

¹⁶ Willow Creek Fire Safe Council. (n.d.) Our Mission. *Willow Creek Fire Safe Council Homepage*. Retrieved November 28, 2012 from www.willowcreekfsc.org.

¹⁷ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 1.)

creating well positioned, reflective address and road signs; implementing fire safe landscaping (such as stone and gravel pathways that can act as *fuelbreaks*) around homes in the community; and obtaining funding assistance for property owners making these modifications via the *Fire-adapted Landscapes and Safe Homes (FLASH) program*.¹⁸

FLASH is a rebate program that reimburses property owners for hazardous vegetation management completed around their homes, along *access routes*, and in particularly hazardous areas. Between 2010 and 2011, over 35 acres were treated under the FLASH program and over 100 site visits including a home risk assessment were conducted by FSC staff. The program has received additional funding for 2012-2013 and the goal is to treat approximately 20 acres.

IV.7.6. Trinity Fire Protection Level of Service

The Trinity Planning Unit has excellent coordination and collaboration between various fire protection groups. Federal, state, and local agencies have a cooperative agreement for exchanged protection responsibility in specific areas; for example, CAL FIRE provides both 911 *dispatching* services to the Willow Creek VFD, as well as suppression resources to the Six Rivers National Forest when requested. "Because fires do not respect jurisdictional boundaries and in the spirit of shared protection responsibility, local, state, and federal resources work together to ensure a well coordinated wildfire management strategy."¹⁹ However, CAL FIRE's capabilities and resources are limited outside of fire season due to units being unstaffed as a result of state budget cuts.

Local *volunteer fire departments* (VFDs) are primarily responsible for responding to *structural fires* and medical emergencies; however, volunteers are also trained for wildfire management and may be called upon to assist in case of fire emergencies. The following VFD provides fire protection as well as medical and rescue services to the neighborhoods within this Planning Unit:
20

- The Willow Creek VFD, founded in 1957, has 22 volunteers who provide service to approximately 2,000 residents within an area of four square miles. Their *apparatuses* include: two type-2 engines, a type-6 wildland engine, one rescue truck, and a 3,000 gallon *water tender*. The Willow Creek VFD can be reached by calling (530) 629-2229.

The following departments are in Trinity County but will respond to emergencies in Willow Creek and also receive assistance from the WCVFD as needed:

- The Hawkins Bar VFD has 12 volunteers who provide service to 600 residents within approximately 156 square miles. Their apparatuses include: four fire engines, including one quick attack engine, a medical van, and a water tender. The Hawkins Bar VFD can be reached by calling (530) 629-3920.
- The Salyer VFD has approximately 14 volunteers who provide service within approximately 50 square miles. Their apparatuses include: two type-2 engines, one quick attack medical vehicle, and one water tender. The Salyer VFD can be reached by calling (530) 629-2778.

Sufficient funding is a critical issue faced by many VFDs in this area. Costs associated with insurance, Workers Compensation, and ensuring adequate safety equipment and training are high; and fund-raising by all-volunteer departments is difficult and time-consuming. Providing emergency response to calls during business hours can be a challenge for many VFD, as volunteers often have jobs or children to attend to during the day. Still, VFDs are holding fast to

¹⁸ Firewise Communities/USA Recognition Program. (2010). *Willow Creek Community Firewise Assessment*.

¹⁹ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (p. 20.)

²⁰ Willow Creek Fire Safe Council. (2011). *Willow Creek Greater Area CWPP*. (pp. 23-25.)

ensure delivery of local emergency services, although the level of service capabilities vary between communities.

IV.7.7. Trinity Evacuation

Evacuation from the Trinity Planning Unit will travel either south-east or west along Highway 299 or north on Highway 96, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences and neighborhoods to Highway 96. Adequate ingress and egress along these roads is vital to a large portion of the community that may need access to the main highway evacuation route and for firefighters who will be using the roads to access wildfires burning in these areas.

Several U.S. Forest Service Routes could potentially provide alternative evacuation routes; however, residents would most likely require permission and assistance to utilize these routes.

Potential alternative evacuation routes include:

- Campbell Ridge Rd., Brannan Mountain Rd., Beebe Ranch Rd., Coon Creek Rd., and USFS Rte 4, surrounding Willow Creek;
- USFS Rte 5N01, USFS Rte 5N10, USFS Rte 1, and PVT - Redwood Valley, located near the southwestern portion of the Unit;
- USFS Rte 4, USFS Rte 06N10, and USFS Rte, located in the northeastern unit area.

Evacuation impediments may include: landslides, fallen trees, downed power lines, overgrown vegetation, poorly marked streets and intersections, and one-way-in, one-way-out roads that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.7.8. Trinity Community Identified Potential Projects

The following section includes a summary of potential projects identified through the community processes discussed above. Some of the potential projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.7-3). This map includes projects carried over from the 2006 fire-planning process and those identified and refined during the 2011 Willow Creek local CWPP development and the 2012 County CWPP

update process. In addition, Figure IV.7-2 illustrates Community-Identified Values and Assets, Hazards and Risks, and Wildfire Protection Resources. The maps in Figure IV.7-2 and Figure IV.7-3 can each be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Because of the tremendous amount of work that has been accomplished within this unit and the existence of a local CWPP, a project matrix was not included in this Unit Action Plan. All of the geographic community identified project information is cataloged in the Web GIS Portal described above as well as in the Greater Willow Creek CWPP. This County CWPP incorporates that information by reference here. This information will continue to be made available as a resource for capturing grant funds and continued project implementation tracking.

Project ideas are also listed that are not visible on the maps, because they are not geographically based. These proposed actions also add to and expand upon the 2006 plan, based on the 2012 process (including the County CWPP update, the local CWPP, and the Firewise action plan). Because of the complexity of the planning process in this unit, the community identified potential projects are broken out into the following categories:

- CWPP Action Items,
- Firewise Action Items

CWPP Action Items

The Greater Willow Creek Area CWPP lists and outlines various types of projects that have been proposed to improve fire safety in the area in a five to ten year action plan. These projects fall under the categories of:

- Reduce Structural Ignitability
- Support and Improve Fire Protection Capabilities
- Treatment of Hazardous Fuels
- Education
- Planning

The following summarizes the projects proposed in the Greater Willow Creek Area CWPP. A complete copy of the Greater Willow Creek Area CWPP, which includes the table of coded projects mentioned above, can be found on the Willow Creek FSC²¹ and Humboldt County FSC²² websites.

- Proposed projects to **Reduce Structural Ignitability** include: lessening the vulnerability of homes to damage from wildfire by retrofitting flammable roofs, siding, gutters, etc. with ignition-resistant materials; and creating and maintaining defensible space in the Home Ignition Zone by thinning fuels and implementing fire-wise landscaping.
- Proposed projects intended to **Support and Improve Fire Protection Capabilities** include actions that aim to make firefighters’ jobs easier. These projects include: supplying sufficient water for fire protection by adding more water tanks, equipping water tanks with the proper fittings, and marking water sources so that they are easily identifiable; establishing emergency secondary access routes in remote, single-access neighborhoods; improving signage; and ensuring that firefighters have the necessary equipment and resources for providing adequate fire protection services.

²¹ www.willowcreekfsc.org/

²² www.co.humboldt.ca.us/natural-resources/fire_safe_council/

- Proposed projects for the **Treatment of Hazardous Fuels** include: removing dense vegetation along primary and residential access roads that could hinder emergency response or evacuation; reducing fuel loads located near critical facilities and valued community areas; collaborating with local, state, and federal partners to take steps toward returning the landscape to a closer semblance of its natural fire regime; and continuing to explore appropriate uses of prescribed burning.
- Proposed **Education** projects include: providing fire prevention informational materials and support to community members on topics such as, how to create a fire-safe Home Ignition Zone, and how to prepare for emergency evacuation; encouraging communities to obtain and maintain Firewise recognition; and conducting outreach in local schools with age-appropriate fire-safety materials and presentations for preschool through high school curriculums.
- Proposed **Planning** projects include maintaining the efforts of the existing fire safe council and encouraging the development of a new one in neighboring communities; and facilitating collaboration between planning partners and local community members to select and implement priority actions from within their local CWPP.

Firewise Action Items

The Firewise Action Plan, which resulted from the community Firewise assessment, contains a list of short-term actions with measurable objectives that can be done within the Home Ignition Zone, within high risk community areas, and the community at large. These actions are consistent with implementation of the Willow Creek Greater Area CWPP. The following summarize the projects proposed in the Firewise Action Plan:

- Publish an **educational brochure for community residents** entitled, “Living With Fire in the Lower Trinity” that includes material on home ignition prevention, evacuation readiness, and fire-safety in the WUI.
- Complete **fuels reduction projects** on approximately 38 acres in four Willow Creek neighborhoods; these projects have already been planned out and funding has been obtained for them.
- Complete wildfire hazard reduction with **FLASH** funding for ten property owners.
- Hold three **Neighborhood Cleanup Days** to help property owners in get rid of flammable debris and byproducts; this will be done with assistance from PG&E and CAL FIRE.
- Hold three **Sheriff Work Alternative Program (SWAP) Work Days** to reduce buildup of roadside fuels throughout the community.
- Host the **annual Firewise event**, the “Willow Creek Fire Safe Day & Youth Ecology Fair.”

IV.7.9. Trinity Action Plan

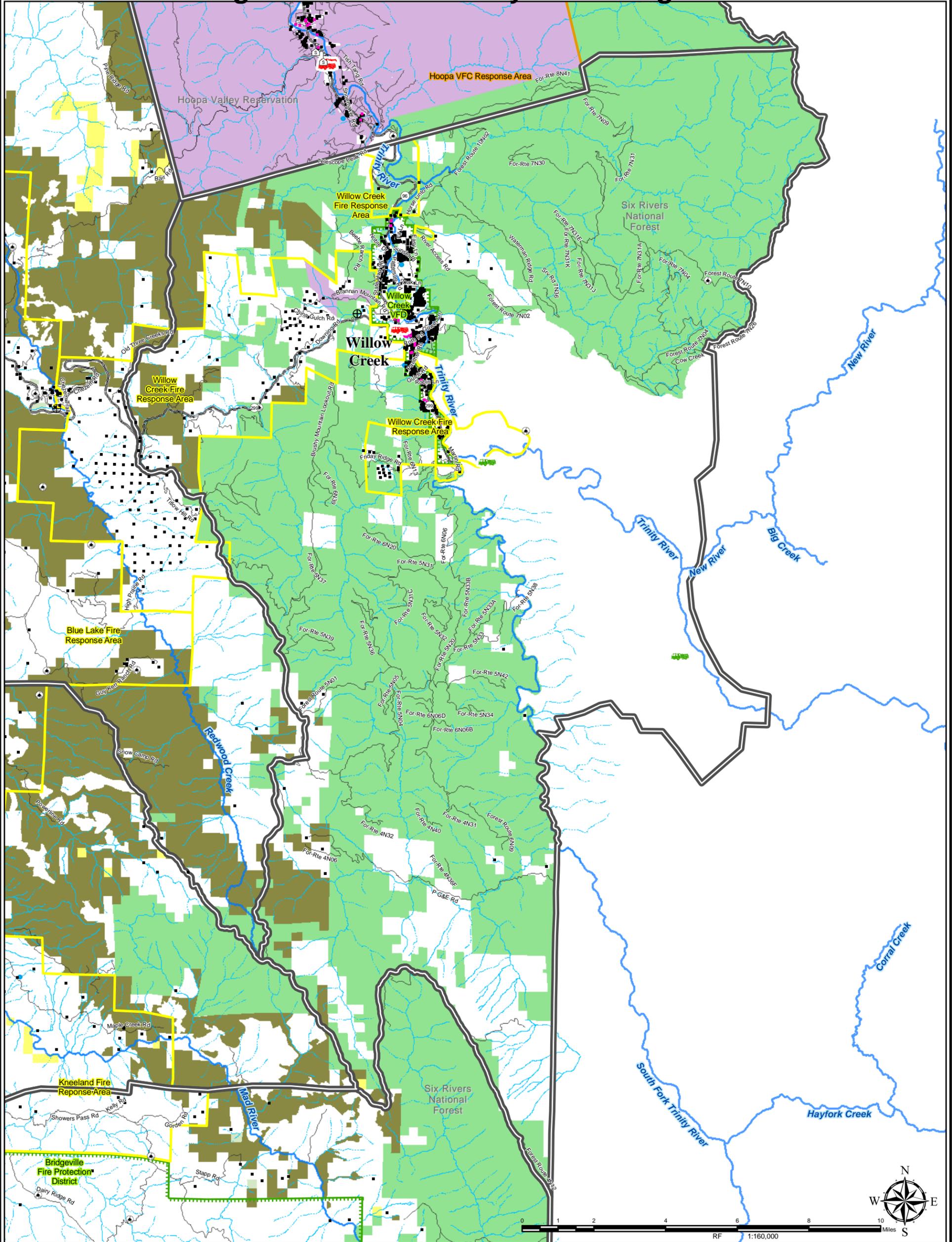
The following items are the initial priorities for community action for the Trinity Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action. No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

- Maintain and support the WCFSC to facilitate community wildfire preparedness and mitigation.
- Ensure that the WCFSC continues to be represented on the Humboldt County FSC.
- Maintain and support the WCVFD to provide community emergency services.
- WCFSC work with the WCVFD, the Willow Creek Community Services district and other community groups to implement priority projects from the Greater Willow Creek Area CWPP (See the project matrix in the Greater Willow Creek Area CWPP as well as projects illustrated on the Web GIS Portal).
- This Plan recommends an initial focus on the following priority areas for fuels reduction as identified at the 2012 Community Workshop:
 - Bigfoot subdivision West
 - Patterson Road
 - Patterson Road North
 - Upper Brannan
 - Friday Ridge

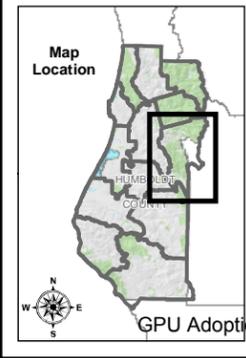
Secondary priorities include:

 - Conducting fuel clearance along Otter Lane.
 - Improving defensible space in Trinity Acres neighborhood.
 - Landscape clearing and modifications to improve bottleneck situation on Highway 299, West of Willow Creek.
 - Conducting roadside clearance on fuels along Old Three Creeks.
- Apply to renew participation in the Firewise Communities/USA recognition program annually. This will include an annual update of the Firewise action plan, which can be used as a short-term Willow Creek CWPP implementation tool. Actively implementing and maintaining the Firewise action plan on an annual basis will take small bites out of the local CWPP which has a five to ten year planning horizon.
- Share geographic information on project implementation progress with County staff so that the project information of the County Web GIS Portal can be updated.
- WCFSC and WCVFD work with the Humboldt County Office of Emergency Services to engage community members in evacuation preparedness. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

Figure IV.7-1 Trinity Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station
 - Six Rivers Fire Station
- Hospitals and Clinics**
 - Hospital/Medical Center
 - Red Cross
- Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
- Cities

Humboldt County FireSafe COUNCIL

Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan.

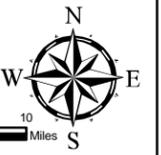
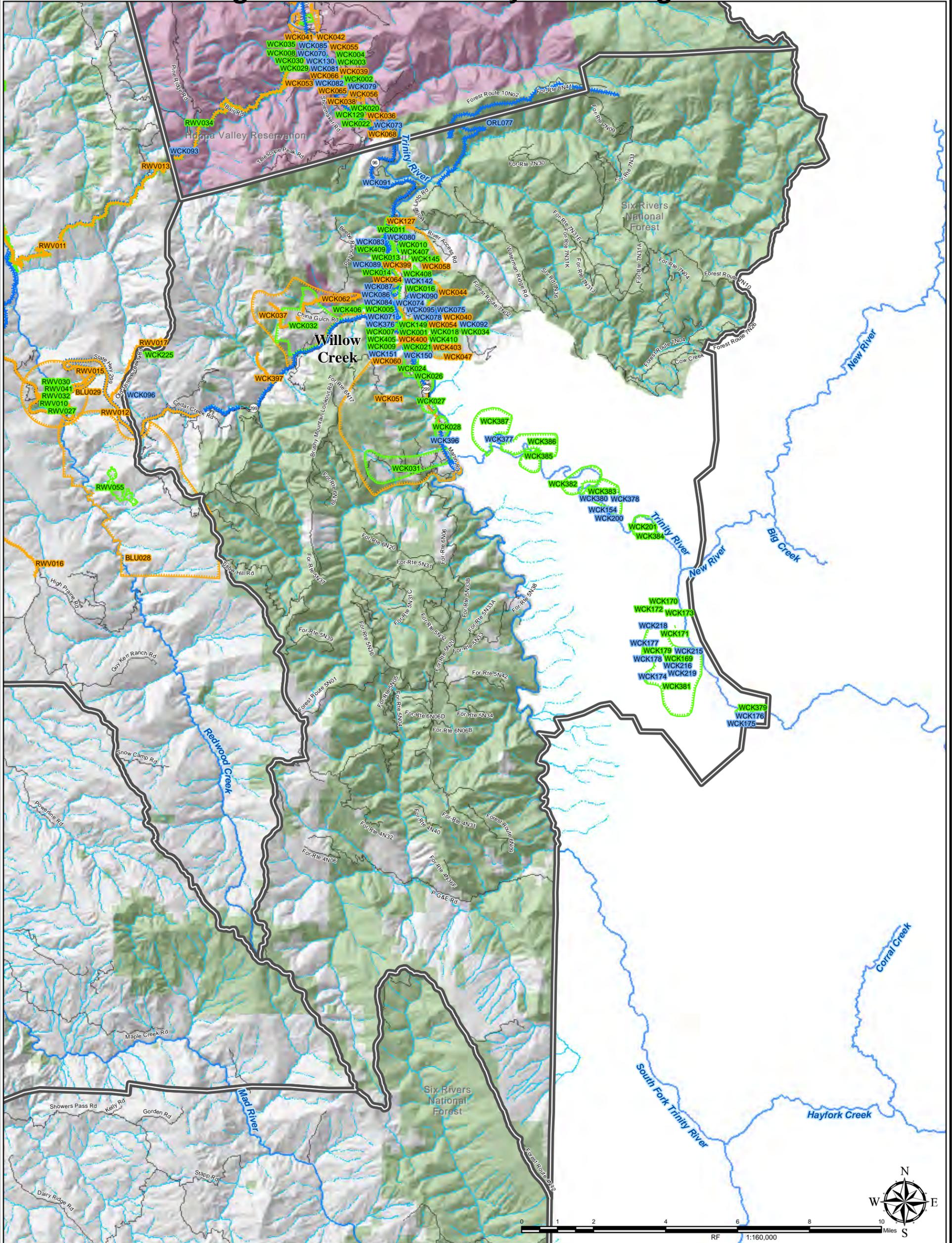
This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us



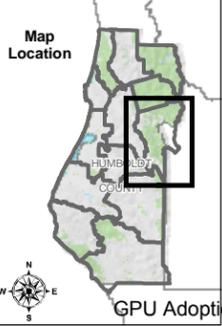
October 23, 2017

Figure IV.7-2 Trinity Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

- | | | | |
|-----------------------------|-------------------------|-----------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | HWY 101 | Hydrography |
| Protection/Evacuation | Parks/Public Land | State HWY | Major River or Stream |
| Value/Asset | Reservation/Tribal Land | HWY or Secondary Road | Perennial Stream |
| Risk/Hazard | Cities | Local Road or Street | Intermittent Stream |

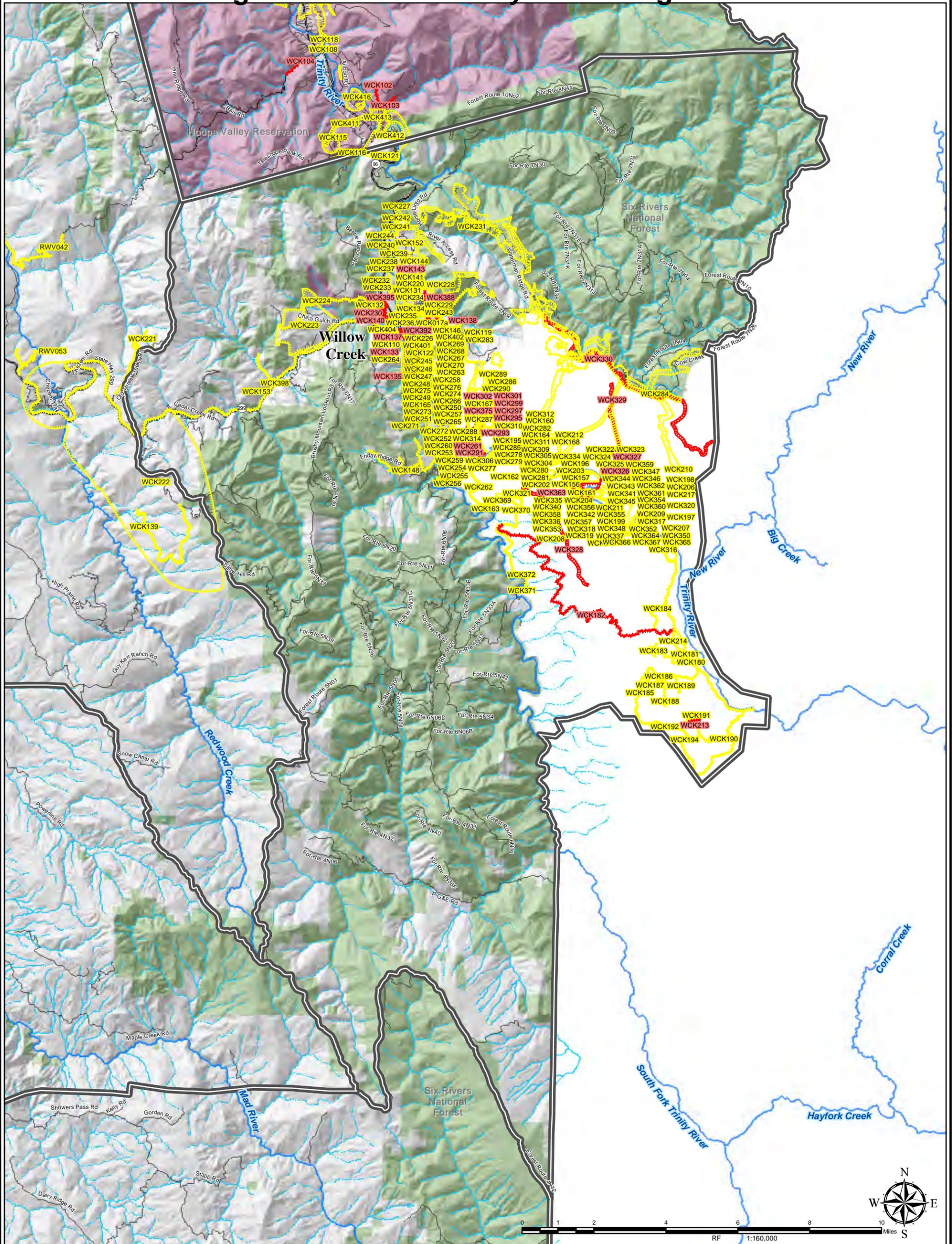


Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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Map compiled by County of Humboldt, March 2013
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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

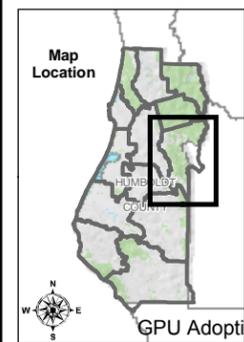
Figure IV.7-3 Trinity Planning Unit



CWPP - Community Identified Projects

Legend

- | | | | |
|-------------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Projects | Parks/Public Land | HWY 101 | Major River or Stream |
| Proposed Project | Reservation/Tribal Land | State HWY | Perennial Stream |
| Treated Project | Cities | HWY or Secondary Road | Intermittent Stream |
| | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

IV.8. Eureka Plain Planning Unit Action Plan

IV.8.1. Eureka Plain Planning Unit Description

The Eureka Plain *Planning Unit* encompasses 143,780 acres situated along the central coast of Humboldt County and contains the most urbanized and populated areas within the county. The geography of the Unit is dominated by the Humboldt Bay, which spans approximately two-thirds of the Unit's coastline and is comprised of three sections: South Bay, Entrance Bay, and North Bay. Highway 101 serves as the primary transportation corridor through the Unit, bordering the bay and coastline with a north-to-south orientation. Highway 299 provides eastward access and joins Highway 101 in the northern portion of the Unit. The Eureka Plain *watershed* is comprised of four major waterways: Jacoby and Freshwater Creeks, which drain into the North Bay; Elk River, which flows into the Entrance Bay; and Salmon Creek, which meets the South Bay.

The cities of Eureka and Arcata surround Humboldt Bay and comprise the community population centers of this Planning Unit. The unincorporated town of McKinleyville to the north has experienced significant suburban growth in recent years and become a populous community as well. The lesser populated City of Blue Lake is located east of Arcata along Highway 299. Several other distinct, smaller communities are interspersed throughout the Unit as well, mainly surrounding the central cities. The Fields Landing and Ridgewood Heights communities are located south of Eureka. Inland, located between Eureka and Arcata, are the communities of Freshwater, Indianola, and Bayside. Bayside is just south of and adjacent to Sunny Brae, a community on the southeastern side of the City of Arcata. Fieldbrook is located inland from McKinleyville and north of the community of Glendale, which is off Highway 299, en route to Blue Lake. Communities clustered along the coastal side of the Humboldt Bay inlet include Fairhaven, Samoa and Manila. A map of this planning unit can be viewed in Figure IV.8-1. Eureka Plain Unit: CWPP Unit Map.

The characters of these numerous communities vary widely, from distinctly urban locales, to small-town neighborhoods, rural residential areas, and more remote homes located in the *wildland-urban interface* (WUI). It is these communities located in the hinterlands and in the WUI, on the outskirts of the more populated areas, which experience the greatest risk of loss from wildfire events.

Timber production is the dominant non-residential land use within this Planning Unit, and significant portions of land--especially in the southeastern portion--is managed by Humboldt Redwoods Company and, to a lesser extent, Green Diamond Resource Company (GDRCo). Agricultural land use is also common within the Unit, involving mainly pasturelands for livestock grazing and dairy production, as well as a few lily bulb farms in Arcata and McKinleyville.¹ Rural residential developments are scattered throughout the timber/grazing interface, which includes several parcels of ranchland, while urbanized development dominates the central population areas. Public lands including state and county parks make up a substantial proportion of the Unit. Areas of particular significance are:

- Headwaters Forest Reserve; managed by the Bureau of Land Management (BLM) and located southeast of Eureka amidst the timberlands;
- Humboldt Bay National Wildlife Refuge;
- Mad River Wildlife Area, also known as the Arcata Marshes;
- Elk River Wildlife Area;

¹ Dyett & Bhatia. (2002, September). Eureka Plain (Humboldt Bay) Watershed. *Humboldt 2025 General Plan Update: Natural Resources and Hazards; Vol. 2: Detailed Watershed Characteristics and Regulatory Framework Analysis*. Retrieved from <http://www.co.humboldt.ca.us/gpu/documents/background.aspx>.

- Lamphere Dunes; managed by the U.S. Fish and Wildlife Service.

IV.8.2. Eureka Plain Community Process Summary

Several open-house community workshops were held in various areas throughout the Planning Unit for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide *community wildfire protection plan* (CWPP) update process. One workshop was held on May 14, 2012 at the Bayside Grange in Arcata, which included residents from Arcata, Bayside, and the Jacoby Creek neighborhood. A second workshop was held on June 21, 2012 at the Fieldbrook Elementary School for residents in the McKinleyville, Fieldbrook, Glendale, and Blue Lake communities. And a third workshop was held on June 25, 2012 at the Redwood Acres Fairgrounds in Eureka, involving residents in Eureka and its surrounding communities. A group exercise, which involved maps of the Planning Unit area, invited those attending each of these workshops to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. These workshops and mapping exercises also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their communities. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their communities' fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.8.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.8.3. Eureka Plain Wildfire Environment

The majority of the Eureka Plain Planning Unit (68%) is zoned “High Fire Hazard Severity,” as determined by the California Department of Forestry and Fire Protection (CAL FIRE).² However, approximately 17% of the Unit area, including many of the central communities, are zoned “Moderate Fire Hazard Severity,” with less than 1% of the Unit zoned “Very High Fire Hazard Severity.” A substantial portion of the more populated areas are within the *Local Responsibility Area* (LRA) and are therefore not zoned by CAL FIRE. The terrain around the bay is primarily made up of flat lands consisting of urbanized areas and pasturelands. Further inland, where *wildfire risk* is greater, the terrain is mostly comprised of moderately steep forested areas.

The forestlands within this Unit are dominated by redwoods. To a much lesser extent, there are also fir and pine forests, as well as swaths of annual grasslands and areas of oak woodland. Wetlands and *riparian* areas are also distributed throughout the area. The Unit is characterized by cool, wet winters and mild summers. Weather patterns are heavily influenced by the Unit's

² CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

proximity to the Pacific Coast, with regularly occurring fog blankets in the mornings that tend to break up by mid-afternoon, only to return again in the evenings.

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early settlers in the late 1800s also used intentional burning in order to clear and maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1940s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. Intense timber harvests, which were common during the 20th century, had substantial impacts on the forest ecosystems in this region. Timber operations left behind heavy amounts of logging *slash*, and the replacement of old growths with second growth redwoods altered *stand compositions*, making them less resilient to *wildfires*.

In recent years, GDRCo has undertaken efforts to help reduce risk of wildfire occurrences within their territory. Firefighting equipment is maintained at logging operations and inside all vehicles; harvesting operations are suspended at specified levels of low *relative humidity*; and logging crews are required to make daily fire inspections after work is done during the *fire season*. Furthermore, the company maintains fire trucks and heavy equipment for wildland fire emergencies and GDRCo Forestry staff, logging and maintenance crews, and contractors are available to respond to fire emergencies on the company's timberlands and to assist CAL FIRE at their request. The company also treats logging fuels in a variety of ways to help reduce *fire hazards*. Their methods include piling and burning, *broadcast burning*, *mastication* and on-site chipping; they also employ *biomass recovery* for power generation with the vegetative debris produced by these activities.

Fortunately, fire occurrences in this Planning Unit have been minimal in recent decades, and CAL FIRE has no major fire events on record within this area since the Luffenholtz Fire in 1908, which burned over 690 acres in the northern region of the Unit.

Humans and human-related activities are the main wildfire *ignition sources* in this area. Potential human-related fire causes include: arson, equipment use, vehicle accidents, smoking, and unattended campfire and burn piles. Abandoned structures and vehicles are also ignition hazards because they present easy targets for arsonists. Lightning strikes and downed power lines are also potential fire-starters. This region is also seismically active, and the potential for earthquakes should always be considered in assessing fire risks.

Residences within this Planning Unit facing the greatest risk of *structural ignitability* are those located among communities in the remote hinterlands and within the WUI. These communities include Ridgewood Heights, Freshwater, Indianola, Fieldbrook, and neighborhoods located up along Jacoby Creek and Fickle Hill Roads. For these homes, there is an increased likelihood that wildland fires will become *structural fires* and vice versa.

Dead plant matter and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to structural ignitability. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and sidings add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Vegetation around structures in this Unit vary; some residences may support farms and gardens, while other parcels may be largely forested or contain pastures in small to medium openings in the forest. Although private properties tend to be located on more gentle terrain, some homes are surrounded by steep slopes that can limit their defensible areas and put structures in the line of up-hill spreading wildfires. Figure IV.8-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire

planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Highway 101 is the central *ingress and egress* route, followed by Highway 299, with numerous other primary roads, neighborhood streets, and backwoods roads splintering off of the main highway. Poor or complete lack of *signage* at roads and addresses in some neighborhoods pose potential problems for emergency ingress and egress; this is especially true for more remote residences that are further away from the main towns. The narrowness of smaller roads leading to these remote residences could create serious complications for emergency vehicle responses trying to gain access during simultaneous home evacuations. Some of these smaller routes are *one-way-in, one-way-out roads*, with no alternative route. Routes may also be grown over with heavy brush and tree limbs, and many properties have inadequate vehicle *turn around spaces*. The potential for landslides in these upslope areas could also inhibit access.

All of the cities and communities within this Planning Unit are provided with potable water and *fire protection water* by the Humboldt Bay Municipal Water District (HBMWD), which was formed in 1956 under the California Municipal Water Act of 1911. The HBMWD’s facilities and operations include: the R.W. Matthews Dam and the associated Gosselin Hydro-Electric Power House; diversion, pumping and control facilities adjacent to the Mad River; storage and treatment facilities; and two separate pipeline systems for delivering drinking water and untreated, raw water to customers.³ Numerous hydrants as well as city- and privately-owned water tanks are located throughout the cities of Eureka and Arcata. Additional fire protection water may be drawn from the following locations:

- Baywood Golf Course ponds (drafting)
- Doug’s Pond (helicopters-yes; draft-no)
- Sampson’s Pond (helicopter)
- Manila CSD ponds
- Morai’s Pond
- Kernan Pond
- Mad River
- Morrison Gulch drafting sites
- Essex Dipping Pond
- Guynup’s Pond
- Davenport Pond
- Blue Lake waste water ponds (helicopter)
- Fraser Pond
- Lane Pond
- Quarry Rd. drafting site

The map in Figure IV.8-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS Portal, Fire Planning section: <http://gis.co.humboldt.ca.us/>.

IV.8.4. Eureka Plain Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber

³ Humboldt Bay Municipal Water District. (2012). *About Us*. Retrieved from <http://www.hbmwd.com/about>.

harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The *assets at risk* in this Unit are numerous and diverse. The majority of assets include residential homes, communities, and farmsteads, along with a variety of commercial and service industries, community centers, schools, fire stations, medical and dental centers, churches, post offices, along with infrastructure components such as water treatment facilities, and cell towers. Some particularly noteworthy assets within this Planning Unit include: California State University Humboldt, College of the Redwoods, the Arcata/Eureka Airport, the Mad River Community Hospital, the Blue Lake Casino, the Arcata Plaza, Redwood Acres Fairgrounds, and the Bayside Mall. Agricultural lands, timber stands, and industrial facilities are also valuable assets at risk. An extensive oyster industry operates out of Humboldt Bay, and the harbor there is a major shipping center for the North Coast. Commercial and recreational fishing is common throughout the coastal region as well; sites and facilities that support these industries are valuable assets as well.

The map in Figure IV.8-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁴ Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Bayside Grange, Old Community Hall, Post Office, Mistwood School
- Samoa Cookhouse
- Humboldt Hill Communications Complex
- Blue Lake Industrial Area
- Manila CSD and Tanks
- Biomass Plant
- Two Feathers Health Center
- Boy Scout Camp
- Apple Orchard/farm –Fieldbrook Apple Farm
- Fairhaven Power Company
- Coast Guard Station
- Simpson Mill Site

This Unit also contains an abundance of environmentally and culturally significant areas, with a range of recreational opportunities available as well, such as hiking, kayaking, surfing, and rock climbing. In addition to the principal public lands aforementioned (e.g. the Headwaters Reserve and wildlife areas) there are numerous state/county parks and beaches throughout the Planning Unit, including:

- Mad River and Clam Beach County Parks
- Sequoia Park, Eureka
- Arcata Community Forest
- Hiller Park, McKinleyville

These environmentally significant areas hold great value for the communities that appreciate them and the wildlife that depends on them.

IV.8.5. Eureka Plain Community Preparedness

Fire preparedness in these communities is abetted by the Humboldt County *Fire Safe Council* (HCFSC), which was formed in 2002 by the County Board of Supervisors. The HCFSC's goals, in addition to implementing measures outlined in the countywide Master Fire Protection Plan, include: sharing fire-safety information, assessing fire risk, promoting community fire-safe planning and coordination, linking fire-prevention programs and providing support to local fire

⁴ Geographic Information Systems (GIS).

services and fire safe councils (FSC).⁵ The HCFSC has helped several community groups in the county establish their own FSCs, and has assisted many more communities in achieving national *Firewise* recognition, as well as helping these groups obtain grant funding for *fire hazard* mitigation activities such as *fuel reduction* projects.

Residents of the Jacoby Creek Road neighborhood—a community at risk of wildfire—formed the Upper Jacoby Creek Firewise Group after seeing a neighbor’s home burn to the ground as the result of a chimney fire. At the end of 2012, this group produced a Community Assessment and an Action Plan, and successfully achieved national recognition as a Firewise Community. Some successful Firewise modifications include: implementing the “*Blue Dog Program*,” where water tanks are clearly labeled and outfitted with reflective blue dots, improving signage by replacing old markers with reflective address signs, and raising fire-safe awareness by hosting a Firewise event and producing an informational brochure.

IV.8.6. Eureka Plain Wildfire Protection Capabilities

A host of *volunteer fire departments* (VFDs) provide fire protection, medical, and rescue services to communities within the many *fire protection districts* (FPDs) in this Planning Unit. The following fire protection services exist for the Eureka Plain Planning Unit:⁶

- **Humboldt Bay Fire (a joint operation between Humboldt #1 Fire Protection District and City of Eureka Fire Department)** has 25 volunteers out of 83 members. They serve 56,000 residents in approximately 56 square miles. They are equipped with three type-1 engines, with two additional type-1 engines on reserve, two vehicles for responding to hazardous emergencies, a type-2 search and rescue trailer, and one technical rescue equipment trailer. Humboldt Bay Fire can be reached by calling (707) 445-41900, or (707) 441-4000, or by visiting their website at: www.humboldtbayfire.org.
- **Arcata Fire Protection District** has 25 volunteers and a total of 54 members. They serve over 37,000 citizens in an area of 62 square miles that encompasses Arcata, McKinleyville, Manila, Jacoby Creek, Glendale, Indianola, and provides automatic aid, Fairhaven, Fieldbrook, Blue Lake, Eureka, Eureka / Arcata Airport, and Humboldt State University. The Arcata FPD can be reached by calling (707) 825-2000, or by visiting their website at: www.arcatafire.org.
- **Samoa Peninsula Fire District** has 14 volunteers who serve 350 residents in approximately 3.4 square miles. Their apparatuses include: two type-1 engines—E8611 and E8614, which hold 500 gallons and 1000 gallons, respectively, as well as E8646, a type-4 quick attack engine. The Samoa Peninsula Fire District can be reached by calling (707) 443-9042 or by visiting their website at: www.samoapeninsualfire.org.
- **Blue Lake Fire Protection District** has 26 volunteers. Their district area includes 14 square miles with a total response area of approximately 200 square miles. Their apparatuses include: two type-1 engines, 1 type-2 engine, one type-4 quick attack engine, a utility truck, a 2,200 gallon *water tender*, and a 1,750 gallon water tender. The Blue Lake FPD can be reached by calling (707) 668-5765, by email at: admin@bluelakefire.net, or by visiting their website at: www.bluelakefire.net.

⁵ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Safe Council*. Retrieved from www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx

⁶ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx.

- **Fieldbrook Volunteer Fire Department** has 22 volunteers who serve approximately 1,200 residents in 10 square miles. Their apparatuses include: WT8756, an international Van Pelt water tender; E8715, a type-1 International Becker pumper; E8717, a type-1 Spartan Beck pumper; and E8747, a type-4 quick attack truck. The Fieldbrook VFD can be reached by calling (707) 839-0931, by email at: info@fieldbrookfire.org, or by visiting their website at: www.fieldbrookfire.org.

Both the Blue Lake and Fieldbrook FPDs are in the process of exploring the possibility of annexing properties to which they frequently provide fire protection services but are not currently included within their district boundaries. The Korbel Volunteer Fire Brigade is not included within any FPD, but rather is maintained by Green Diamond Resource Company to help protect its mill site.

Emergency *response times* to the further removed communities in this Planning Unit can be lengthy due to poor road access that requires emergency vehicles to traverse the roads slowly and with extreme caution. There is also a need to improve access to fire protection water in several of the more remote communities.

IV.8.7. Eureka Plain Evacuation

Evacuation from the Eureka Plain Planning Unit will either travel north or south along Highway 101, or east on Highway 299, depending on law enforcement recommendation based on *fire behavior*, wind patterns, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences and neighborhoods to Highway 101. Adequate ingress and egress along these roads is vital to a large portion of the population that may need to access the main highway evacuation route and for firefighters who will be using the roads to access wildfires burning in upslope, remote areas.

Highway 255 (Samoa Blvd.) is crucial for accessing communities on the west side of the bay, although it can be accessed via both Eureka and Arcata. Access along Fieldbrook Rd. and Murray Rd. is necessary for reaching the community of Fieldbrook. Similarly, Walnut Dr. and West Gate Dr. are the only roads leading to the Ridgewood Heights community; and the community that exists up Elk River Rd. may only be accessed via that route. Maintaining proper clearance on these roads is extremely important for ensuring the safety of residents within these far-removed neighborhoods; overgrown vegetation can create hazardous conditions for firefighting *apparatuses* seeking access to these areas and can also hinder evacuation of residents in emergency situations.

Other evacuation impediments may include: landslides, fallen trees, downed power lines, poorly marked streets and intersections, and one-way-in, one-way-out roads that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

Alternative evacuation routes within this Unit include:

- Old Arcata Rd./Myrtle Avenue in between Arcata and Eureka;
- Central Avenue into McKinleyville;
- Essex Ln. from 299 into McKinleyville;
- Janes Rd., Spear Ave., and Alliance Rd. through Arcata;
- Jackson Ranch Rd leading from Highway 255 into the Arcata bottoms;
- Walnut Dr., Ridgewood Dr., and Elk River Rd., to communities on the eastern outskirts of Eureka.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The

determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.8.8. Eureka Plain Community Identified Potential Projects

The following list and matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.8-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

Non-geographic community identified proposed projects based on community workshop notes:

Greater Eureka

- Conduct *defensible space* education in interface areas.
- Close loop on dead-end/access roads where possible, and clear brush along roads. Areas with steep brushy slopes should be the top priority.
- Enhance water systems; especially Freshwater and Ridgewood for new developments.
- Implement a *Blue Dot Program* to identify water that is available for firefighting with a reflective blue dot. The program will also provide information about the importance of making firefighting water available and how to set it up properly. The Bottom Line: Water tanks must be full of water, accessible, and labeled.
- Create and distribute public education flyers where needed.
- Countywide project: Use creative ideas to maintain fuels reduction treatments. Eagle Scouts might want to maintain project.

Samoa

- Recruit more volunteers for fire department.
- Obtain more funding for fire department.

- Make emergency radios available.
- Install sirens for fire and tsunami alerts.
- Make emergency supplies (especially first aid) available for Manila residents.
- Improve mapping and communication with how CAL FIRE calls them out on incidents.
- Need better response maps for firefighters.
- Evacuation plan for assisting disabled children from Samoa Peninsula School.

Bayside

- Raise/obtain sufficient funding for adequate fire protection.
- Hog fuel *biomass utilization* support
- Defensible space incentives for Upper Jacoby Creek neighborhoods
- Community fire safety education
- Explore back access evacuation route from Jacoby Creek.—There is a need to punch roads through to connect with other nearby roads so that there is more than one-way-in and one-way-out for evacuation and emergency response. This will also facilitate getting full buildout of land zoned for more development. Right now, even though it is properly zoned, the rules about roads (width, length of dead-end road, turnouts, etc.) are an obstacle to more development. Priority areas of need are connecting Jacoby Creek Rd. with Baywood Lane and connecting Jacoby Creek Rd. to Kneeland Rd.
- Need for education about on-site water supply and visibly marking water available for fire protection.

Blue Lake

- Obtain permission to access ponds on private lands.
- Create more fire stations.
- Conduct community fire-safe education regularly (annually or every six months); dovetail fire-safe education with other community events.
- Start a fire safe council.
- Recruit more volunteer firefighters.
- Conduct door-to-door fire-safe education in high risk areas.

Fieldbrook

- Implement *Red Truck Program*, with community defensible space education.
- Allow no new development without year-round water supply and good road grading.
- Improve address signs (house #s) in the community.
- Design a fuels reduction demonstration project and follow it up with a fun educational event to showcase the project.
- Conduct community education on defensible space and dovetail these efforts with community events and fire department fundraisers – provide handouts and localized wildfire mitigation information.

McKinleyville

- Improve road sign and home address sign visibility throughout the community.
- Work towards obtaining sufficient funding for fire protection services.

Green Diamond

- Prioritize interface areas and high trespass areas for fuels reduction work – biomass as much of the residue as possible because burning is difficult in these areas (air quality and escape risks).
- Enhance wildfire detection and prevention program – teach people to call 911 if they see smoke.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
ARC035	Perimeter of forest Sunnybrae to Fickle Hill Rd	Sunnybrae shaded fuelbreak & protection zone	Treat-Med	2012	Landscape				grant-landowner-Assn.
ARC037	Eastern boundary of Woodland Heights	Woodland Heights: create shaded fuelbreak	Treat-Med	2012	Landscape				grant-landowner-Assn.
ARC038	All of Arcata east of Hwy 101	Arcata east of Hwy 101, ALL: encourage defensible space	Treat-Med	2012	Defensible Space				grant -landowner
BAY029	Upper Jacoby Creek	Upper Jacoby Creek water tank network	Action Need	2012	Other - Water				grant - fire dept.
BAY032	Fickle Hill Road	Fickle Hill: create shaded fuelbreak.	Treat-Med	2012	Landscape				grant-landowner-Assn.
BAY033	Garden Lane and Jacoby Creek Rd.	Develop safe zone at old quarry site	Treat-Med	2012	Other - Safe Zone	6.69			grant-landowner-Assn.
BAY045	Roberts Height Ln, off Jacoby Creek Rd	Roadside brush clearing for ingress and egress	Treat-Med	2012	Roadside Clearance and Other - Access				grant-landowner-Assn.
BAY046	Roberts Height Ln, off Jacoby Creek Rd	Pool could be developed as a water site	Action Needed	2012	Other - water				grant-landowner-Assn.
BAY047	Roberts Height Ln	Good site for the water id blue dot program	Action Needed	2012	Other - Water				grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BAY048	Jacoby Creek Forest	Fuel reduction to create buffer between residential area and forest land in Jacoby Creek Forest	Treat-High	2012	Landscape				grant-landowner-Assn.
BAY049	Garden Ln, THREE SITES, off Jacoby Creek Rd	Need vegetation clearance around existing water tanks (protect H2O source)	Treat-High	2012	Defensible Space				grant-landowner-Assn.
BAY050	Garden Ln, off Jacoby Creek Rd	Understory clearing along Garden Lane	Treat-High	2012	Roadside Clearance				grant-landowner-Assn. (FLASH)
BAY052	Glory Lane, off Garden Lane	Understory clearing along Garden Lane	Treat-High	2012	Roadside Clearance				grant-landowner-Assn.
BAY053	Mtn Bike Trail, South Quarry Rd off Jacoby Cr Rd	Clearance along public recreation and fire access trail	Treat-Low	2012	Landscape and Other - Trails				grant-landowner-Assn.
BAY054	Abbey Ln, off Jacoby Creek Rd	Understory clearing along Abbey Lane	Treat-Med	2012	Roadside Clearance				grant-landowner-Assn.
BAY055	Upper Creek Rd	Understory clearing along Upper Creek Rd	Treat-Med	2012	Roadside Clearance				grant-landowner-Assn.
BLU050	Green Hill Rd Neighborhood	Fuel reduction above freeway below Green Hill Rd	Treat-Med		Roadside Clearance	5.36			grant-landowner-Assn.
BLU051	Community of Blue Lake	Brush clearance along walking paths	Treat-Med		Other - Trails	36.09			grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BLU052	Liscomb Hill Neighborhood	Liscomb Hill Rd. - 2.5K gal. water source/tank for all area residents	Action Need	2010	Other - Water				
BLU057	Liscomb Hill Rd off Glendale Dr, E of Glendale	Liscomb Hill Neighborhood: maintain defensible space, improve road access	Treat - Med	2012	Defensible Space and Other - Access				
BLU059	West End Rd/Warren Creek Area, W of Blue Lake	West End/Warren Creek - connect Elizabeth to Cedar Hill; plan turnouts spaces for better access	Treat - Med	2012	Other - Access				
BLU061	Upper Blue Lake Blvd, Hwy 299, E of Blue Lake	Upper Blue Lake Blvd: roadside clearance, water tank development, and maintain defensible space	Treat - Med	2012	Roadside Clearance; Defensible Space; and Other - Water				Address access issues for the Elk River Court bridge, Headwaters haul bridge, and McKay Tract Bridge
BLU063	West End Rd, W of Blue Lake	West End Rd.: roadside brush clearing	Treat - Med	2012	Roadside Clearance				
EUR036	Freshwater Park	Freshwater Park: create a summer dam	Action need	2010	Other - Water				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
EUR037	Pine Hill neighborhood	Pine Hill Ave: drafting location @ Martin Slough	Action need	2010	Other - Water				
EUR047	Elk River Community	Elk River Court bridge: fix/ engineer bridge to improve access.	Action need	2010	Other - Access				
EUR048	McKay Tract	Fix McKay Tract Bridge	Action need	2010	Other - Access				
EUR049	Headwaters	Fix Headwaters haul bridge to improve access.	Action need	2010	Other - Access				
EUR051	Berta Rd and off shoot roads	Post address and street signs (esp. on private roads); roadside clearance; improve access and water availability.	Treat - Med	2012	Roadside Clearance and Other - Signage and Other - Water				
EUR053	Vista Rd and dead- end off shoot roads	Post address and street signs (esp. on private roads); roadside clearance; improve access and water availability.	Treat - Med	2012	Roadside Clearance and Other - Signage and Other - Water				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
EUR056	Neighborhoods north of Myrtle Ave, Ryan- Freshwater Creeks	Post address and street signs (esp. on private roads); roadside clearance; improve access and water availability.	Treat - Med	2012	Roadside Clearance Other - Access and Other - Signage and Other - Water				
EUR058	Indianola neighborhoods	Post address and street signs (esp. on private roads); roadside clearance; improve access and water availability.	Treat - Med	2012	Landscape and Other - Access and Other - Water				
EUR060	Redmond Rd and off shoots and dead- end roads	Post address and street signs (esp. on private roads); roadside clearance; improve access and water availability. Paint hydrants to improve visibility.	Treat - Med	2012	Landscape and Other - Access and Other - Water				
FIE039	Community of Fieldbrook	County brush clearance along Fieldbrook Rd	Treat- Med		Roadside Clearance				County Rds.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
FIE040	Van Eck Neighborhood	North Line of Fieldbrook / Van Eck unit: shaded fuelbreak	Treat-Med		Landscape	1.31			grant-landowner-Assn.
FIE041	Van Eck / Lindsey Creek & Mather Estates Neighborhood	Shaded fuelbreak between Van Eck / Lindsey Crk & Mather Estates	Treat-Med		Landscape	7.84			grant-landowner-Assn.
FIE042	Community of Fieldbrook	Sawdust Trail: brush clearance for shaded fuelbreak.	Treat-Med		Roadside Clearance	0			grant-landowner-Assn.
FIE045	Community of Fieldbrook	Old Railroad Grade North: brush clearance along roadsides.	Treat-Med		Roadside Clearance	0			grant-landowner-Assn.
FIE046	Rock Pit Rd, north of Fieldbrook	Rock Pit Quarry - roadside clearing for access/hazard reduction	Treat - Med	2012	Roadside Clearance and Other - Access	0			grant-landowner-Assn.
FIE047	Old Railroad Grade North. north of Fieldbrook	Old Railroad Grade North: roadside clearing for access; maintain defensible space	Treat - Med	2012	Roadside Clearance and Defensible Space				grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
FIE051	Hwy 299, Timmons Ln - Essex Ln, W of Glendale	Essex Gulch - improve access, , turnouts; conduct roadside brush clearing	Treat - Med	2012	Roadside Clearance and Other - Access				grant-landowner-Assn.
FIE053	Cloudwood Rd, E of Fieldbrook	Cloudwood Rd - understory clearance	Treat - Med	2012	Landscape				grant-landowner Assn.
FIE054	Buckman Trail Ln, Murray Rd, W of Fieldbrook	Buckman Tr Ln - understory clearance	Treat - Med	2012	Landscape				grant-landowner Assn.
FIE056	Hughes Way, Murray Rd, W of Fieldbrook	Hughes Way - fuel reduction, 3 hydrants, pump station, 15000gal tank	Treat - Med	2012	Landscape and Other - Water				? green diamond ?
KNE047	Greenwood Heights Drive	Greenwood Hts Dr./Freshwater Rd: maintain defensible space and road buffers and improve access clearance.	Treat-Med	2012	Landscape and Roadside Clearance				grant-landowner-Assn.
KNE056	Barry and Tim Mullen's Road, Kneeland	Clear brush and mow grass along roads (buffers), people's driveways, homes	Treat - Med		Roadside Clearance and Defensible Space				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
MCK006	McKinleyville Community	Create a buffer between area east of town and interface zones	Treat- Med	2012	Landscape				grant-landowner- Assn.
MCK008	Arthur and Elizabeth Road area	Clearly mark houses and roads (street names and numbers)	Action Need		Other - Signage				grant-landowner- Assn.
PAC001	Northern boundary Humboldt Redwood Company; Freshwater- Kneeland area	Fuel reduction in WUI areas.	Treat- Med		Landscape				grant-landowner- Assn.
PAC002	04N 01E SEC's 21,22,26,25 & 04N 02E SEC 19	Fuel reduction to improve breaks on fire suppression ridges; targeted for additional treatment	Treat- Med		Landscape				grant-landowner- Assn.
SAM061	W of Lincoln Ave, Fairhaven	Regularly clear fuels in empty lots	Treat - Med	2012	Landscape				

IV.8.9. Eureka Plain Action Plan

The following items are the initial priorities for community action for the Eureka Plain Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Sustainable Fire Departments:** Community members within this Planning Unit should support their local fire department⁷ through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services. Focus initial efforts on the following priorities:
 - Develop a recruitment strategy for adding more volunteers to the local fire departments; particularly Samoa Peninsula and Blue Lake Fire Departments.
 - Explore possibilities for expanding the boundaries of the Blue Lake Fire Protection District to provide service to the Maple Creek and Redwood Creek areas. These efforts will likely necessitate the approval of a special tax or benefit assessment to support service in the expanded jurisdiction.
- **Road Improvements:** Address road conditions that inhibit effective evacuation and access by emergency responders. Begin by systematically identifying and mitigating such access impediments. The following priority access issues were identified at community workshops and are recommended for initial action in this plan:
 - Address the issue of dead-end roads by exploring the possibility of connecting existing roads to create a secondary access point. This is particularly important for the Upper Jacoby Creek Community and several roads in the community of Fieldbrook as well as greater Eureka area neighborhoods.
 - Address access issues for the Elk River Court bridge, Headwaters haul bridge, and McKay Tract Bridge
- **Signage:** To aid emergency responders, residents and road associations should improve road and address signage throughout their communities. Make signs larger and reflective to increase visibility and install road and address signs where they are missing. Less noticeable but more sentimental address signs may remain but it is important to also post reflective signs with lettering at least three inches in height. Focus initial efforts in the following areas:
 - McKinleyville: Arthur and Elizabeth Road area
 - Greater Eureka Area: Berta, Vista, Redmond Roads and their dead-end off shoots
 - Neighborhoods north of Myrtle Ave, Ryan-Freshwater Creeks, Redmond Road
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Neighborhood and road associations and/or Firewise Communities work with local fire departments to develop a “Blue Dot” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. It is also helpful to

⁷ All local fire departments within this unit are listed above with their contact information in the “Wildfire Protection Capabilities” section.

Paint hydrants to improve visibility. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed.

- The Humboldt Bar Fire Chiefs Association should coordinate to develop a Blue Dot program for priority areas within the Planning Unit. Priority areas will include neighborhoods not served by a community water system.
- Blue Lake: Ensure that all residents in the Liscomb Hill Road area have a 2,500 gallon water tank.
- Enhance water systems to ensure sufficient emergency water supply for future development in the Freshwater and Ridgewood areas.

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program with neighborhood groups in developed areas adjacent to the wildland, particularly where there are many residences located along dead-end roads. Actively implement and maintain the Firewise action plan on an annual schedule. Target the following neighborhoods on edges of communities in the higher risk interface areas, possibly through an affiliation with a road association:
 - Upper Jacoby Creek
 - Blue Lake
 - Fieldbrook

Ensuring Safe and Effective Evacuation

- Encourage fire department representatives from each department within this Planning Unit to work with the Humboldt County Office of Emergency Services and local law enforcement to conduct local evacuation preparedness planning and outreach. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions. Focus evacuation planning efforts in neighborhoods located along the following single access roads:
 - Upper Jacoby Creek
 - Liscomb Hill
 - Dead-end roads to WUI neighborhoods in the Greater Eureka Area

Promoting Fire Safe Education

- Conduct public education and outreach efforts regarding strategies for fire safety, maintaining defensible space, and evacuation planning. Send out informational material in mailers throughout the communities. Consider involving Boy Scouts and Girl Scouts of America in outreach efforts. Focus initial educational efforts in all of the WUI neighborhoods on the outskirts of the more urbanized areas.
 - Provide education on fire protection and preparedness for community members. Inform people about how to call 911 more effectively and familiarize residents with fire protection service jurisdictional areas and response times.
 - Utilize the Bayside Grange as an information resource with a kiosk or bulletin board.

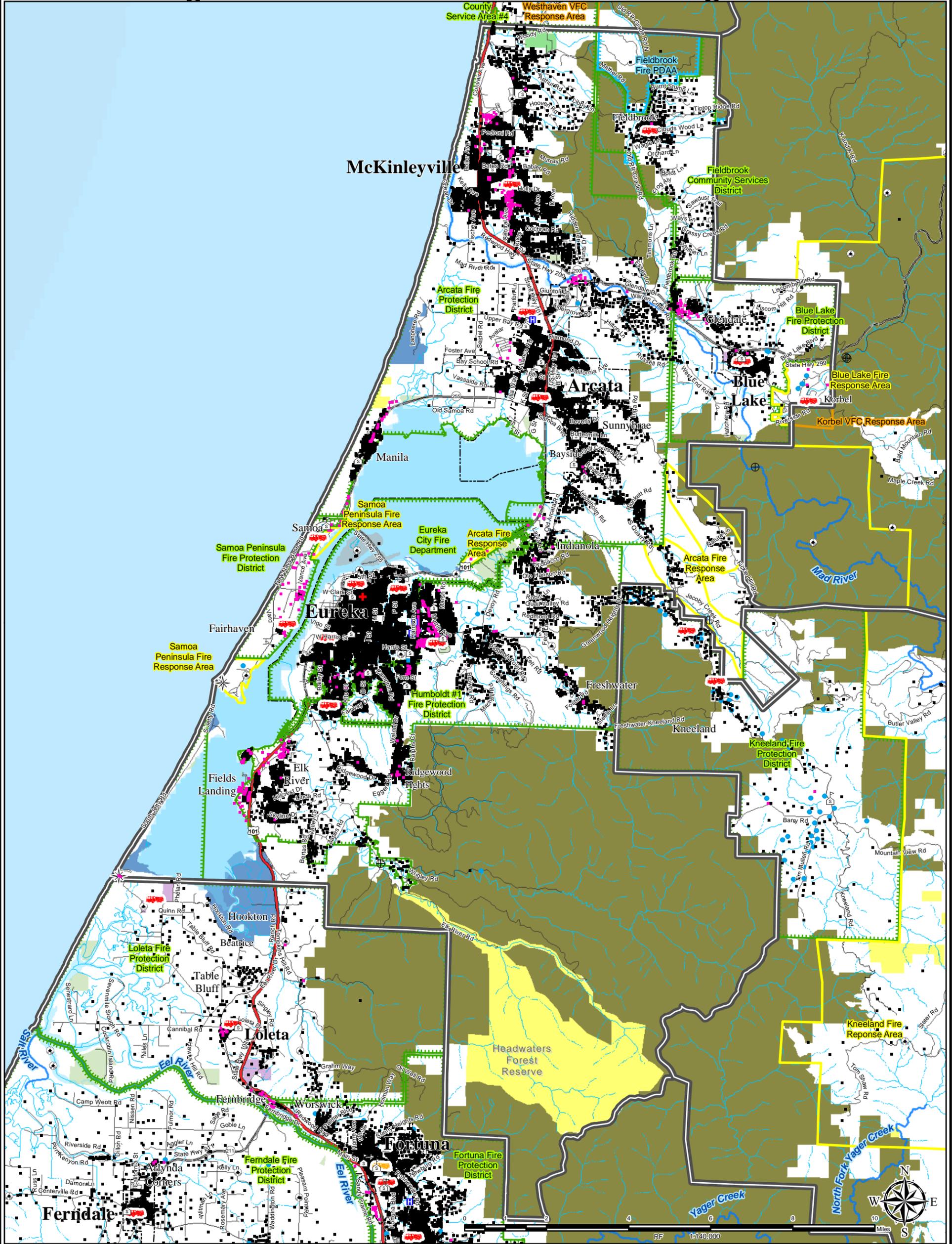
Reducing Wildfire Fuels (Flammable Vegetation)

- **Defensible Space:** Those residents living in areas within this Planning Unit that are at risk to wildfire should manage the flammable vegetation within their home ignition zone. Maintaining *defensible space* through vegetation treatments should be a routine and ongoing practice for all homes and *landscapes*. Community *Chipper Days* can facilitate this process by helping landowners get rid of slash

and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the planning unit. Priority neighborhoods in this Unit are those adjacent to forested wildland particularly where there is a predominance of older pre-WUI building code construction. Work with local fire departments to identify initial priorities for targeted outreach.

- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Many roads in the Unit were identified at community workshops as needing vegetation treatment. The highest priority should be those with the largest populations, highest fuel loads, and most remote locations. Coordinate with local fire officials to identify target roads.
- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:
 - Create a buffer between the forested area east of McKinleyville and the interface zones.
 - Regularly clear fuels in empty lots in Fairhaven

Figure IV.8-1 Eureka Plain Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station
 - Six Rivers Fire Station
- Hospitals and Clinics**
 - Hospital/Medical Center
 - Red Cross
- Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership**

AGENCY

 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber

CITIES

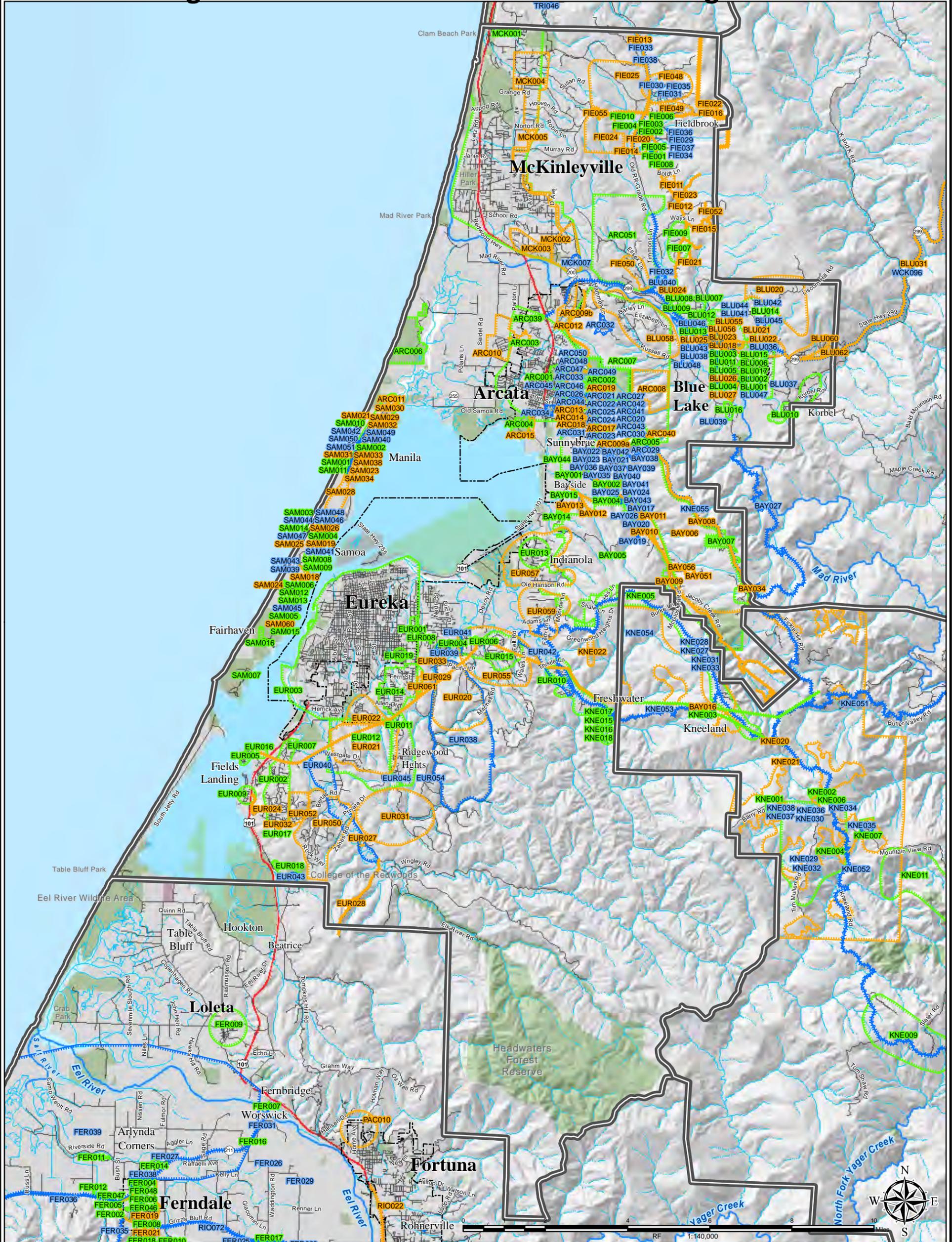
Humboldt County FireSafe COUNCIL

Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

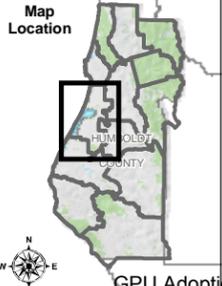
Figure IV.8-2 Eureka Plain Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-------------------------------|-------------------------|-----------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Parks/Public Land | HWY 101 | Major River or Stream |
| Protection/Evacuation | Reservation/Tribal Land | State HWY | Perennial Stream |
| Value/Asset | Cities | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |

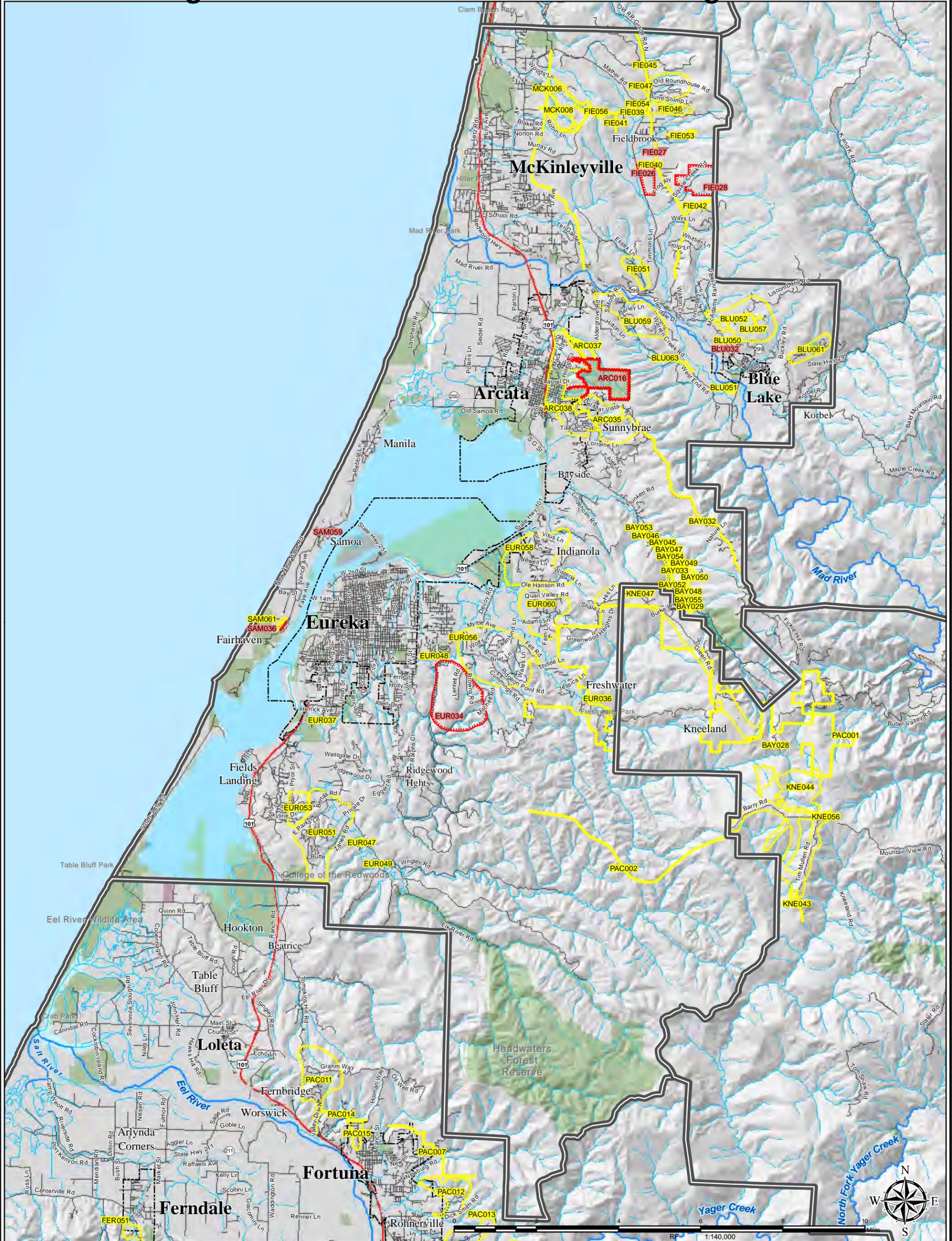


Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.8-3 Eureka Plain Planning Unit



CWPP - Community Identified Projects

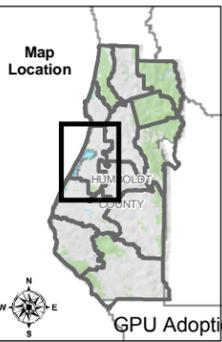
Legend

- CWPP Planning Unit Boundary
- Community Identified Projects
- Proposed Project
- Treated Project

- Land Ownership**
- Parks/Public Land
- Reservation/Tribal Land
- Cities

- Highways and Roads**
- HWY 101
- State HWY
- HWY or Secondary Road
- Local Road or Street

- Hydrography**
- Major River or Stream
- Perennial Stream
- Intermittent Stream



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

IV.9. Kneeland-Maple Creek Planning Unit Action Plan

IV.9.1. Kneeland-Maple Creek Planning Unit Description

The Kneeland-Maple Creek *Planning Unit* encompasses 123,233 acres situated in the geographic center of Humboldt County. The Unit lies east of Eureka and the Headwaters Forest Reserve, west of Six Rivers National Forest, with the City of Blue Lake located to the north, and Highway 36 to the south. Kneeland Road, Greenwood Heights Drive, and Fickle Hill Road are the primary transportation routes within this Unit, although Maple Creek and Butler Roads are important routes as well. The Mad River is the central waterway, entering the Unit from the southwest and flowing north towards Arcata, where it meets the Pacific Ocean. Other water bodies include: Maple Creek in the northern Unit area, Lawrence Creek in the southwestern portion, and the North Fork of Yager Creek in the southern region.

All residences in this Unit exist within the *wildland-urban interface* (WUI). Kneeland and Maple Creek comprise the main communities in this Unit, however, residential properties are also scattered throughout the entire region. The majority of these rural homesteads and neighborhoods are located near Maple Creek, along Kneeland Road, and densely clustered along Greenwood Heights Drive. A small but dense neighborhood also exists along Tim Mullen Road, which branches off of Kneeland Road., en route to Bridgeville. Private land is the dominant ownership pattern; the Unit largely contains residential parcels, a few tracts of ranchland, and industrially owned timberlands to the north and south. A few parcels of Bureau of Land Management (BLM) land are distributed throughout the area, and a large section of the eastern portion of the Unit falls within Six Rivers National Forest territory. A map of this planning unit can be viewed in Figure IV.9-1. Kneeland-Maple Creek Unit: CWPP Unit Map.

IV.9.2. Kneeland-Maple Creek Community Process Summary

An open-house community workshop was held on June 4, 2012 at Kneeland Elementary School for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide *community wildfire protection plan* (CWPP) update process. Target communities were Kneeland and Maple Creek, but only Kneeland residents were present at the meeting. Although the meeting was lightly attended, some key players participated. Among them were the Fire Chief of Kneeland Volunteer Fire Department, as well as active volunteer firefighters, and one retired volunteer firefighter. The principal of Kneeland School was also in attendance. A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their community. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their community's fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.9.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.9.3. Kneeland-Maple Creek Wildfire Environment

The majority (65%) of the Kneeland-Maple Creek Planning Unit is zoned “Very High *Fire Hazard Severity*,” with 35% of the Unit area, particularly in the southern region of the Unit, zoned “High Fire Hazard Severity,” as determined by the California Department of Forestry and Fire Protection (CAL FIRE).¹ The terrain in this Unit is mostly mountainous, with steep canyons and elevations ranging from. The Unit is characterized by warm summers with periodic rainfall and cool, wet winters. Most of the Unit area is heavily forested, with *stand compositions* including Douglas fir, redwoods, oak varieties, willows, big leaf maple, and white and red alders.

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early agricultural settlers in the late 1800s used intentional burning to clear and maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1930s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuels. Intense timber harvests during the 20th century further exacerbated damages to forest ecosystem health. The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 49% of the Kneeland-Maple Creek Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 20% of the area is condition class 2, or moderately altered from the historical range.

Despite its high fire hazard rating, recent fire events have been limited to a few blazes and contained to a small range. Major fires between the years 2000-2010 included only the Kneeland Fire in 2009, which burned 26 acres, and the Iaquia Fire in October 2009, which burned 170 acres.

Humans are the most likely *ignition source* for fires in this Planning Unit. Vehicle accidents, poorly maintained burn piles and campfires, equipment use, and incendiary burning are all potential causes. There has been a recurring problem of stolen or abandoned vehicles being torched in areas along Kneeland Road during the time school graduations happen, which often correlates with the beginning of *fire season*. Lightning and downed power lines are other potential ignition sources within this Unit.

Homes in this Planning Unit exist within the WUI, which increases the likelihood that *wildland fires* will become *structural fires*, and vice versa. *Dead plant matter* and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and siding add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Although residential properties tend to be located on more gentle terrain, some homes are surrounded by steep slopes that can limit their defensible space and put structures in the line of up-hill spreading wildfires. Figure IV.9-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

¹CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

Kneeland Road, Greenwood Heights Drive, Fickle Hill Road, and Maple Creek Road, are the primary *ingress and egress* routes, with a few smaller roads connecting residences and neighborhoods to the main roads. The main roads are somewhat interconnected, though remote, and all of them are windy and narrow in parts. The narrowness of these roads could create serious complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Overgrowth of vegetation along roads and driveway and inadequate vehicle *turn around spaces* could create problems as well. Poor or complete lack of *signage* at roads and intersections pose potential problems for emergency ingress and egress. The potential for landslides could also inhibit access throughout the Unit.

Communities in this Planning Unit are not served by any community service districts, so residents obtain water through other means, such as drawing from nearby creeks and holding tanks. A number of water tanks located throughout the community are available for *fire protection water*. Community members identified four 2,500-3,000 gallon tanks, a 15,000 gallon tank, a 20,000 gallon tank, and a 30,000 gallon tank that could be made available for use by firefighters. Fire protection water may also be drawn from the following sites:

- A ½-acre pond – helicopter accessible
- Barry Road pond “B” – helicopter accessible
- A 1/4-acre pond - helicopter accessible
- Barry Road pond “C” – helicopter accessible

The map in Figure IV.9-2 at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.9.4. Kneeland-Maple Creek Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

Assets at risk in this Planning Unit mainly include residential homes and neighborhood areas, as well as infrastructure components such as communication towers, power lines, and *access roads*. Many residents in these communities possess large farm animals and these, along with their associated structures, such as barns and stables, are considered assets at risk as well.

The map in Figure IV.9-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS² Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Kneeland School
- CDF Station/Airport/Heliport/rare
- Maple Creek School/Fire Station
- Maple Creek swimming

² Geographic Information Systems (GIS).

- plant species
- Greenwood Heights/old Post Office building
- hole/recreation
- Blue Slide Church Camp

Environmentally significant assets at risk within this Planning Unit include the Iaqua Buttes, a *viewshed* with great ecological importance to the community, as well as timber resources located between Old Arcata Road and Fickle Hill Road.

IV.9.5. Kneeland-Maple Creek Community Preparedness

No local *fire safe councils* (FSC) exist in this Planning Unit and none of the communities has yet achieved national *Firewise* recognition. However, during the community outreach process, there was notable interest expressed among several Kneeland residents in the possibility of forming a local FSC and pursuing *Firewise* recognition for their community.

IV.9.6. Kneeland-Maple Creek Wildfire Protection Capabilities

Community fire protection within the Unit is provided by the Kneeland *Fire Protection District* (KFPD), which was established in 1990 and is served by the Kneeland *Volunteer Fire Department* (KVFD). The KVFD serves approximately 42 square miles; the out of district *response area* consists of buffer zones surrounding Freshwater, Maple Creek, Butler Valley Road, Fickle Hill Road, Bridgeville, and Showers Pass.³ The KVFD has eight volunteer firefighters who provide fire protection and medical services to these communities. Their *apparatuses* include: one 800 gallon type-1 engine, one 300 gallon type-4 quick attack engine, and one 2,200 gallon *water tender*.⁴ The KVFD can be reached by calling (707) 442-3252, or by visiting their website at: www.kneelandfire.org.

CAL FIRE is responsible for responding to wildland fires in the Unit. However, the KFPD has formal *mutual aid agreements* with CAL FIRE, Humboldt Fire District and Arcata Fire Protection Districts for giving and receiving additional assistance. Due to the remoteness of the area, the KVFD is often the first to respond to wildfires; however, volunteers' equipment and training experience limits their ability to contain large wildfires. In these instances, volunteer firefighters prioritize the protection of lives and structures while doing what they can to address the fire until assistance from CAL FIRE arrives.

The volunteer fire department in Maple Creek recently had to close due to insufficient funding. Now the community relies on seasonal wildfire response from CAL FIRE and the *goodwill service* of fire protection resources in neighboring communities, such as the Kneeland and Blue Lake.

Many communities in this Unit have various needs associated with improving the availability of emergency water for wildfire protection. Many existing water sources are in need of maintenance, protection, or improvements. There is also a need to make the location of existing water sources more apparent to firefighters with visible markers, and for community members to ensure that their water sources are properly outfitted for firefighting equipment. The KFPD is also in the process of building a new fire station which will also serve as the Kneeland Community Center. There is always a need for additional funding to support this endeavor.

³ Kneeland Fire Protection District. (2011). *About Us*. Retrieved from <http://www.kneelandfire.org/about-us.html>

⁴County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx

IV.9.7. Kneeland-Maple Creek Evacuation

Evacuation from the Kneeland-Maple Creek Planning Unit will travel northwest along either Kneeland Road, Greenwood Heights drive, or Fickle Hill Road towards Arcata, or it will travel south along Kneeland Road towards Bridgeville, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are a number of smaller roads connecting residences and neighborhoods to these primary transportation routes. Barry, Paddock, and Tim Mullen Roads connect several neighborhoods to Kneeland Road, while Mountain View Road provides an alternative route south from Kneeland Road. Butler Valley Road is necessary for connecting Maple Creek to the main roads leading west, while Maple Creek Road provides northern access to Blue Lake, approximately nine miles away. Powerline Road could potentially enable eastern access, with assistance and permission from the U.S. Forest Service.

Evacuation impediments may include: landslides, fallen trees, downed power lines, overgrown vegetation, poorly marked streets and intersections, and narrow roads with few turnouts that could cause difficulty for evacuation and emergency response vehicles operating simultaneously.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.9.8. Kneeland-Maple Creek Community Identified Potential Projects

The following list and matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.9-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

Non-geographic community identified proposed projects based on community workshop notes:

- Improve signage—home addresses and road names.
- Build a Fire House/Community Center for Kneeland.
- Start a local Fire Safe Council or Firewise Board.
- Hold a “Firewise Recognition Workshop”; conjoin Firewise Day with community’s annual music festival.
- Conduct a *Fuel Reduction AND Slash* Collection weekend event; inquire into Humboldt Redwood Company as a possible funding source.
- Translate the fire department’s hand-written maps of area into a more sophisticated, bound and laminated map book for emergency responders.
- Implement the *Blue Dot Program*; collaborate with and educate community members regarding this.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BAY028	Kneeland Rd & Butler Valley Rd	Water tanks at Kneeland Rd & Butler Valley Rd; 20-30k gal	Action Need	2010	Other - Water				grant - fire dept.
BAY029	Upper Jacoby Creek	Upper Jacoby Creek: water tank network	Action Need	2012	Other - Water				grant - fire dept.
BAY032	Fickle Hill Road	Fickle Hill shaded fuelbreak	Treat-Med	2012	Landscape				grant- landowner- Assn.
KNE043	Community of Kneeland	Tim Mullen Rd/Foss Rd shaded fuelbreak	Treat-High		Roadside Clearance				grant - landowner
KNE044	Community of Kneeland	ID shaded fuelbreak in upper Freshwater area and fuel reduction	Treat-High		Landscape				grant- landowner- Assn.
KNE047	Greenwood Heights Drive	Greenwood Heights Dr./Freshwater Rd: maintain defensible spaces, maintain buffers near roads and between grass and tree lines, and improve access clearance.	Treat-Med	2012	Defensible Space and Roadside Clearance and Other - Access				grant- landowner- Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
KNE056	Barry and Tim Mullen's Road, Kneeland	Clear brush and mow grass along roads (buffers), people's driveways, homes			Defensible Space and Roadside Clearance				
PAC001	Northern boundary Humboldt Redwood company lands; Freshwater- Kneeland area	WUI; possible shaded fuelbreak	Treat-Med		Landscape				grant- landowner- Assn.
PAC002	04N 01E SEC's 21,22,26,25 & 04N 02E SEC 19	Fire Suppression Ridges on Humboldt Redwood Company Property; some natural break; targeted for additional treatment	Treat-Med		Landscape				grant- landowner- Assn.

IV.9.9. Kneeland-Maple Creek Action Plan

The following items are the initial priorities for community action for the Kneeland-Maple Creek Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Sustainable Fire Departments:** Community members within this Planning Unit should support their local fire department⁵ through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services.
 - Complete construction of the new Kneeland Fire Hall and Community Center.
 - Explore potential options for providing local fire protection to the community of Maple Creek. This may include expanding the Kneeland Fire Protection district Boundary to include the community of Maple Creek. This Plan recommends that voter approval of a special tax or assessment accompany any expansion so that the fire service is financially supported.
- **Signage:** To aid emergency responders, residents and road associations should improve road and address signage throughout their communities. Make signs larger and reflective to increase visibility and install road and address signs where they are missing. Less noticeable but more sentimental address signs may remain but it is important to also post reflective signs with lettering at least three inches in height.
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Neighborhood and road associations and/or Firewise Communities work with local fire departments to develop a “Blue Dot” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed. Focus initial efforts in the following neighborhood areas:
 - Kneeland Road
 - Butler Valley Road
 - Upper Jacoby Creek Road

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program for the community of Kneeland within the Kneeland Fire Protection District boundaries. Focus particular attention on neighborhoods located along dead-end roads. Actively implement and maintain the Firewise action plan on an annual schedule.

Preparing for Emergencies

- **Community Emergency Response Teams:** Organize a *Community Emergency Response Teams* (CERT) training session for residents interested in improving the community’s emergency preparedness. These training opportunities equip community members with basic disaster response skills for dealing with a variety of emergency situations. Such skills become extremely valuable in situations where professional responders cannot act immediately. CERT participants gain experience implementing collaborative problem solving and develop a greater sense of community cohesion. It is particularly important to build

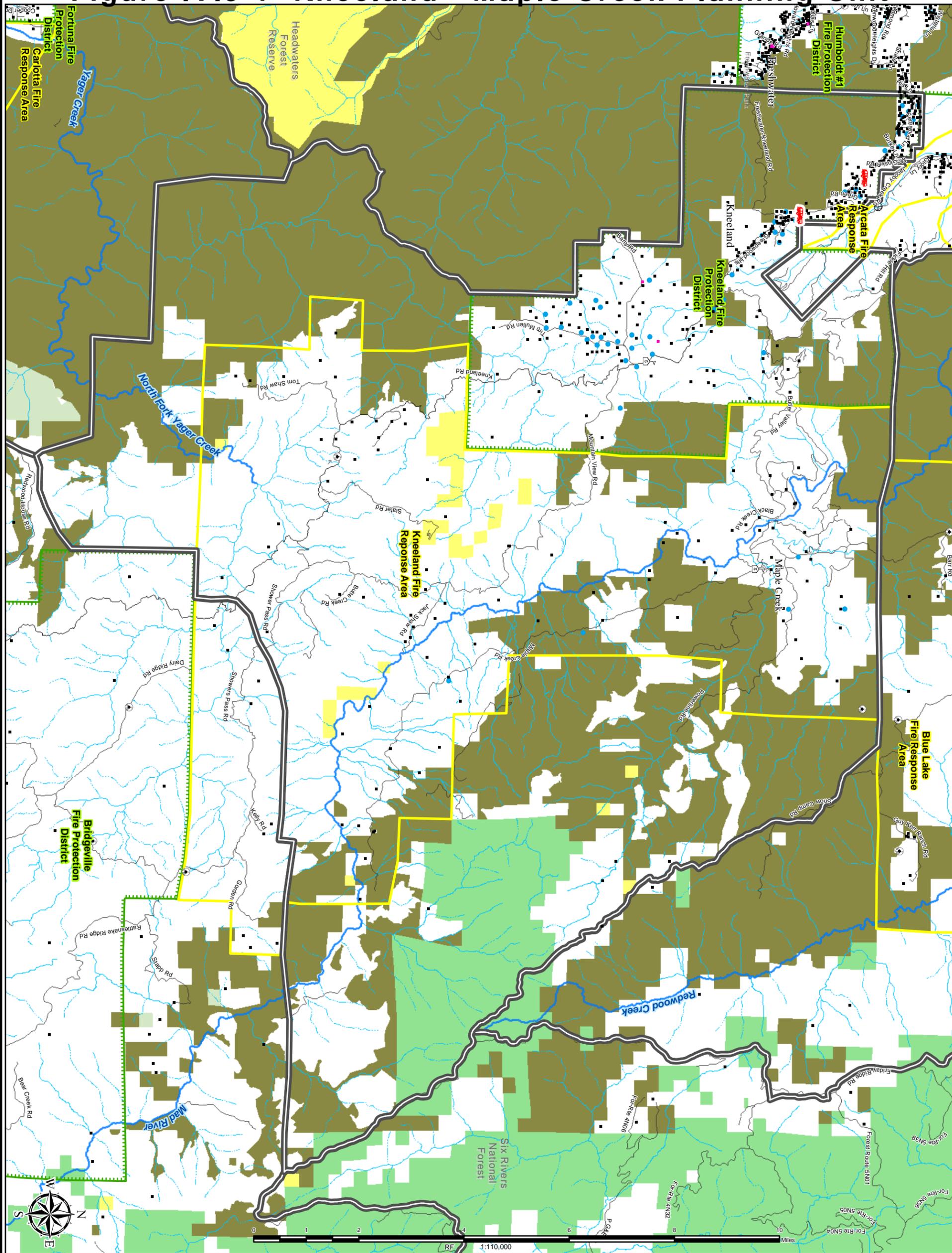
⁵ All local fire departments within this unit are listed above with their contact information in the “Wildfire Protection Capabilities” section.

this community capacity because Kneeland has the potential for being cut off from larger community centers during an extreme wildfire or earthquake event.

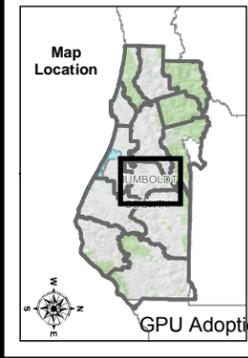
Reducing Wildfire Fuels (Flammable Vegetation)

- **Defensible Space:** All residents in this Planning Unit live within the WUI and are at risk to wildfire; therefore, residents should manage the flammable vegetation within their *home ignition zone*. Maintaining *defensible space* through vegetation treatments should be a routine and ongoing practice for all homes and landscapes. Community *Chipper Days* can facilitate this process by helping landowners get rid of slash and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the planning unit. The following priority areas were identified at community meetings and are recommended for treatment in this plan:
 - Greenwood Heights Drive
 - Barry Road
 - Tim Mullens Road
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Focus initial efforts along the following roads:
 - Tim Mullens Road
 - Foss Road
 - Shaded fuelbreak where needed on upper Fickle Hill Road.
 - Shaded fuelbreak in upper Freshwater area, along Kneeland Road.
- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:
 - Vegetation treatment on fire suppression ridges.
 - Shaded fuelbreak near northern Humboldt Redwood Lumber Company boundary, near Freshwater and Kneeland Road.

Figure IV.9-1 Kneeland - Maple Creek Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station
 - Six Rivers Fire Station
 - Hospital/Medical Center
 - Red Cross
 - Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership**
- AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
 - Cities

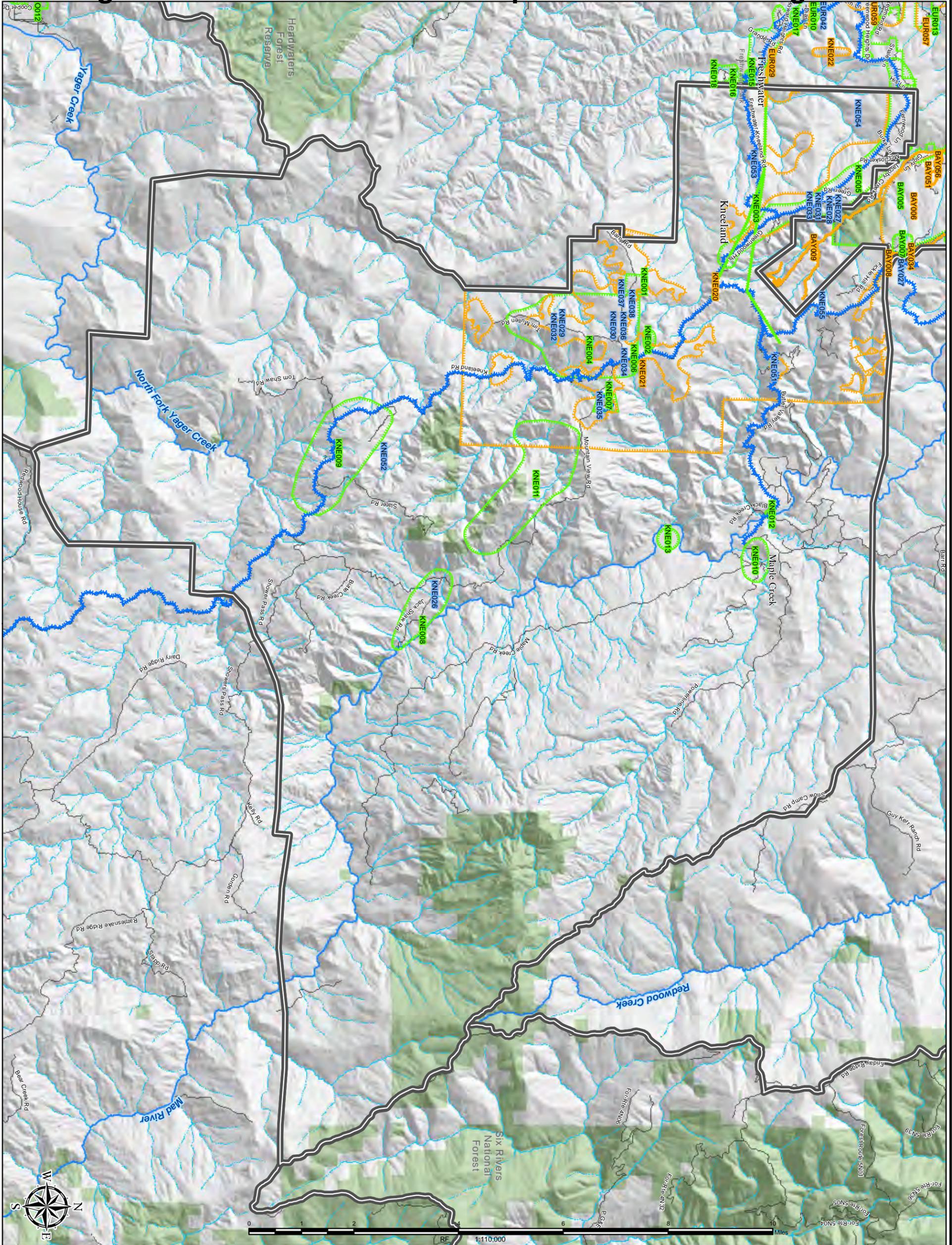
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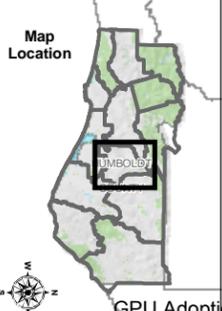
October 23, 2017

Figure IV.9-2 Kneeland - Maple Creek Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

- | | | | |
|-------------------------------|-------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Parks/Public Land | Highways and Roads | Hydrography |
| Community Identified Features | Cities | HWY 101 | Major River or Stream |
| Protection/Evacuation | | State HWY | Perennial Stream |
| Value/Asset | | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |

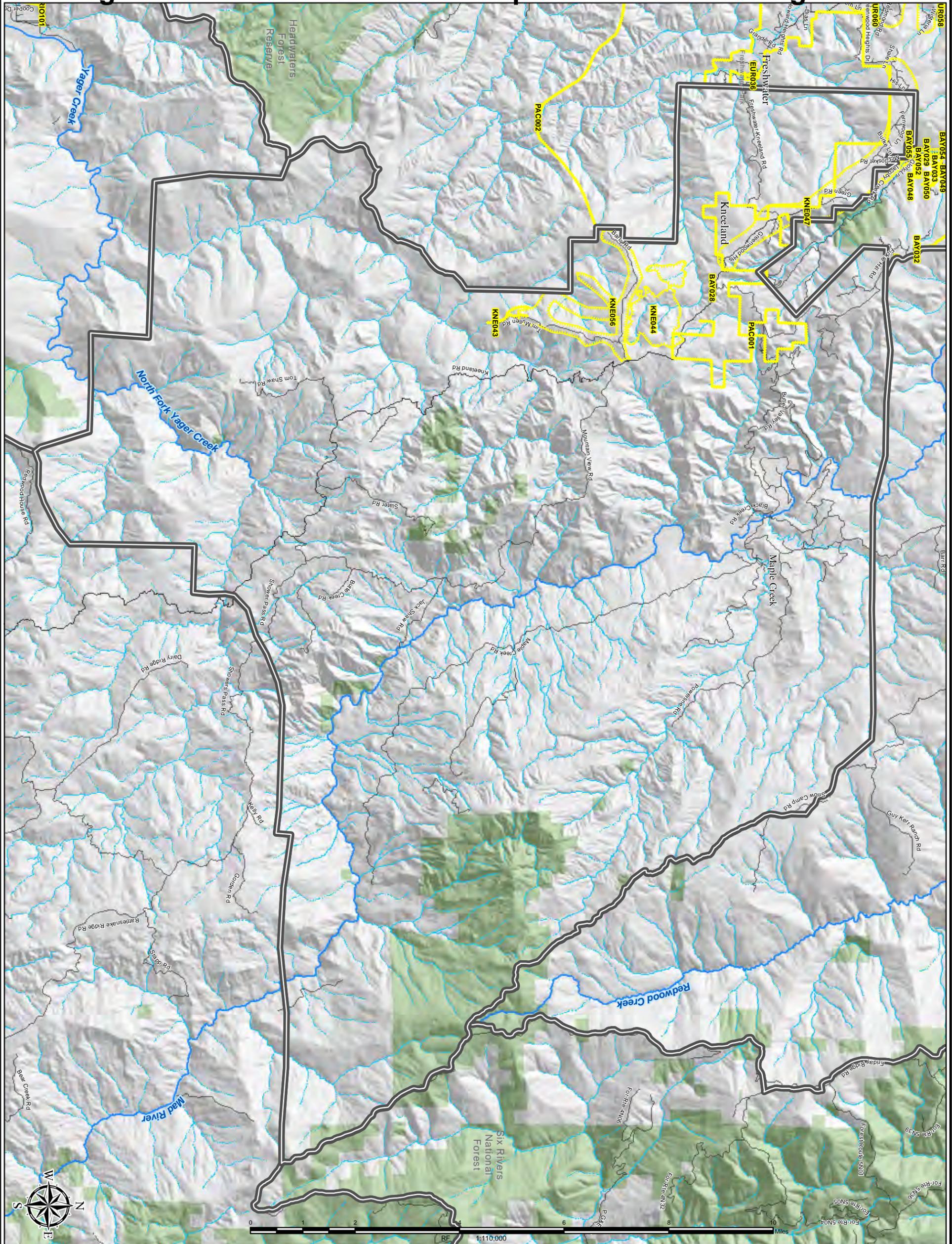


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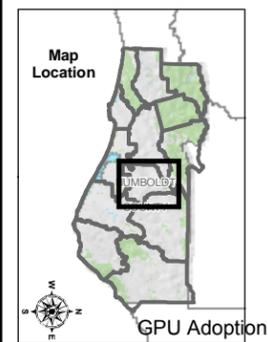
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Figure IV.9-3 Kneeland - Maple Creek Planning Unit



CWPP - Community Identified Projects

- | | | | |
|-------------------------------|--------------------------|---------------------------|-----------------------|
| Legend | Parks/Public Land | Highways and Roads | Hydrography |
| CWPP Planning Unit Boundary | Parks/Public Land | HWY 101 | Major River or Stream |
| Community Identified Projects | Cities | State HWY | Perennial Stream |
| Proposed Project | | HWY or Secondary Road | Intermittent Stream |
| Treated Project | | Local Road or Street | |



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IV.10. Eel Planning Unit Action Plan

IV.10.1. Eel Planning Unit Description

The *Eel Planning Unit* encompasses 222,623 acres situated in the south-western portion of Humboldt County; it is located south of Humboldt Bay and the Headwaters Forest Reserve, and west of the town of Bridgeville, with the southern edge of the Unit bordering Humboldt Redwoods State Park. This Unit contains some of the more populated areas of Humboldt County, apart from the Greater Eureka Area. Highway 101 is the central transportation route, entering from the south-east corner and traveling in a north-westerly direction through the Planning Unit. Highway 36 is another major route that heads east out of the Unit towards Trinity County. The geography of the Unit is dominated by the lower portion of the Eel River *basin* and its *tributary watersheds*. A major confluence of primary waterways and transportation routes takes place just south of Fortuna near the community of Alton: the Eel River, which is paralleled by Highway 101, is joined by the Van Duzen River, which is paralleled by Highway 36. Major Eel River tributaries within the Unit include: Yager Creek, Home Creek, Price Creek, and Strongs Creek.

The City of Fortuna, known as the “Friendly City,” and the City of Rio Dell comprise the community population centers of this Planning Unit. The rural City of Ferndale is another yet smaller population center within this Unit. Located directly west of Fortuna, Ferndale is accessed via Highway 211, which leads into the heart of Ferndale, where numerous smaller roads branch out into various neighborhoods. Several other towns and communities are clustered along Highway 101, including the town of Loleta to the north, and the town of Alton, in between Fortuna and Rio Dell, as well as Carlotta and Hydesville located to the east along Highway 36. The communities of Scotia, Stafford, Holmes, Pepperwood and Redcrest are located south of Rio Dell.

Private land is the prevailing ownership pattern within this Planning Unit. Rural-residential parcels dominate the areas surrounding Fortuna and Ferndale, with dense clusters development amassed around the main roads and community centers, while most of the southwestern Unit area is comprised of large ranchlands, with properties dispersed more widely. Rio Dell and the communities to the south are surrounded by land managed primarily by Humboldt Redwood Company, along with some parcels owned by Green Diamond Resource Company and other timber industries. Agriculture and timber production are the primary industries within this Planning Unit. A small portion of the famous Avenue of the Giants (also known as Highway 254) lies between the towns of Redcrest and Pepperwood, featuring some of the most breathtaking old growth redwoods still in existence today. A map of this planning unit can be viewed in Figure IV.10-1: Eel Unit: CWPP Unit Map at the end of this document.

IV.10.2. Eel Community Process Summary

Two community workshops were held within this Planning Unit for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide *community wildfire protection plan* (CWPP) update process. One meeting took place on April 17, 2012 in Loleta, and the other was held on June 28, 2012 in Fortuna. These meetings were sparsely attended. A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the

initial planning process in 2006. These workshops and mapping exercises also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their communities. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their communities' fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.10.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.10.3. Eel Wildfire Environment

The majority of the Eel Planning Unit (72%) is zoned “High *Fire Hazard Severity*,” as determined by CAL FIRE.¹ However, approximately 13% of the Unit area is zoned “Moderate Fire Hazard Severity,” including the more populated areas surrounding towns and the main transportation corridors. A portion of the Unit, primarily land to the west of Fortuna and surrounding Ferndale, falls within *Local Responsibility Area (LRA)*, which is outside of CAL FIRE’s jurisdiction and is therefore not zoned for Fire Hazard Severity; this accounts for 15% of the Unit acreage. Much of the inland portion of this Unit is moderately steep and heavily forested. Areas of tidal marshland are located closer to the coast. Many flat land areas near the bay contain a mix of agricultural production and pastureland.

The Unit is characterized by a Mediterranean climate. Summer weather further inland is typically dry and hot, while the coastal areas are tempered by cool fog. Winter months feature frequent precipitation and although snowfall is a rare occurrence near the coast, it is likely at elevations of 2,500 feet and above. *Local vegetation types* include: forested areas, which are largely comprised of redwoods, mixed conifer, hardwoods, and oak woodlands; *riparian* areas, where red alder, willow, and coastal shrub species are common; and annual grasslands.² Agricultural crops also comprise a significant portion of vegetation within this Unit.

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Communities in this Planning Unit are known for having a long history of ranching and agricultural practices; some of the early settlers in the late 1800s used intentional burning to clear and then maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1940s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. Intense timber harvests during the 20th century further exacerbated damages to forest ecosystem health.

Humans are the most likely *ignition source* for fires in this Planning Unit. Vehicle accidents, smoking, playing with fire, poorly maintained brush pile burns, and incendiary burning are just a few potential causes. Various types of equipment use and downed power lines can also be potential ignition sources. Lightning is the most probable natural cause of fire starts within this Unit.

¹ CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>.

² Dyett & Bhatia. (2002, September). Lower Eel River Watershed..(p. 14.)

Although the majority of communities in this Unit reside within the “fog belt” and experience an abundance of precipitation, residents must not be lured into a false sense of security regarding their risk of wildfire. Many homes exist within the *wildland-urban interface* (WUI) in which *wildland fires* can easily become *structural fires*, and vice versa. *Dead plant matter* and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and sidings add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Figure IV.10-2 found at the end of this Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS Portal, Fire Planning section: <http://gis.co.humboldt.ca.us/>.

Highway 101 and Highway 36 are the central *ingress and egress* routes, with numerous smaller roads connecting residences and neighborhoods to these central corridors. Poor or complete lack of *signage* at roads and intersections pose potential problems for ingress and egress; this is especially true for more remote residences that are further away from the main towns. The narrowness of smaller roads leading to remote residences could create serious complications for firefighting *apparatuses* trying to gain access during simultaneous home evacuations. Routes may also be overgrown with vegetation, and many properties have inadequate *turn around spaces*. The potential for landslides in the area could also inhibit access.

The central cities of Ferndale, Fortuna, and Rio Dell provide potable water and *fire protection water* to the majority of the population within this Unit. The City of Ferndale serves a population of approximately 1,400; The City of Fortuna serves a population of approximately 11,200; and the City of Rio Dell serves a population of approximately 3,250. The Scotia and Carlotta Community Service Districts also provide their communities with water. Residents outside of the cities and service districts obtain water through other means, such as drawing from nearby creeks and holding tanks. Fire protection water may also be drawn from the following locations:

- Bear River drafting area
- Blue Slide Road river drafting
- Dyerville river drafting
- Eel River tributaries drafting locations
- Three drafting locations on Palco Log Pond
- Elinor Flat river drafting
- Holmes river drafting area
- Price Creek drafting areas
- Shively river drafting areas
- Yager Creek
- Carlotta Mill

The map in Figure IV.10-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS Portal, Fire Planning section: <http://gis.co.humboldt.ca.us/>.

IV.10.4. Eel Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber

harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes and communities, along with a variety of commercial and service industries, community centers, medical and dental clinics, schools, churches, museums, as well as infrastructure components, such as water treatment plants. The Bear River Casino and Rohnerville Airport are noteworthy assets as well. The ranching, agricultural, dairy, and timber industries within the Unit are also considered assets at risk. The Unit also contains a few city parks, an industrial park, and RV parks, which are scattered among the various communities.

The map in Figure IV.10-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS³ Portal, Fire Planning section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Mount Pierce Communications Site
- Eel River Sawmills
- Capetown Hotel
- Russ Park
- Cookhouse Ranch - historical site
- Humboldt Creamery Association

The Eel River itself is an environmentally significant asset; it “supports the largest remaining native coho salmon population in California, as well as fall-run Chinook salmon, steelhead trout, coastal cutthroat trout, green sturgeon, and Pacific Lamprey.”⁴ Table Bluff County Park, located at the southwestern edge of Humboldt Bay, and Crab Park are areas of environmental importance as well. The Eel River Wildlife Area has significant ecological value, with a diverse array of *habitats* that support a bounty of wildlife, such as, “river otters, harbor seals, tundra swans, bald eagles, egrets, herons, salmon and steel head trout.”⁵ Other notable wildlife species within the Unit include: black tailed deer, beaver, mink, gray fox, ring tailed cats, weasels, coyote, and bobcats.⁶ Just east of Table Bluff Park lies the Wiyot Reservation, a small bit of land that holds great cultural significance for many residents in this Unit.

IV.10.5. Eel Community Preparedness

No local *fire safe councils* (FSC) exist in this Planning Unit and none of these communities has achieved national *Firewise* recognition. Efforts to educate community members about fire safety and to improve emergency preparedness within this Unit are guided by the local fire protection services with some support from Humboldt County FSC. *Community Emergency Response Teams* (CERT) training took place within this Unit to equip community members with basic disaster response skills for dealing with a variety of emergency situations. Such skills become extremely valuable in situations where professional responders cannot act immediately. CERT participants gain experience implementing collaborative problem solving and develop a greater sense of community cohesion.

The Fortuna Volunteer Fire Department (VFD) provides fire prevention and safety services through their Fire Prevention Division and Public Education Division. Their efforts include implementing and maintaining community outreach programs that educate and inform the public

³ Geographic Information Systems (GIS).

⁴Dyett & Bhatia. (2002, September). Lower Eel River Watershed. *Humboldt 2025 General Plan Update: Natural Resources and Hazards; Vol. 2: Detailed Watershed Characteristics and Regulatory Framework Analysis*. Retrieved from <http://www.co.humboldt.ca.us/gpu/documentsbackground.aspx>.

⁵ The Wildlands Conservancy. (2012). *Eel River Estuary Preserve*. Retrieved from http://www.wildlandsconservancy.org/preserve_eelriver.html.

⁶ Dyett & Bhatia. (2002, September). Lower Eel River Watershed. (p.17.)

about fire prevention; in addition to giving safety presentations on a range of topics, the Fortuna VFD also distributes informational materials at local community events. The Fortuna VFD is also committed to enhancing public safety by conducting fire safety inspections at businesses, residences, schools, as well as children's day cares and senior residential care units.

IV.10.6. Eel Wildfire Protection Capabilities

Seven *volunteer fire departments* (VFDs) and *volunteer fire companies* (VFCs) collaborate to provide fire protection to the communities within the various *fire protection districts* (FPD) and *community services districts* (CSD) that exist within this Planning Unit. The seven fire chiefs from these fire departments and companies comprise the Eel River Valley Fire Chiefs group. This group meets on a quarterly basis to discuss and coordinate issues in the Eel River Valley and along Highway 36.

Tax- or fee-supported fire protection services within this Unit include:^{7 8}

- **The Loleta VFD** was formed in 1900 and has 30 volunteer firefighters who provide service to approximately 1,500 community members in 30 square miles. Their apparatuses include: a 4,000 gallon water tender, three type-2 engines, one type-3 engine, one type-4 quick-attack engine, and a rescue truck. The Loleta VFD can be reached by calling (707) 733-5407, by email at: loletafire@suddenlink.net, or by visiting their webpage at: www.loletafire.com.
- **The Ferndale VFD** was founded in 1897 and supports 34 members who provide service to approximately 2,605 community members within the district, which encompasses over 28 square miles. They also provide service to about 130 residents outside the district. Their apparatuses include: one type-1 engine, two type-2 engines, one type-4 quick-attack truck, one rescue truck, and two 5,000 gallon water tenders. The Ferndale VFD can be reached by calling (707) 786-9909, or by visiting their website at: <http://www.ferndalefire.org/>.
- **The Fortuna VFD** was founded in 1904 and supports 68 volunteer firefighters out of three stations. Volunteers provide service to 15,000 community members in approximately 26 square miles, including the City of Fortuna and outlying areas including Hydesville and Alton. Their apparatuses include: a 2,000 gallon water tender, a 3,000 gallon water tender, two aerial fire trucks, two type-1 engines, two type-2 engines, plus one reserve type-2 engine, a type-3 engine, and two rescue trucks. The Fortuna VFD can be reached by calling (707) 725-5021, or by visiting their website at: www.fortunafire.com.
- **The Rio Dell VFD** was founded in 1941 under the name of "Wildwood FPD," and became the "Rio Dell FPD" in 1961.⁹ It supports a total of 30 members who provide service to approximately 3,300 community members within over 40 square miles. Their apparatuses include: one type-1 engine, one type-2 engine, one type-3 engine, one type-4 rescue truck, one 3,800 gallon water tender, and a Ford Expedition Incident Command vehicle. The Rio Dell VFD can be reached by calling (707) 764-3329, or by visiting their website at: www.riodellfire.com.
- **The Carlotta VFD** was formally established in 1965 and supports 12 members. Their apparatuses include: a Rapid Response 1986 GMC ¾-ton, which responds to all medical calls; a 1977 Ford Van Pelt Pumper with 850 gallons of water; a 1983 Chevy

⁷ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx.

⁸ Humboldt County Fire Chiefs Association. (2012). 2012 Local Fire Protection Survey.

⁹ Rio Dell Volunteer Fire Department. (2012). *Homepage*. Retrieved from <http://www.riodellfire.com/>.

Utility Truck that carries 150 gallons of water, has foam, and carries rope rescue gear; a 1980 Ford F600 Pumper with a 550 gallon capacity; a 1977 Ford Van Pelt Pumper/Tender Combo with 2,500 gallons; and a 1971 International Tender with 3,500 gallons. The Carlotta VFD can be reached by calling (707) 768-1714 or (707) 768-1724.

There are two *volunteer fire companies* (VFC) operating in this Unit, which receive no tax-based support but rather rely solely on donations and fundraising. They include:¹⁰

- **The Redcrest VFC**, supports 6 volunteers who provide services to the areas of Redcrest, Holmes, Larabee, Shively, and Stafford. Their apparatuses include: one type-1 engine with a 500 gallon capacity and a 4WD Utility Truck with medical equipment. The Redcrest VFC can be reached by calling (707) 722-1967.
- **The Scotia VFC** supports 22 members who provide service to approximately 800 community members. Their apparatuses include: one type-1 engine, one type-2 engine, a medical response vehicle, and a Chief Command Vehicle (Pickup). The Scotia VFC can be reached by calling (707) 764-4322, by email at svfdfire@gmail.com, or by visiting their website at: <http://svfdfire.com/>.

The fire protection service entities in this Planning Unit respond to structural fires as well as wildfires. A substantial portion of the Unit, particularly the area west of Highway 101 surrounding Ferndale, falls under the jurisdiction of LRA. The remaining area is State Responsibility Area (SRA) and is the responsibility of CAL FIRE. The CAL FIRE – Humboldt-Del Norte Unit (CAL FIRE-HUU) Administrative Headquarters is located in Fortuna and houses the primary dispatch center in Humboldt: the Fortuna Interagency Command Center. Staffing at the Fortuna CAL FIRE station varies throughout the year, but remains adequate for emergency response most of the year. CAL-FIRE HUU can be reached by calling (707) 725-4413.

Many communities in this Unit have various needs associated with improving the availability of emergency water for wildfire protection. There are some locations where firefighting water is not available or where emergency water storage is needed to supplement the potentially over taxed municipal water supply. Many existing water sources are in need of maintenance, protection, or improvements. There is also a need to make the location of existing water sources more apparent to firefighters, and for community members to ensure that their water sources are properly outfitted for fire fighting equipment.

Emergency responders in this Unit are also challenged by a lack of proper signage throughout some of the more remote neighborhoods. Poorly visible or missing signage can make it difficult for firefighters to locate incident sites and can also hinder emergency *response times*. Difficulty accessing residences is exacerbated in areas where narrow roads are grown over with vegetation and have insufficient width to accommodate firefighting apparatuses.

The fire protection entities within this Planning Unit do their best to provide their communities with fire protection as well as medical and rescue services. However, individually, these departments struggle with the man-power, time and funding to support the more specialized goal of rescue services. This is why the fire chiefs of the Van Duzen and lower Eel River Valley areas came together to form the Eel River Valley Technical Resource Team (ERVTRT), to address the many risks that these departments face (water rescue, collapse rescue, confined space rescue and more). Participating fire departments include: Bridgeville, Carlotta, Ferndale, Fortuna, Loleta, Rio Dell, and Scotia. The ultimate goal of the ERVTRT is, through the pooling of resources, to have the ability to provide a higher level of rescue operations to their communities. These operations include low angle rope rescue, hazardous materials operations level training, confined space training, rescue systems training (collapse rescue) and swift water rescue training along

¹⁰ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*.

with the acquisition of appropriate equipment to address collapse, confined space and water rescue events. The ERVTRT has approximately 15 members who train together twice monthly and have an assigned Team Leader and Squad Leaders who are in charge of members from each fire department. In November 2011, the Fire Chief's determined that the level of training and procedures for the ERVTRT were adequate and authorized the team to respond to calls.

IV.10.7. Eel Evacuation

Evacuation from the Eel Planning Unit will travel either southeast or northwest along Highway 101, or east on Highway 36, depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. Ferndale residents will connect to Highway 101 either by traveling north on Highway 211 or southeast on Grizzly Bluff Rd, which becomes Blue Slide Road. There are numerous small roads connecting communities and residences to main roads and highways. Adequate ingress and egress along these roads is vital to a large portion of the community that may need to access primary *evacuation routes* and for firefighters who will be using the roads to access wildfire incidents.

Evacuation impediments may include: landslides, fallen trees, overgrown vegetation, poorly marked streets and intersections, and *one-way-in, one-way-out roads* that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.10.8. Community Identified Potential Projects

The following list and matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: *Descriptive Characteristics for Community Identified Projects Matrix*. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.10-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose "Fire Planning" from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

Non-geographic community identified proposed projects based on community workshop notes:

- Provide education and outreach about living in an area vulnerable to wildfires. Include compelling stories about past coastal wildfire events. Send this information out with various already occurring mailers.
- Post more address and road signs in some areas.
- Identify roads that are impassable with fire trucks. Ferndale is considering posting a red reflective strip at the bottom of roads that can not accommodate their fire trucks.
- Include a link to the County Fire Safe Council and State Fire Safe Council websites on all fire department websites.
- Use Facebook and other popular social networking tools to get the fire safe message out to more people.
- Encourage Boy Scouts of America to perform community service activities including delivering literature to homeowners or clearing around and painting fire hydrants.
- Partner with the California Conservation Corps to treat hazardous vegetation in priority locations.

LOCATION		Community Identified Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg. Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD020	HWY 36 east to Trinity CO line	Fuel reduction	Treat-Med	2010	Roadside Clearance				grant-landowner, neighborhood or road association
BRD035	H-Line (old PL haul road)	Fuel reduction	Treat-Med	2010	Roadside Clearance				grant-landowner, neighborhood or road association
BRD076	Cummings Creek Road	Fuel reduction	Funded	2010	Landscape				
BRD078	Fox Creek Road	Fuel reduction	Funded	2010	Landscape				
BRD082	Carlota - Church Ln (Private road) & Hwy 36	Neighborhood -combo driveway clearing, defensible space, and buffer to protect from wildland fire - Thinning Chipping	Treat-High	2009	Landscape Defensible Space				grant-landowner, neighborhood or road association
BRD089	Fox Creek Rd.	Roadside Shaded Canopy. 50 ft each side of Rd. for 2 miles -Thinning Chipping	Funded	2009	Roadside Clearance	24.00		Check re-growth every 3 years	USDA 2009 grant
BRD091	Cummings Creek Road	Roadside Shaded Canopy. 50 ft each side of Rd. for 1 mile - Thinning Chipping	Funded	2009	Roadside Clearance	12.00			USDA 2009 grant

LOCATION		Community Identified Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg. Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD107	Carlotta interface areas North hwy 36	Public outreach re defensible space and fire safety	Action-Needed	2012	Other-Ed				
FER050	Williams Ck Rd (single access), and surrounding	Roadside vegetation Management, Public outreach re defensible space, evacuation plan	Treat-Med	2012	Roadside clearance & Other Education				
FER051	Eugene St (single access), Ferndale	Public outreach re defensible space and address signage	Action-Needed	2012	Other-Education				
PAC003	from 2N1E sec 34, SE ~14mi to 1N3E sec 27	Fire Suppression Ridges; some natural break; targeted for additional treatment	Treat-Med	2012	Landscape				grant-landowner, neighborhood or road association
PAC004	from 1N1W sec 36, SE ~6mi to 1S1E sec 14	Fire Suppression Ridges; some natural break; targeted for additional treatment	Treat-Med	2012	Landscape				grant-landowner, neighborhood or road association
PAC006	01S 02E SEC 14 ~6mi East to 01S 03E sec 23	Fire Suppression Ridges; some natural break; targeted for additional treatment	Treat-Med	2012	Landscape				grant-landowner, neighborhood or road association
PAC007	NE boundary Fortuna/timber lands	WUI; fuel treatment buffer between residence and wildland	Treat-Med	2012	Landscape				grant-landowner, neighborhood or road association

LOCATION		Community Identified Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg. Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
PAC011	Tompkins Hill Rd, Fortuna	Install address and Rd signs. Public education and outreach	Action-Needed	2012	Other-Access and Education				
PAC012	Loop Rd and off-shoots, Fortuna	Install address and Rd signs. Public education and outreach	Action-Needed	2012	Other-Access and Education				
PAC013	Mill St (single access), Fortuna	Install address and Rd signs. Public education and outreach	Action-Needed	2012	Other-Access				
PAC014	North of neighborhoods in Palmer Ck, near Fortuna	Shaded fuelbreak as a buffer between residents and wildlands	Treat-Med	2012	Landscape				
PAC015	Neighborhood at the top of Home Ave (single access), Fortuna	Improve defensible space where needed (evacuation planning)	Treat-High	2012	Defensible Space Other - Education				
RIO076	Price Creek Neighborhood – Rio Dell	Improve Price Creek Community Water Source (Blue Dot Program)	Update	2012	Other – Water and Education				grant-landowner, neighborhood or road association
RIO077	Pepper Tree Lane – Rio Dell	Improve Pepper Tree Lane area Water Source (Blue Dot Program)	Update	2012	Other - Water				grant-landowner, neighborhood or road association

LOCATION		Community Identified Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg. Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
RIO083	Redwood Avenue – Rio Dell	Widen Redwood Avenue & improve bridge crossing for fire truck access	Action Need	2010	Other - Rd. Access				grant-landowner, neighborhood or road association
RIO084	Demo Left & Stafford to Happy Valley – Rio Dell	Slash Treatment/Vegetation Management along timber roads	Treat-Med	2012	Roadside Clearance				grant-landowner, neighborhood or road association
RIO095	Shively Rd (single access)	Vegetation management along road. Prioritize county roadside clearing	Treat-Med	2012	Roadside Clearance	14.43			
RIO096	Shively Rd (single access)	Public Outreach re defensible space and evacuation planning	Action-Needed	2012	Other-Education				
RIO097	Residences near Larabee Ck Rd/Johnson Ln (single acc)	Public outreach about defensible space and evacuation planning	Action-Needed	2012	Other-Education and Evacuation				
RIO099	Monument Rd, Rio Dell	Education outreach about defensible space and roadside fuel reduction. Improve signage and water availability	Action-Needed	2012	Roadside Clearance Other-Education and Water				
RIO100	Rio Vista Ln (single access) – Rio Dell	Public outreach re defensible space, fire safety, evacuation planning	Action-Needed	2012	Other-Education				

LOCATION		Community Identified Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg. Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
RIO101	Hydesville neighborhoods interface areas	Public outreach re defensible space and fire safety	Action-Needed	2012	Other-Ed				

IV.10.9. Eel Action Plan

The following items are the initial priorities for community action for the Eel Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

- **Sustainable Fire Departments:** Community members within this Planning Unit should support their local fire department¹¹ through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services.
- **Road Improvements:** Upgrade and/or repair roads that hinder access by emergency responders. Begin by systematically identifying and mitigating such access impediments. The following priority access issue was identified at a community workshop and is recommended for initial action in this plan:
 - Widen Redwood Avenue near Rio Dell and improve the bridge crossing for fire truck access.
- **Signage:** To aid emergency responders, residents and road associations should improve road and address signage throughout their communities. Make signs larger and reflective to increase visibility and install road and address signs where they are missing. Less noticeable but more sentimental address signs may remain but it is important to also post reflective signs with lettering at least three inches in height. Focus initial efforts in the following areas:
 - Fortuna: Tompkins Hill Road, Loop Road and offshoots, and Mill Street
 - Ferndale: Eugene Street
 - Rio Dell: Monument Road
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Neighborhood and road associations and/or Firewise Communities work with local fire departments to develop a “*Blue Dot*” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed. Focus initial efforts in the following neighborhoods:
 - Pepper Tree Lane, North of Rio Dell and West of Highway 101.
 - Price Creek, North of Rio Dell and West of Highway 101.
 - Monument Road, Southwest of Rio Dell

Creating Fire Safe Communities

- **Firewise Communities:** Pursue participation in the Firewise Communities/USA recognition program with neighborhood groups in developed areas adjacent to the

¹¹ All local fire departments within this unit are listed above with their contact information in the “Wildfire Protection Capabilities” section.

wildland, particularly where there are many residences located along dead-end roads. Actively implement and maintain the Firewise action plan on an annual schedule. Target the following neighborhoods on edges of communities in the higher risk interface areas, possibly through an affiliation with a road association:

- Near Fortuna: Tompkins Hill and loop roads, top of Home Avenue, and Mill Street
- Near Ferndale: William Creek Road and Eugene Street
- Near Rio Dell: Monument Road
- Near Carlotta: Cummings Creek and Fox Creek roads
- Holmes and Shively

Ensuring Safe and Effective Evacuation

- Encourage fire department representatives from each department within this Planning Unit to work with local law enforcement and the Humboldt County Office of Emergency Services to engage community members in evacuation preparedness. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions. Focus evacuation planning efforts in neighborhoods located along the following single access roads:
 - Fortuna: Tompkins Hill Road, Home Avenue, Mill Street
 - Ferndale: Eugene Street, Williams Creek Road
 - Carlotta: Cummings Creek Road, Fox Creek Road
 - Rio Dell: Monument Road, Rio Vista Lane
 - Shively/Holmes: Shively Road, Larabee Creek Road and Johnson Lane

Promoting Fire Safe Education

- Conduct public education and outreach efforts regarding strategies for fire safety, maintaining defensible space, and evacuation planning. Send out informational material in mailers throughout the communities. Consider involving Boy Scouts and Girl Scouts of America in outreach efforts. Focus initial educational efforts in the following neighborhoods:
 - Fortuna: Tompkins Hill Road, Home Avenue, Mill Street
 - Ferndale: Eugene Street, Williams Creek Road
 - Hydesville neighborhoods interface areas
 - Carlotta interface areas north of Highway 36
 - Rio Dell: Price Creek, Monument Road, Rio Vista Lane
 - Shively/Holmes: Shively Road, Larabee Creek Road, and Johnson Lane

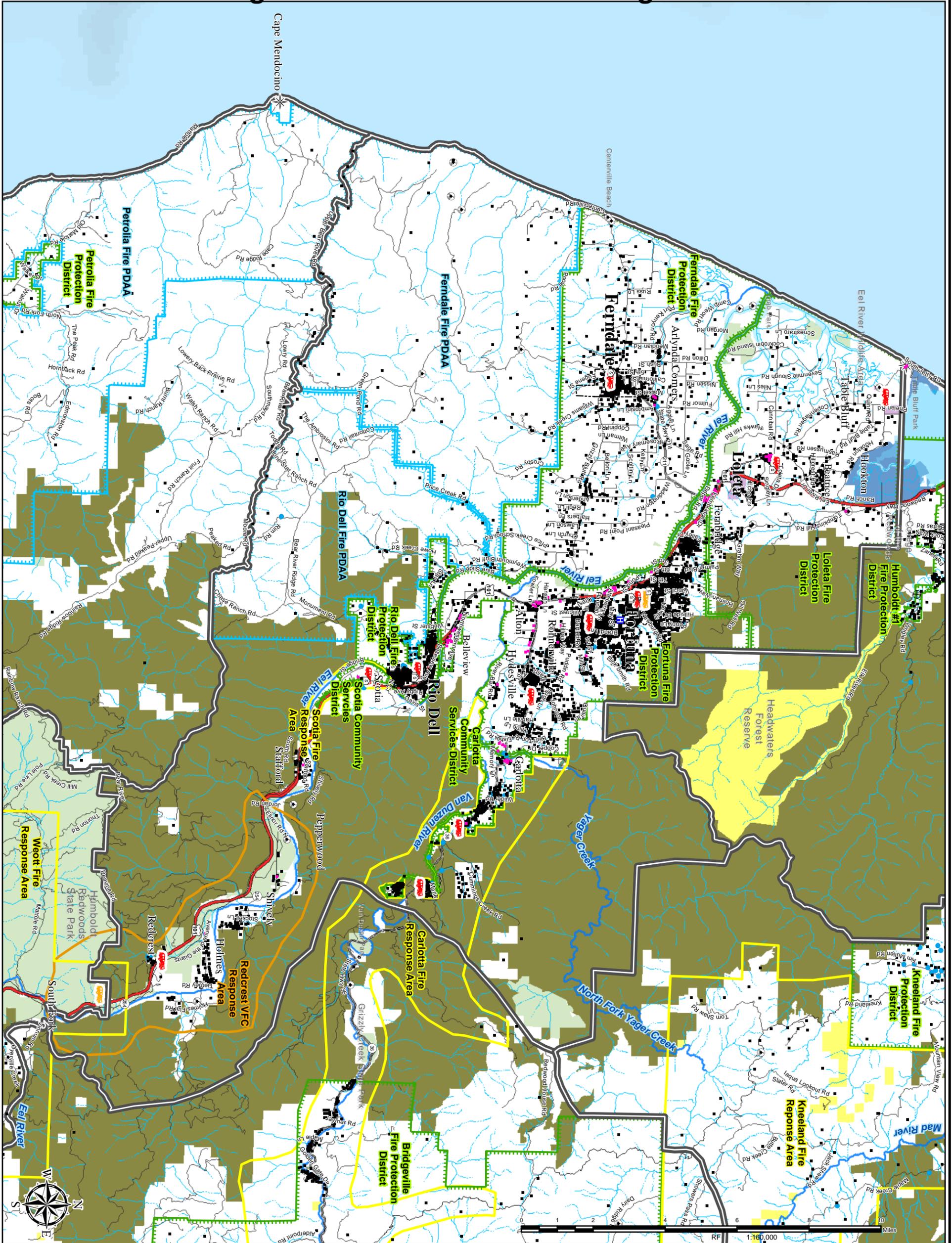
Reducing Wildfire Fuels (Flammable Vegetation)

- **Defensible Space:** Those residents living in areas within this Planning Unit that are at risk to wildfire should manage the flammable vegetation within their home ignition zone. Maintaining *defensible space* through vegetation treatments should be a routine and ongoing practice for all homes and *landscapes*. Community *Chipper Days* can facilitate this process by helping landowners get rid of slash and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the planning unit. The following priority areas were identified at community meetings and are recommended for treatment in this plan:
 - The neighborhood at the top of Home Avenue in Fortuna
 - The neighborhood along Church Lane, Southeast of Carlotta

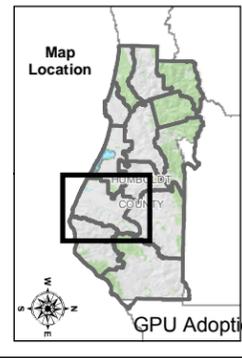
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Focus initial efforts along the following roads:
 - Williams Creek Road
 - Cummings Creek Road
 - Church Lane
 - Fox Creek Road
 - Highway 36 where needed
 - H-Line (Old lumber company haul road)
 - Monument Road
 - Shively Road

- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:
 - A shaded fuelbreak buffering WUI neighborhoods along the Northeast side of Fortuna, between the city and timberlands.
 - A shaded fuelbreak North of neighborhoods in Palmer Creek (North Fortuna)
 - A buffer between the neighborhoods along Church Lane and the wildlands (Southeast of Carlotta)

Figure IV.10-1 Eel Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station \ Camp
 - Six Rivers Fire Station
 - Hospitals and Clinics
 - Hospital/Medical Center
 - Red Cross
 - Lookout, Lights, Radio
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership**
- AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
 - Cities

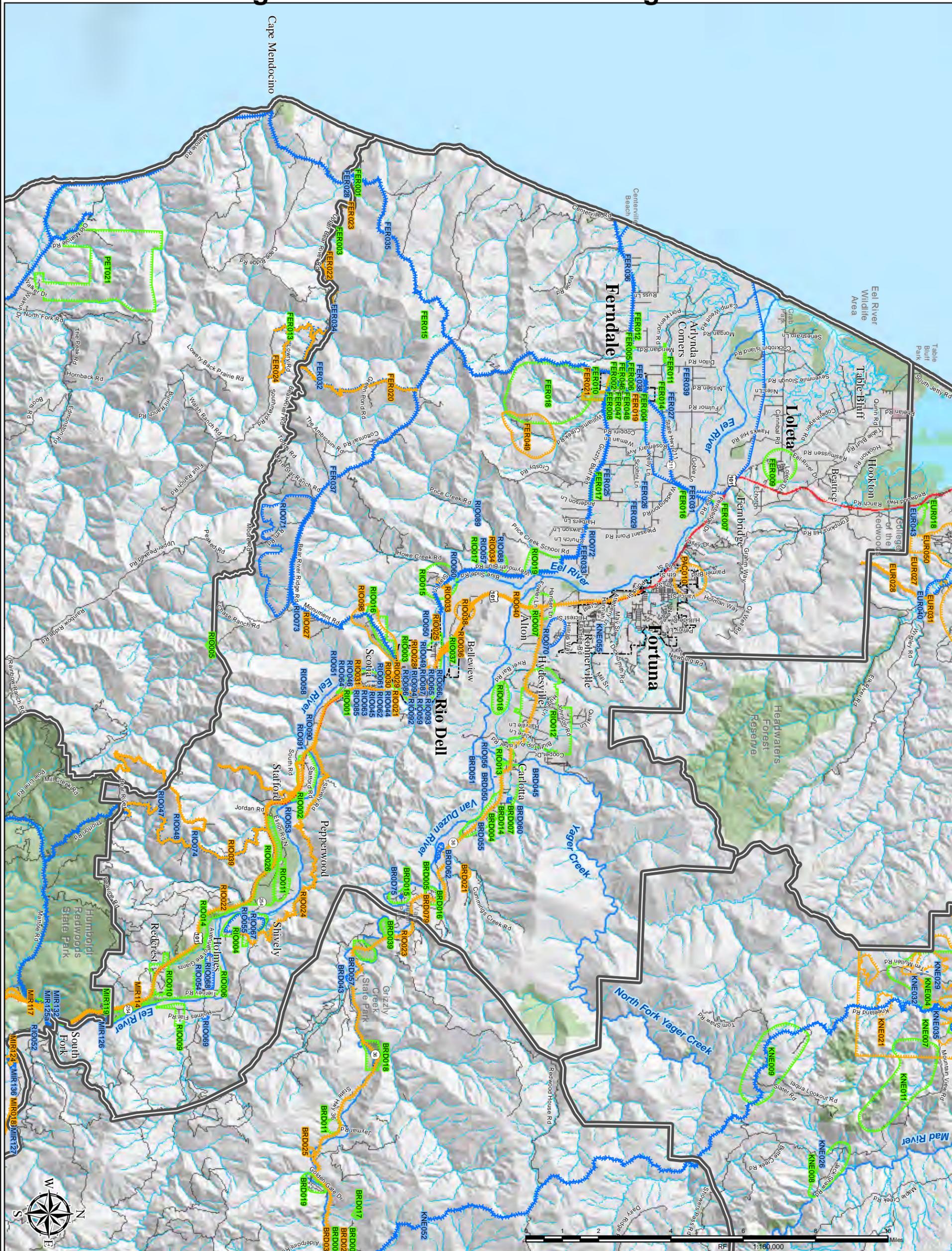
Humboldt County FireSafe COUNCIL

Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

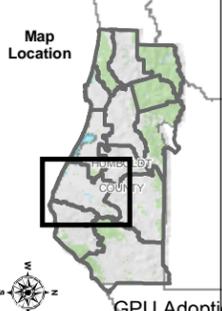
Figure IV.10-2 Eel Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-------------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Parks/Public Land | HWY 101 | Major River or Stream |
| Protection/Evacuation | Reservation/Tribal Land | State HWY | Perennial Stream |
| Value/Asset | Cities | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |

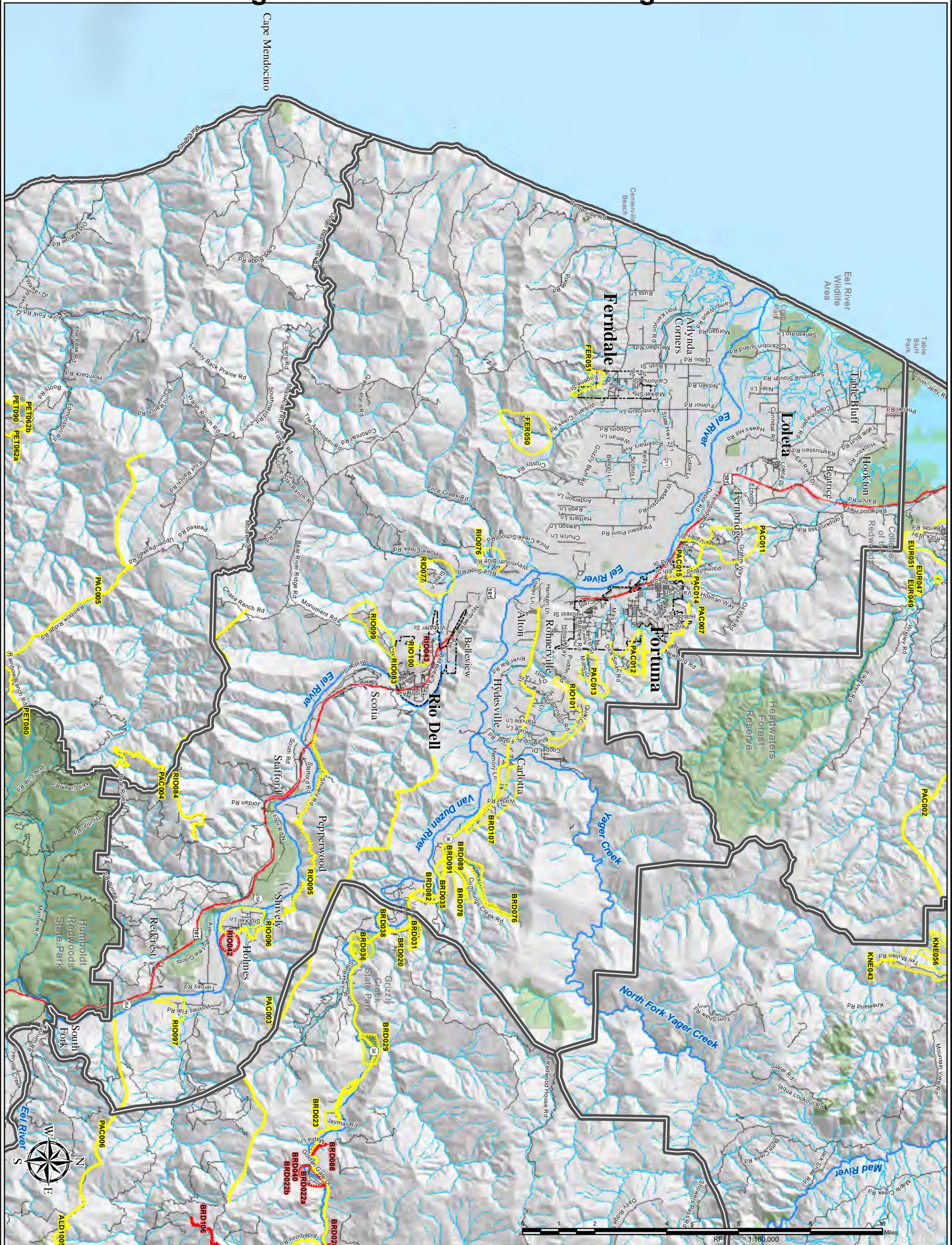


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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.10-3 Eel Planning Unit



CWPP - Community Identified Projects

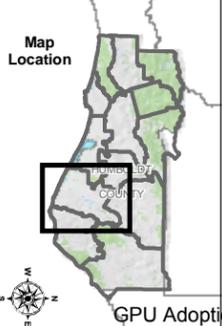
- | | | | |
|-----------------------------|-------------------------|---------------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Proposed Project | Parks/Public Land | HWY 101 | Major River or Stream |
| Treated Project | Reservation/Tribal Land | State HWY | Perennial Stream |
| | Cities | HWY or Secondary Road | Intermittent Stream |
| | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us



GPU Adoption

October 23, 2017

IV.11. Mad-Van Duzen Planning Unit Action Plan

IV.11.1. Mad-Van Duzen Planning Unit Description

The Mad-Van Duzen *Planning Unit* encompasses 300,661 acres situated in the southeastern region of Humboldt County. The Cities of Fortuna and Rio Dell and Humboldt Redwoods State Park are located to the west, while Trinity County and Six Rivers National Forest border the eastern side of the Unit. Highway 36 is the primary transportation route through the Unit; it is paralleled by the main waterway, the Van Duzen River, which is one of the last remaining free-flowing rivers in California. The river and highway travel across the center of the Unit in a westward direction. Kneeland and Alderpoint Roads provide access to the north and south, respectively. The Unit contains portions of both the Van Duzen River *watershed* and the Mad River watershed, with the Mad River flowing through the northeastern portion of the Unit. The topography includes steep canyons formed by the rivers and their *tributaries*, which include: Indian Creek, Larabee Creek, the Little Van Duzen River, Butte Creek, East Creek and Pilot Creek, to name a few.

The privately-owned town site of Bridgeville comprises the main community center within this Planning Unit, and it is located at the point where the three primary transportation routes—Highway 36, Kneeland Road and Alderpoint Road intersect. Other communities within the Unit include Dinsmore in the east, and Blocksburg in the southern region. Other distinct neighborhood groupings exist near Coyote Flat and Homestead Roads, and in the Golden Gate and Deerfield Ranch subdivisions as well. The communities within this Planning Unit were established upon a resource-based lifestyle; and agriculture, along with timber and non-timber forest products, continue to play an important role in the local economies. The area supports a variety of cottage industries, fine art trade, and social services as well.¹

Private land is the dominant ownership pattern in this Unit. The composition of land uses include: farms and rural residences in the lower floodplain and near the river; large- and medium-sized swaths of ranchland; residential parcels bunched along the main roads; and a few parcels managed by various timber industries. The majority of residential properties lie along Highway 36, and around and in between Bridgeville and Dinsmore. Several clusters of residential property are also located to the south along Alderpoint Road and near Blocksburg. Residential parcel sizes span a wide range, “from standard house lots, 40- to 100-acres parcels, ranches with 1,000 acres or more, to small trailer parks.”² Large portions of land along the eastern edge of the Unit fall within Six Rivers National Forest and are managed by the U.S. Forest Service. A few small areas of Bureau of Land Management Land (BLM) exist to the south of Highway 36 as well. A map of this planning unit can be viewed in Figure IV.11-1. Mad-Van Duzen Unit: CWPP Unit Map.

IV.11.2. Mad-Van Duzen Community Process Summary

Multiple community workshops were held, and several residents’ homes were visited, in an effort to gather community input for the development of a local CWPP for this Planning Unit. Workshops were advertised on the radio, in the Bridgeville Community Center’s newsletter, and flyers were sent home with students from the Bridgeville Elementary School. In 2012, at the Bridgeville Annual Firewise event, a group exercise was implemented, which involved maps of the Planning Unit area and invited those present to help identify and pinpoint on the maps where

¹ Humboldt County Department of Community Development Services. (2003, July). *Bridgeville Area Community Action Plan*. (pp.5-6.) Retrieved from http://www.co.humboldt.ca.us/planning/planning/documents/action_plans/2003_plans/brdg_web.pdf

² Firewise Communities/USA Recognition Program. (2010). *Bridgeville Community Assessment*. (p.4.)

particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during community workshops that took place during the initial countywide planning process in 2006. These workshops and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their communities. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their communities' fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshops and mapping exercise, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.11.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.11.3. Mad-Van Duzen Wildfire Environment

Approximately 63% of the Mad-Van Duzen Planning Unit is zoned “Very High *Fire Hazard Severity*,” as determined by the California Department of Forestry and Fire Protection (CAL FIRE).³ Thirty-seven percent of the Unit, including a substantial portion of the western area, is zoned “High *Fire Hazard Severity*,” while one very small patch of land near Indian Creek (which encompasses less than 1% of the entire Unit area) is zoned “Moderate *Fire Hazard Severity*.”

Summer weather in this Unit is consistently hot and dry. Steep, wooded slopes with thick underbrush are characteristic of this region. These features, accompanied by high wind speeds and low *moisture levels*, have the potential to spread fire very rapidly. Local vegetation is mainly comprised of forested areas, which contain redwoods as well as mixed *conifer forests* with fir and pine trees, oak woodlands, and large swaths of open grasslands.⁴

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early agricultural settlers in the late 1800s used intentional burning to clear and maintain grasslands for pasture animals. A heavy *fire suppression* campaign beginning in the 1930s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory become threatened by overcrowded forests and accumulated fuels. Intense timber harvests during the 20th century further exacerbated damages to forest ecosystem health.

The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 52% of the Mad-Van Duzen Planning Unit is

³ CAL FIRE. (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

⁴ County of Humboldt, Natural Resources Planning & Humboldt County Fire Safe Council. (2012). *Humboldt County Hazardous Fuels Reduction Plan Update 2009-2010*. (p.105.) Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/

condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 20% of the area is condition class 2, or moderately altered from the historical range.

Fortunately, there have been few major fire events in this Unit within the last decade. Those fires that did occur were relatively small and widely dispersed across the Unit; they include:

- The Pilot Fire, 2004: 283 acres.
- The Larabee 3 Fire, 2008: 29 acres.
- The Iaquia Fire, October 2009: 170 acres.

Fires in the previous decade, between the years 1980-1999 tended to be significantly larger; these fire events included:

- The Chalk Rock Fires, 1992: 203 acres; and 1993: 572 acres.
- The Fort Baker Fires, 1994: 815 acres; and 1995: 138 acres.
- The Charles Fire, 2007: 55 acres.

Vehicles and vehicular accidents on Highway 36 cause the majority of fire incidences in this Unit. *Ignitions* from vehicles have a variety of potential starts, such as: “hot mufflers or catalytic converters on vehicles parked over grasses by the side of the road, vandals torching abandoned vehicles on the roadside, or vehicles hitting the side of a bank or rolling down a ravine. Unfortunately, these are common occurrences on this highway.”⁵ Power lines have also been the cause of many fire starts in this Unit. Humans are another likely *ignition source*, and fire starts may be accidental or incendiary. Vacant or unmaintained structures throughout the communities in this Unit are potential *fire hazards*, as they present easy targets for arsonists and often have unmaintained *Home Ignition Zones*.

Neighborhoods in this Unit exist within the *wildland-urban interface* (WUI), which increases the risk of *wildland fires* becoming *structural fires*, and vice versa. This risk is exacerbated by the fact that “many homes have large amounts of dense vegetation growing in the Home Ignition Zone and flammable items in direct contact with the structure.”⁶ *Dead plant matter* with low moisture levels within 100-150 feet of the homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden gates, fences, latticework and stacks of firewood located near or against structures add significantly to this risk, as does the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Figure IV.11-2 found at the end of this Planning Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Highway 36 is the central *ingress and egress* route, with several smaller roads connecting residences and neighborhoods to it. Roadside fuels, which increase the risk of ignitions, are not uncommon along these access routes, and the topography of the region necessitates that the majority of roads in this Unit are windy and often narrow. The narrowness of smaller roads leading to remote residences could create serious complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Routes may be overgrown with vegetation so as to make it difficult for fire engines to gain access, and some properties may have inadequate *turn around spaces*. The potential for landslides in the area could also inhibit access.

⁵ Firewise Communities/USA Recognition Program. (2010). *Bridgeville Community Assessment*. (p. 9.)

⁶ Firewise Communities/USA Recognition Program. (2010). *Bridgeville Community Assessment*. (p. 12.)

Water for fire protection is extremely limited in this Unit. There are no fire hydrants in these communities, and most residents' water tanks contain just 3,000 gallons or less, which often falls short of what is anticipated for fire suppression needs. Furthermore, these water tanks may lack the proper fittings for fire engines to be able to utilize this water. *Fire protection water* may be *drafted* from the following locations:

- Sweasey Lake (new name Forest Lake)
- Root Creek drafting site
- Little Larabee Creek - drafting
- McClellan Mountain Ranch pond
- Sanderson Pond (dry in the Fall)
- Murphy Pond
- McCann Eel River drafting
- Dyerville river drafting

The map in Figure IV.11-2 found at the end of this Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire protection resources. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, "Fire Planning" section: <http://gis.co.humboldt.ca.us/>.

IV.11.4. Mad-Van Duzen Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes and communities, along with a variety of commercial and service industries, community centers, medical and dental clinics, schools, fire stations, churches, museums, as well as infrastructure components, such as cell phone towers and *access roads*. The ranching, agricultural, and timber industries within the Unit are also considered assets at risk.

The map in Figure IV.11-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁷ Portal, "Fire Planning" section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Swimmer's Delight/Van Duzen Park
- Swain's Flat Houses/Market
- Golden Gate Subdivision
- Bridgeville downtown/Bridge for evacuation
- Dinsmore Airport
- Historic Blocksburg
- PG&E Substation/CalTrans yard
- Triumphant Life Camp

The Six Rivers National Forest, Grizzly Creek Campgrounds and State Park, and Robinson Rock comprise some of the environmentally significant areas within this Unit. These areas, along

⁷ Geographic Information Systems (GIS).

with the wide swaths of undeveloped ranchlands throughout the region, provide breathtaking vistas and important *habitat* for wildlife species.

IV.11.5. Mad-Van Duzen Community Preparedness

Communities in this Unit are assisted by the efforts of the Van Duzen Watershed *Fire Safe Council* (FSC), which was founded in 2004, and has since garnered close to one million dollars in grant funding for projects to improve fire safety in these communities. The mission of the Van Duzen Watershed FSC is: “to protect and preserve our homes, forests and waterways from the dangers of wildfires by actively performing *fuel reduction* work, creating a working fire plan, educating and motivating residents to be *fire safe*, coordinating funding and action plans with government agencies, detailed mapping and risk assessment and creating an emergency response system for our community.”⁸ Successful projects have included constructing *fuelbreaks* in and around residential areas, creating *defensible space* around homes, conducting roadside clearance, and providing community members with educational materials to improve their fire awareness. The Van Duzen Watershed FSC can be reached by calling (707)-446-4530, or by visiting the Bridgeville Community Center website at: <http://www.bridgevillecommunitycenter.org/>

The Van Duzen Watershed FSC is also involved with the County in implementing the *Fire-adapted Landscapes and Safe Homes (FLASH) program*. FLASH is a rebate program that reimburses property owners for *hazardous vegetation management* completed around their homes, along access routes, and in particularly hazardous areas. Between 2010 and 2011, 51 acres were treated under the FLASH program and 22 site visits including a home risk assessment were conducted by FSC staff. The program has received additional funding for 2012-2013 and the goal is to treat approximately 38 acres.

The Van Duzen Watershed FSC is currently in the process of conducting outreach events and workshops to gather community input for the creation of a local *community wildfire protection plan* (CWPP). This Plan will help increase community awareness of fire safe practices and provide residents with resources for reducing *fire risk* in their homes and communities.

Bridgeville has been a nationally recognized Firewise Community since 2010 and holds an annual Fire Safety Day, which creates an opportunity to educate the community about fire emergency preparation and fire prevention while enjoying live music and festivities. Since gaining Firewise recognition, there have been several meaningful fire safety modifications throughout the community, including fuels reduction projects, such as hazardous vegetation clearance around vacant buildings and roadsides, creating defensible space around homes, and improving emergency vehicle access on roads and driveways.⁹

IV.11.6. Mad-Van Duzen Wildfire Protection Capabilities

The Bridgeville *Volunteer Fire Department* (BVFD) is comprised of ten volunteer firefighters who provide fire protection as well as rescue, and basic life support (BLS) emergency medical services to approximately 1,200 residents within 196 square miles in this Planning Unit. The BVFD’s firefighting *apparatuses* include three 750 gallon pumpers and a rescue wagon.¹⁰ The

⁸ Van Duzen Watershed Fire Safe Council (2012). Van Duzen Watershed Council Facebook page. Retrieved from <http://www.facebook.com/pages/Van-Duzen-Watershed-Fire-Safe-Council/382176151812405>

⁹ Firewise Communities/USA Recognition Program. (2010). *Bridgeville Community Assessment*. (pp. 13-17.)

¹⁰ Bridgeville Fire Protection District. (2011, November). *Bridgeville Fire Protection District Municipal Service Review*. Prepared for Humboldt Local Agency Formation Commission. (p.9). Retrieved from http://www.humboldtlafo.org/sites/default/files/Fire%20District%20Protest%20Notice/Bridgeville%20FPD%20MSR_Adopted%20November%202011.pdf .

ability for the BVFD to provide effective emergency service is sometimes hampered by unmarked roads, missing addresses, inadequate water shortage, and outdated equipment. The BVFC can be reached by calling (707) 777-3424. The BVFD uses a vehicle storage barn as a fire apparatus garage. This has been deemed inadequate for the VFD's needs, and it has been difficult to secure funding to support construction of a fire station.

Up until recently, the BVFD relied solely on donations and fundraising efforts, was fiscally sponsored by The Bridgeville Community Center, and had no specific boundaries or access to tax revenue. However, in August 2012, the BVFD sought and was granted recognition as an official *fire protection district* (FPD). The decision was contingent on voter-approval of a special (parcel) tax to finance fire protection services. The results of the special mail in ballot election held on August 21st, 2012 determined that the formation of the Bridgeville Fire Protection District was approved by voters! The new Bridgeville Fire Protection District covers approximately 196 square miles of the area surrounding Bridgeville.

CAL FIRE is responsible for addressing wildland fires in this Unit. There is a CAL FIRE station in Bridgeville that is staffed only seasonally, during the declared *fire season*. CAL FIRE resources also frequently respond out of their fire station in Fortuna.

Communities in this Unit have various needs associated with improving the availability of emergency water for wildfire protection. Many existing water sources are in need of maintenance, protection, or improvements. There is also a need to make the location of existing water sources more apparent to firefighters, and for community members to ensure that their water sources are properly outfitted for firefighting equipment.

IV.11.7. Mad-Van Duzen Evacuation

Evacuation from the Mad-Van Duzen Planning Unit will travel either east or west along Highway 36, or it will travel north on Kneeland Rd., or south on Alderpoint Rd., depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences and neighborhoods to Highway 36. Some neighborhoods in the Unit, like the one west of Blocksburg near Homestead Rd., depend on a closed network of smaller roads. Adequate ingress and egress along these roads is vital to a large portion of the community that may need to access the main highway *evacuation route* and for firefighters who will be using the roads to access wildfires burning in these areas.

Few alternative routes exist for accessing the communities in this Unit. The eastern town of Dinsmore may be reached via Bear Creek Rd. to the north. Egress from Blocksburg could potentially be achieved via a USFS road connected to Church St.; however, utilization of this route would likely necessitate permission and assistance from the U.S. Forest Service.

Evacuation impediments may include: landslides, fallen trees, overgrown vegetation, poorly marked streets and intersections, and *one-way-in, one-way-out roads* that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very

difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.11.8. Mad-Van Duzen Community Identified Potential Projects

The following matrix includes community identified proposed projects based on input from the community processes discussed above. A detailed description of each heading in the matrix can be found in Appendix G: Descriptive Characteristics for Community Identified Projects Matrix. These projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.11-3). Projects include those carried over from the 2006 fire-planning process and those identified and refined during the 2012 CWPP update process. This information can also be viewed on the fire planning GIS Portal. The GIS Portal allows users to search for and view specific fire planning features by location or to zoom into a desired area from an aerial view. To access the Portal, go to: <http://gis.co.humboldt.ca.us/> and choose “Fire Planning” from the list of mapping applications. The data collected through this Planning process are included in the GIS layers within the Portal.

No vegetation *treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
ALD028	Alderpoint Rd	Hazardous fuels reduction on Alderpoint Road in brushy or forested sections	Treat-High	2010	Roadside Clearance				grant-landowner-Assn.
ALD033	Sunset Ridge Road	Hazardous fuels reduction on Larabee Creek Ranch / Sunset Ridge Road	Treat-Med	2010	Roadside Clearance				grant-landowner-Assn.
ALD034	Homestead Road	Hazardous fuels reduction on Larabee Creek Ranch / Homestead Road	Treat-Med	2010	Roadside Clearance				grant-landowner-Assn.
ALD035	Blocksburg	Brush clearing in defensible space around Historic Buildings in Blocksburg	Treat-Med	2010	Defensible Space				grant-landowner-Assn.
ALD036	Alderpoint Rd & Pine Mtn. Rd.	Fuelbreak for defensible space around Casterlin School	Treat-Med	2010	Defensible Space				grant-landowner-Assn.
ALD1005	From Alderpoint Rd approx. 15.0 mi. west	Ridgetop Lost Flat Ranch: Fuelbreak	This year	2012	Landscape				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
ALD1006	From Alderpoint Rd approx 15.0 mi. west	Ridgetop Lost Flat Ranch: Fuelbreak	This year		Landscape				
ALD1007	From Alderpoint Rd approx 15.0 mi. west	Ridgetop Lost Flat Ranch: Fuelbreak	Proposed	2012	Landscape				
ALD1008	From Alderpoint Rd approx 15.0 mi. west	Lost Flat Ranch: Lateral Fuelbreaks (3)	This year		Landscape				
ALD1009	Alderpoint Rd 15 mi. ea.	Lateral Shaded Fuelbreaks (3)	Funded		Landscape	300			Recourse Advisory Council (RAC) \$100,000+ grant
BRD020	HWY 36 east to Trinity CO line	fuel reduction along State Highway 36 east to Trinity CO line	Treat-Med	2010	Roadside Clearance				grant-landowner-Assn.
BRD023	Swains Flat Community	fuel reduction along Swains Flat & Hwy 36	Initiated	2007	Landscape				

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD026	~ 1.7 mi east of Bridgeville, hairpin turn at bottom of grade	Fuel reduction at hairpin turn at bottom of grade, ~1.7 mi east of Bridgeville	Treat-Low	2010	Roadside Clearance				Cal-Trans
BRD029	Grizzly Creek Campgrounds, CA State Park/Hwy 36	Fuel reduction in Grizzly Creek Campgrounds/CA State Park along Highway 36	Treat-Med	2010	Landscape				grant-landowner-Assn.
BRD031	Redwood House Road/Hwy 36	Redwood House Road and Hwy 36: fuel reduction	Treat-Med		Roadside Clearance				grant-landowner-Assn.
BRD034	Weekender 46204 ST Hwy 36	Fuel reduction at Weekender 46204 ST Hwy 36	Treat-Med	2010	Landscape	19.71			grant-landowner-Assn.
BRD036	Carlotta Pump Site	Fuel reduction at Carlotta Pump Site near 14535 ST Hwy 36	Treat-High	2010	Landscape	5.09			grant-landowner-Assn.

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD038	Swimmer's Delight/Van Duzen Park/ Hwy 36	Fuel reduction at Swimmer's Delight/ Van Duzen Park along Hwy 36	Treat-Med	2010	Landscape				grant- landowner- Assn.
BRD063	26360 Hwy 36 to 33396 Hwy 36	Hwy 36 Hazardous fuels reduction, thinning and chipping - Hwy 36 mile post 26 to 33.5. Work with CalTrans	Treat-Med	2009	Roadside Clearance				grants - Cal Trans
BRD064	First 2.3 mi Alderpoint Rd from Bridgeville to Blocksburg	Alderpoint Road shaded fuelbreak - Roadside Shaded Canopy. 50 ft each side of Rd from Bridgeville to Blocksburg.	Treat- High	2009	Roadside Clearance				grant- landowner- Assn.
BRD065	Upper Little Larrabee Rd neighborhood, Private Rd.	Upper Little Larrabee Rd (Private road), shaded fuelbreak - .5 Miles, 50 ft. each side of road	Funded	2010	Roadside Clearance	6.6	Mixed Conifer	Check re- growth every 3 years	2010 CA FSC Grant USDA

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD066	McClellan Mtn. Rd.	McClellan Mountain Rd.: 5 mile shaded fuelbreak, 50 ft. on each side of road -Part of Clear Roads Project.	Funded	2010	Roadside Clearance	60	Mixed Conifer	Check re- growth every 3 years	2010 CA FSC Grant
BRD068	Barnum Timber Subdivision 32444 Hwy 36 and unknown road name	Barnum Timber subdivision: 5 mile Roadside Shaded Canopy- -thinning and chipping-- 50 ft. each side of road, starting at Hwy 36 mile post 31.6 and Barnum	Treat- High	2009	Roadside Clearance	60	Brush, Mixed Conifer	Yearly	Landowner and FSC
BRD080	Hwy 36 & McClellan Mtn Rd	Fuel reduction starting of Hwy 36 and beginning of McClellan Mtn Rd	Funded	2010	Roadside Clearance				
BRD083A	Private road, Bear Creek Rd Complex & Hwy 36	Private road Bear Creek Rd Complex, shaded fuelbreak--thinning and chipping,-- 50 ft. each side of road for 8 miles	Treated	2009	Roadside Clearance		Mixed Conifer, Oaks	3 year cycle	USDA 2009 grant

LOCATION		Treatment/Project Information Eel Fire Planning Unit							
Number Corresponds with location on map	Community, Structure, or Area (Value at Risk)	Description	Status	Year	Type	Acres	Veg Type	Maintenance (actual or proposed)	Funding source (actual or proposed)
BRD086	Upper Little Larrabee Rd & Hwy 36, Private Rd.	Roadside Shaded Canopy. 50 ft each side of Rd. where needed Upper Little Larabee Rd. at Hwy 36	Treat-High	2009	Roadside Clearance				grant-landowner-Assn.
BRD087	Kergerson Lake Rd	Kergerson Lake Rd. Fuels Reduction - Roadside Shaded Canopy. 50 ft each side of road for 2 miles.	Treat-High	2009	Roadside Clearance	24		Check re-growth every 3 years	grant-landowner-Assn.
BRD105	Alderpoint Rd 15 mi. ea.	USFS 1N10 Rd - Shaded fuelbreak along road	Funded		Roadside Clearance	97			Recourse Advisory Council (RAC) \$100,000+ grant
PAC003	from 2N1E sec 34, SE ~14mi to 1N3E sec 27	Fire Suppression Ridges; some natural break; targeted for additional treatment	Treat-Med		Landscape				grant-landowner-Assn.
PAC006	01S 02E SEC 14 ~6mi East to 01S 03E sec 23	Fire Suppression Ridges; some natural break; targeted for additional treatment--fuel reduction	Treat-Med		Landscape				grant-landowner-Assn.

IV.11.9. Mad-Van Duzen Action Plan

The following items are the initial priorities for community action for the Mad-Van Duzen Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

Enhancing Fire Protection

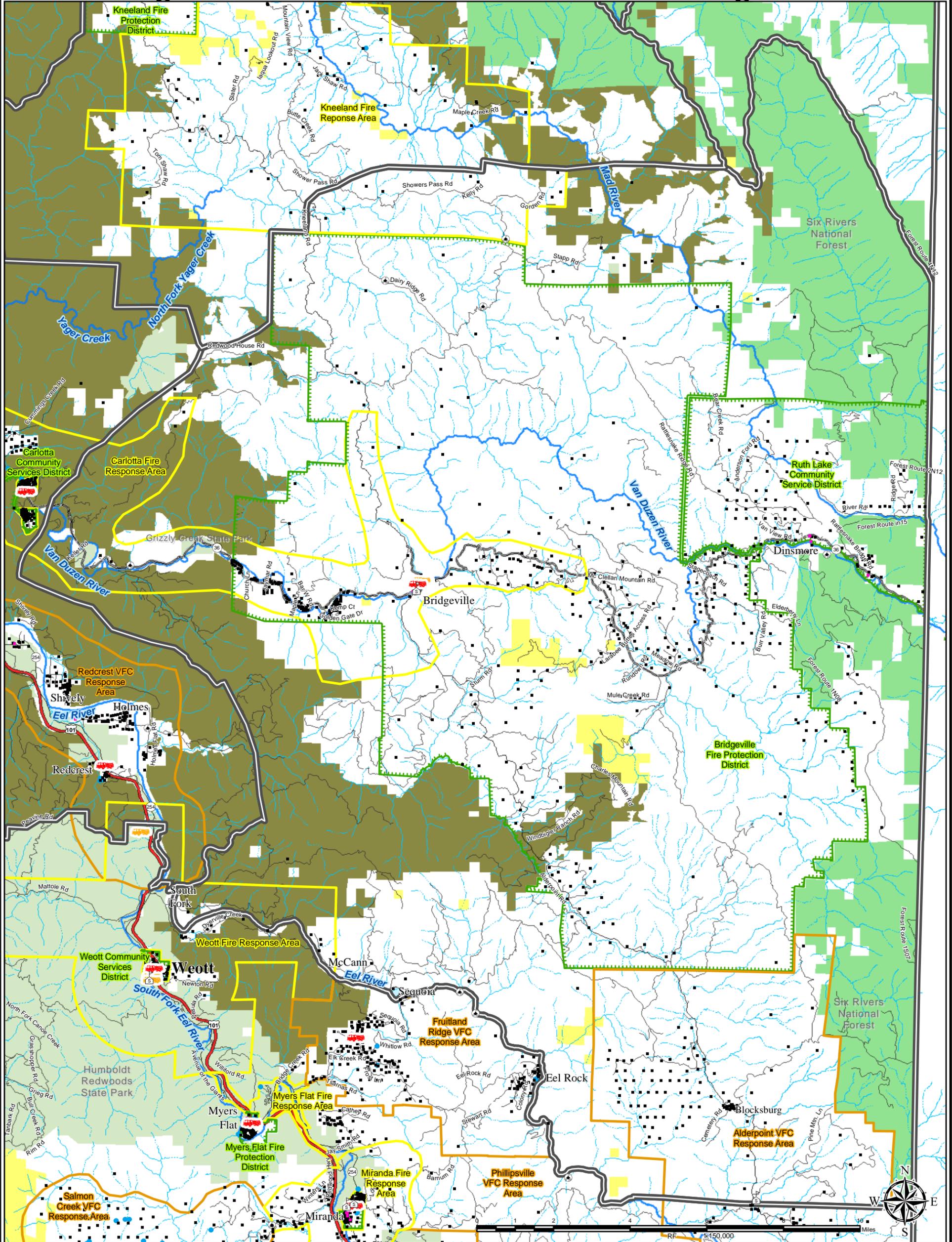
- **Sustainable Fire Departments:** Registered voters within the BVFD response area recently made a significant commitment to supporting the sustainability of the department by approving a special tax that will raise much needed revenue. Because it is still an all volunteer department community support will still be necessary through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and or helping with administrative tasks. With community support, the local fire department can continue to provide a wide variety of vital emergency services.
- **Firefighting Water:** Increase the availability of water for fire protection by making water access locations known to fire departments and investing in more community water tanks. Maintain existing water tanks and expeditiously make repairs when they become necessary. Neighborhood and road associations and/or Firewise Communities work with local fire departments to develop a “*Blue Dot*” program, which identifies the location of firefighting water sources by marking them with a blue reflective dot. This program also ensures that tanks and water systems are outfitted with fittings compatible with firefighting equipment. Begin by identifying where such a program is most needed.

Reducing Wildfire Fuels (Flammable Vegetation)

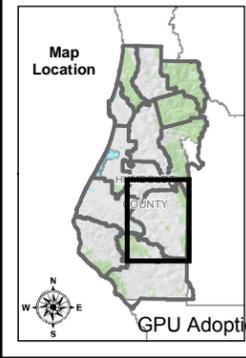
- **Defensible Space:** Those residents living in areas within this Planning Unit that are at risk to wildfire should manage the flammable vegetation within their home ignition zone. Maintaining defensible space through vegetation treatments should be a routine and ongoing practice for all homes and landscapes. Community *Chipper Days* can facilitate this process by helping landowners get rid of *slash* and brush piles so that they do not become an additional hazard. Begin by identifying where defensible space is most needed within the Planning Unit. The following priority areas were identified at community meetings and are recommended for treatment in this plan:
 - Landscapes surrounding historic buildings in Blocksburg.
 - Landscape surrounding Casterlin School, on Alderpoint Road and Pine Mountain Road.
- **Roadside Clearance:** Manage roadside vegetation in order to improve and maintain access for emergency vehicles and ensure safe evacuation. Consider working with the California Conservation Corps or County Public Works Roads Division. Focus initial efforts along the following roads:
 - Sunset Ridge Road
 - Homestead Road
 - McClellan Road
 - Kergerson Lake Road
 - Redwood House Road
 - Upper Little Larabee Road
 - Bear Creek Road
 - Burr Valley Road

- **Landscape Fuels Reduction:** Construct *shaded fuelbreaks* as buffers between residential areas and wildlands to slow the progress of wildfires. This allows firefighters a higher probability of successfully protecting communities from wildfire damage. These buffers may also protect the wildlands from the spread of fires originating within communities. The following areas are recommended for priority treatment in this plan:
 - Ridgetop and lateral fuelbreaks around Lost Flat Ranch, along Alderpoint Road.
 - Hazardous vegetation removal in the Swains Flat community along Highway 36.
 - Reduce fuels in Grizzly Creek Campground areas.
 - Reduce fuels surrounding the Carlotta Pump site.
 - Reduce fuels around Swimmer's Delight/Van Duzen Park area.

Figure IV.11-1 Mad-Van Duzen Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station \ Camp
 - Six Rivers Fire Station
- Hospitals and Clinics**
 - Hospital/Medical Center
 - Red Cross
- Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
 - Cities

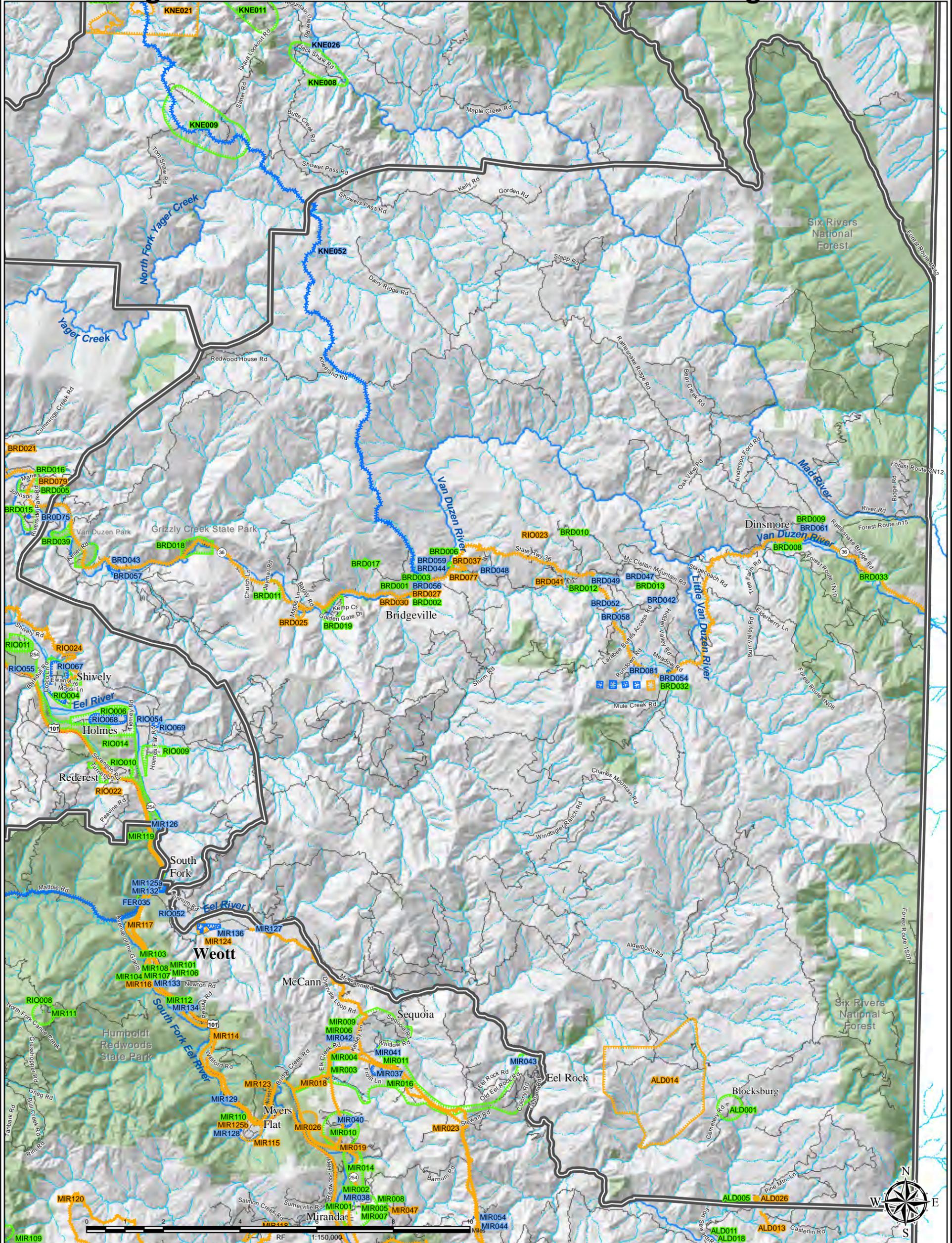
Humboldt County FireSafe COUNCIL

Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Figure IV.11-2 Mad - Van Duzen Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

Legend

- | | | | |
|-------------------------------|----------------|-----------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Public Lands | HWY 101 | Major River or Stream |
| Protection | Cities | State HWY | Perennial Stream |
| Value/Asset | | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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IV.12. Mattole-Lost Coast Planning Unit Action Plan

IV.12.1. Mattole-Lost Coast Planning Unit Description

The Mattole-Lost Coast *Planning Unit* encompasses 200,563 acres situated in the southwestern coastal region of Humboldt County, located west of the Humboldt Redwoods State Park. Although no major highways exist in the Unit, Mattole Road comprises the primary transportation corridor, leading from Cape Mendocino in the northern section of the Unit to the town of Petrolia, and continuing in a south-easterly direction toward Honeydew. The Unit is part of the Mattole *watershed*, which is characterized as “an extremely geologically active and unstable watershed.”¹ The terrain is mostly mountainous with steep valleys formed by *tributaries* of the Mattole River. The Mattole River comes into the Unit south of Honeydew, flows alongside Mattole Road, and joins the Pacific Ocean just south of Petrolia.

The towns of Petrolia and Honeydew comprise the central communities of this Planning Unit, with populations of about 400 and 1,000, respectively. Other smaller neighborhoods are scattered throughout the Unit as well, mainly near Mattole Road, including: Wilder Ridge, Panther Gap, Windy Nip/Doreen Drive, Green Fir/New Jerusalem, Conklin Creek, Lower North Fork, Lighthouse Road, and Prosper Ridge.²

Private lands comprise the dominant ownership pattern in this Unit; these include residential parcels, medium- to –large tracts of rangeland, and a few timber harvest operations in the northern portion of the Unit. The majority of the residential properties are clustered in, around, and in between the towns of Petrolia and Honeydew. Several developed properties are also distributed in the southern region, along Wilder Ridge Road. This Unit contains a large portion of land belonging to the Bureau of Land Management (BLM)--The King Range National Conservation Area--which dominates the southwestern quadrant of the Unit. The Conservation area is an environmentally significant area managed by the Arcata Field Office, which is responsible for the administration of natural resources, lands, and mineral programs.³ A map of this planning unit can be viewed in Figure IV.12-1. Mattole-Lost Coast Unit: CWPP Unit Map.

IV.12.2. Mattole-Lost Coast Community Process Summary

A community workshop was held on March 25, 2012 in Petrolia for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit, and to provide information about the countywide community wildfire protection plan (CWPP) update process. It was attended by approximately 30 community members, and functioned as a brunch fundraiser for the Lower Mattole Fire Safe Council. The meeting also celebrated Petrolia having earned national recognition as a Firewise community.

A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

¹Firewise Communities/USA Recognition Program. (2011). Petrolia Community Assessment. (p. 4.)

² Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole Community Wildfire Protection Plan (CWPP)*. [Draft]. (p.14.) Petrolia, CA.

³ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 18.)

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. This workshop and mapping exercise also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their communities. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their communities' fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents.

The project proposals resulting from community member discussions are contained in section IV.12.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.12.3. Mattole-Lost Coast Wildfire Environment

Approximately 90% of the Mattole-Lost Coast Planning Unit is zoned "High *Fire Hazard Severity*," as determined by the California Department of Forestry and Fire Protection (CAL FIRE).⁴ However, 3% of the Unit, including some locations near Petrolia and along portions of Mattole Rd. are zoned "Moderate Fire Hazard Severity," while approximately 7% of the Unit, including sections of the King Range National Conservation Area and land surrounding the Lighthouse and Prosper Ridge neighborhoods, are zoned "Very High Fire Hazard Severity."

The Unit is characterized as a Mediterranean climate, with cool, wet winters with high runoff, and dry, warm summers with greatly reduced river flows. Most of the lower river area is choked with *sediment*, which reduces its capacity to support fish and other aquatic organisms. About 84% of the Mattole watershed is forested;⁵ forest types predominately include Douglas-fir, as well as hardwood forests, mixed hardwood and *conifer forests*, and a relatively small number of redwoods. The majority of the remaining, non-forested area is comprised of annual grasslands. Various brush and coastal shrub species are also mixed into grasslands and forests; these can contribute to *fire risk* by creating *fuel ladders* into the forest *canopy*. Conversely, grasslands with low levels of thatch can sometimes act as helpful *firebreaks* during forest fires.

Traditionally, fire has been an integral part of the *ecosystems* in this region. Forest management by indigenous tribes included low-intensity, intentional burns to help enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early settlers in the late 1800s also used intentional burning to maintain grasslands for pasture animals. However, a heavy *fire suppression* campaign beginning in the 1940s has disturbed the fire-adapted ecosystems within this Unit and altered *stand composition*. Intense timber harvests, which were followed by the land being sold and subdivided during the 20th century further exacerbated damages to forest ecosystem health: "the unprecedented combination of widespread logging and heavy fire suppression resulted in the dense second growth forests of Douglas fir and tanoak that are found throughout Mattole today."⁶ These heavy fuel loads allow small fires that would otherwise burn through the *understory* to reach into the tree tops, increasing the likelihood of wildfires destroying whole trees and swaths of forest. The extent that the *landscape* has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class

⁴ CAL FIRE (California Department of Forestry and Fire Protection). (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

⁵ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 27.)

⁶ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 23.)

describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 50% of the Mattole-Lost Coast Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 18% of the area is condition class 2, or moderately altered from the historical range.

Fortunately, there have been few major fire events in recent years. A few exceptions include:

- Honeydew Fire, September 2003: 11,793 acres.
- Spanish Fire, 2011: 524 acres.

Major fires between the years of 1980-1999 included:

- Rainbow Fire, August 1990: 2,757 acres.
- Mattole Fire, August 1990: 4,875 acres.
- Kings Fire, August 1990: 3,069 acres.

Humans are the primary *ignition sources* for fires in this Planning Unit, with “equipment use” being the dominant cause of fire starts. Other human-caused *ignitions* include *debris burning*, smoking, campfires, playing with fire, and arson. Human-related causes such as vehicles and downed power lines are also potential ignition sources. The majority of human-caused ignitions occur in populated areas and near major transportation corridors. Lightning is the leading natural cause of fire starts in this region. Other factors that are likely to have a future impact on fire risk within this Unit include: large fuel increases resulting from the spread of *Sudden Oak Death*, which has already been detected in areas of the Mattole watershed; climate change, which is likely to extend the dry season when fire risk is greatest; as well as probable earthquakes, since the Mendocino Triple Junction (where three tectonic plates meet) is just offshore from the Mattole Watershed.⁷

High potential for *structural ignitability* is a concern for many communities in this Unit. The degree to which residents maintain *defensible space* around their homes varies greatly from house to house among the neighborhoods, which can limit the ability of firefighters to ensure the safety of structures. Many houses have dense vegetation growing in the *home ignition zone* or ladder fuels surrounding trees close to roofs. Another common issue is the buildup of highly flammable debris such as leaves, needles, and moss, on rooftops or in gutters. Flammable roofing and sliding is also a concern for homes in this area. “Observations have been made in the planning area of homes with wood piles, fences, gates, and wood lattice in contact with structures. Dead leaves under decks or along foundations of structures were also observed in some cases. These items are generally more susceptible to combustion from *embers* or *radiant heat* and, if lighted, could lead a fire to the rest of the home.”⁸ Furthermore, communities in this Unit exist in the *wildland-urban interface* (WUI), which increases the likelihood that *structural fires* will spread into the wildlands, and vice versa. Figure IV.12-2 found at the end of this Planning Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Mattole Rd. is the central *ingress and egress* route, along with Wilder Ridge Rd., with numerous smaller roads connecting residences and neighborhoods to it. Some neighborhoods in this Unit are very remote and contain homes that are only accessible via narrow, steep, dirt roads, some of which have no alternative exit route. Poor or complete lack of *signage* at roads and intersections pose potential problems for emergency ingress and egress; this is especially true for

⁷ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (pp. 41-44.)

⁸ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 47.)

more remote residences that are further from the towns. The narrowness of smaller roads leading to these remote residences could create serious complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Routes may also be grown over with vegetation, and many properties have inadequate *turn around spaces*. The potential for landslides in this area could also inhibit access.

A lack of available water for fire protection is a very serious issue in this Planning Unit. There are no municipal water services or hydrants in this Unit, and residents must obtain water through other means, such as drawing from nearby creeks and holding tanks. Water availability is a limiting factor for the safety of many neighborhoods in this Unit, particularly the more remote communities. Although a few community water tanks have been placed in these neighborhoods, their contents can fall short of what is anticipated for fire suppression needs and firefighters are often challenged by a shortage of *fire protection water*. Ensuring that existing water tanks are maintained and functioning properly must be made a high priority for community members in these neighborhoods.

The only community-identified water source for this Planning Unit is a *drafting site* on the Bear River near Capetown. Fire protection water may be drafted from the Mattole River. However, this has become problematic in late summer months because of the impact that withdrawing water from the river can have on *endangered* salmon and steelhead populations.

The map in Figure IV.12-2 found at the end of this Unit Action Plan illustrates drafting sites as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.12.4. Mattole-Lost Coast Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a wildfire can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The majority of *assets at risk* in this Planning Unit are residential homes and communities, along with a variety of commercial and service industries, community centers, medical clinics, schools, fire stations, churches, as well as infrastructure components, such as power lines and *access roads*. The map in Figure IV.12-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS⁹ Portal, Fire Planning section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Mattole Salmon Group offices
- Mill Creek Forest
- Mt. Pierce – Communications Site
- Mattole Resort
- Yellow Rose
- Old South Maid Ranch House – historical site

⁹ Geographic Information Systems (GIS).

Significant recreation areas in the Unit include the Mattole Campground and the A.W. Way County Park. Shell mounds comprise areas of environmental and cultural significance to some communities in this Unit as well. The Mattole River has important ecological significance as the Unit's primary freshwater body, which drains directly into a State-designated Area of Special Biological Significance, Critical Coastal Area, and Marine Protected Area. *Sensitive and listed species* in this region include: Steelhead Trout, Chinook Salmon, Coho Salmon, martens, fishers, and northern spotted owls, to name a few.¹⁰

Hardwood and coniferous forests are assets within this Unit as well; they are valuable for subsistence, commercial livelihood, and ecological resources. Some areas, especially near Wilder Ridge, contain many of the last remaining old-growth forests in the Mattole Watershed.¹¹

IV.12.5. Mattole-Lost Coast Community Preparedness

Fire awareness within communities in this Unit is abetted by the *Lower Mattole Community Wildfire Protection Plan* (LM CWPP), which was collaboratively developed with involvement from local, state, and federal land and fire management agencies, as well as officials from CAL FIRE, State Parks, the Mattole Restoration Council (MRC), and from the Lower Mattole *Fire Safe Council* (LMFSC). This Plan is an updated version of the Lower Mattole Fire Plan, which was developed in 2001. The updated CWPP was completed in 2012 and is intended to provide resources and tools to help communities develop strategies for *fire safe* land management practices and *fuels reduction*, improve emergency communication and response systems, and outline possible future projects and funding sources. The plan identifies and prioritizes areas for *hazardous fuel reduction treatments*, and recommends treatment methods, as well as measures for reducing the potential for structural ignitions.

The LMFSC was founded in 2002 and aims 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.”¹² Some of their goals and objectives include: reducing fuel loads in and around neighborhoods; increasing availability of water sources; assisting local fire protection agencies; educating landowners on fire-safe practices; improving community and emergency response communication networks; and promoting healthy forest and rangeland ecosystems. The LMFSC can be reached by calling (707) 629-3514, or by email at: firesafe@mattole.org.

Since its inception, the LMFSC has also partnered with the MRC on fuels reduction and fire safety projects. These entities have utilized the *Fire-adapted Landscapes and Safe Homes (FLASH) program* in an ongoing effort to assist community members with wildfire mitigation efforts. FLASH is a rebate program that reimburses property owners for *hazardous vegetation management* completed around their homes, along access routes, and in particularly hazardous areas. Between 2010 and 2011, over 138 acres were treated under the FLASH program and 92 site visits including a home *risk assessment* were conducted by FSC/MRC staff. The program has received additional funding for 2012-2013 and the goal is to treat approximately 75 additional acres by mid 2013.

Petrolia and Honeydew both received national *Firewise* recognition in 2011. The Petrolia Firewise Area includes the town of Petrolia, as well as sections of Mattole Rd. to the north and

¹⁰ Mattole River and Range Partnership. (2009, August). *Mattole Integrated Coastal Watershed Management Plan; Foresight 2020*. Retrieved from http://www.mattolesalmon.org/joomla/images/stories/Documents/Reports/MSG/SOS/MICWMP_090901.pdf

¹¹ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 50.)

¹² Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP* [Draft]. (p. 16.)

southeast of Petrolia, a portion of Conklin Creek Rd., and the Lighthouse Rd. neighborhood. Successful Firewise modifications around Petrolia include: improving signage—some residents had been unaware of their own address numbers but have since figured them out from the County and constructed road signs as well; fuels reduction along roads and in neighborhoods; and increasing water storage tanks in the area.¹³

The Honeydew Firewise Area includes the town, areas to the north and east of the town, along Bull Creek Rd. and Applewood Rd., a large portion of Mattole Rd. to the west, and the Wilder Ridge Rd. neighborhood to the south. Some Firewise modifications accomplished within the community include: improving defensible space around homes, posting clearly marked addresses and water storage signs, and fuels reduction along roads and in neighborhoods.¹⁴

Two emergency communication resources exist in this Planning Unit as well: a Neighborhood Emergency Service Teams (NEST) list, and California Office Emergency Management Agency representatives. The NEST list was generated after an earthquake in 1992 to provide a structure for emergency communication in and around Petrolia. There is, however, a need to expand NEST to include the communities of Honeydew and Ettersburg, which is located just south of the Planning Unit boundaries. There are also two California Office Emergency Management Agency representatives: one in Petrolia, and one near Honeydew. “Through the NEST and the local VFD’s, the [California Office Emergency Management Agency] representatives are the line of communication between emergency community needs and the [California Office Emergency Management Agency].”¹⁵

IV.12.6. Mattole-Lost Coast Wildfire Protection Capabilities

Community fire protection within the Unit is provided by the Petrolia *Volunteer Fire Department* (PVFD), which services the Petrolia *Fire Protection District*, and the Honeydew *Volunteer Fire Company* (HVFC). These entities provide protection from structural and wildland fires, as well as medical and rescue services.

The PVFD has 25 volunteer firefighters who provide service to approximately 500 residents and respond within a 150 square mile area. The PVFD’s *apparatuses* include: a 2,100-gallon water tender; a type-1 engine with a 750-gallon capacity, two type-3 engines that carry 500 gallons; an all-terrain vehicle (ATV) with a winch; an ambulance-type medical rescue van; and a four-wheel drive quick attack pick-up truck with a 50-gallon tank. The PVFD can be reached by calling (707) 629-3558, by email at: petroliafire@frontier.net, or by visiting their website at: www.petroliavfd.com.

The HVFC was established in 1987 and is served by 14 volunteer firefighters. The HVFC does not currently have the tax-based support of a fire protection district, so their income is based on voluntary contributions from community members. The HVFC has no formal district boundaries; however, they serve approximately 350 residents in a *response area* of nearly 100 square miles, much of which is rugged and isolated, which can present challenges for emergency response. The HVFC’s *apparatuses* include: three type-4 wildland “quick attack” engines and one 500-gallon water tender.¹⁶ The HVFC is in need of new emergency response vehicles and better storage areas for them. The HVFC can be reached by calling (707) 373-4631.

¹³ Firewise Communities/USA Recognition Program. (2011). *Petrolia Community Assessment*.

¹⁴ Firewise Communities/USA Recognition Program. (2011). *Honeydew Community Assessment*.

¹⁵ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP [Draft]*. (p. 63.)

¹⁶ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx

Mutual aid agreements are in place with neighboring jurisdictions, such that all local departments often respond to calls inside and outside of their response areas. However, due to the rural nature of the area, additional help can take a long time to reach its destination. CAL FIRE also responds to wildland fires in the Unit, but the Mattole station is only in operation during declared *fire season*, which usually begins in June and lasts through October. The CAL FIRE Weott station can also send equipment and personnel to the Unit area when extended service is needed. Response times from the Weott station often require 45 minutes or more, depending on the location of the incident.

Fire protection agencies in this Unit are benefited by convenient access to helpful and pertinent information, which is compiled in the Fire Atlas for the area. “The Fire Atlas identifies firefighting resources like fire stations and trucks, and water tanks and ponds. The Fire Atlas also shows the known locations of structures. The Atlas is not distributed publicly. Copies are made available to the PVFD, HVFC, CAL FIRE, and the MRC.”¹⁷

IV.12.7. Mattole-Lost Coast Evacuation

Evacuation from the Mattole-Lost Coast Planning Unit will travel either northwest or southeast along Mattole Rd., or south on Wilder Ridge Rd., depending on law enforcement recommendations based on *fire behavior*, wind pattern, traffic, and ingress of emergency vehicles. There are numerous smaller roads connecting residences to neighborhoods on Mattole Rd. Adequate ingress and egress along these roads is vital to a large portion of the community that may need to access the main *evacuation route* and for firefighters who will be using the roads to access wildfires burning in up-slope areas.

“Many roads are not maintained properly to allow access to firefighting apparatus, nor are they labeled with address or water storage.”¹⁸ Some neighborhoods are only accessible via steep, narrow dirt roads with few *turnouts*. These road conditions can severely hinder fire engine *response time*, such that some homes in these neighborhoods can take between 30 minutes to an hour to reach from the pavement. *One-way-in and one-way-out roads* are a concern for many residences as well. Neighborhoods most at risk from poor road access include: Panther Gap, Windy Nip, Wilder Ridge, and Prosper Ridge.¹⁹

Evacuation impediments may include: landslides, fallen trees, downed power lines, ignition of roadside fuels, overgrown vegetation, poorly marked streets and intersections, and one-way-in, one-way-out roads that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens,

¹⁷ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP [Draft]*. (p. 60.)

¹⁸ Firewise Communities/USA Recognition Program. (2011). *Petrolia Community Firewise Assessment*.

¹⁹ Lower Mattole Fire Safe Council. (2012). *2012 Lower Mattole CWPP [Draft]*. (pp. 50-59.)

community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.12.8. Community Identified Potential Projects

The following section includes a summary of potential projects identified through the community processes discussed above. Some of the potential projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.12-3). This map includes projects carried over from the 2006 fire-planning process and those identified and refined during the 2011 LMFSC local CWPP and the 2012 County CWPP update process. In addition, Figure IV.12-2 illustrates community-identified Values and Assets, Hazards and Risks, and Wildfire Protection Resources. The maps in Figure IV.12-2 and Figure IV.12-3 can each be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Because of the tremendous amount of work that has been accomplished within this unit and the existence of a local CWPP, a project matrix was not included in this Unit Action Plan. All of the geographic community identified project information is cataloged in the Humboldt County Web GIS Portal described above as well as in the Lower Mattole CWPP. This County CWPP incorporates that information by reference here. This information will continue to be made available as a resource for capturing grant funds and continued project implementation tracking.

Project ideas are also listed that are not visible on the maps, because they are not geographically based. These proposed actions also add to and expand upon the 2006 plan, based on the 2012 process (including the County CWPP update, the local CWPP, and Firewise action plans). Because of the complexity of the planning process in this unit, the community identified potential projects are broken out into the following categories:

- CWPP Action Items,
- Firewise Action Items

CWPP Action Items:

The Lower Mattole CWPP lists and outlines various types of projects that have been proposed to improve fire safety in the area in a five to ten year action plan. These projects fall under the categories of:

- Empowering Residents
- Reducing Structural Ignitability
- Reducing Fuels
- Enhancing Fire Protection
- Community Emergency Preparedness and Planning
- Fire Ecology and Conservation/Restoration Efforts

The following summarizes the projects proposed in the Lower Mattole CWPP. A complete copy of the Lower Mattole CWPP, which includes the matrix of coded projects mentioned above, can be found on the MRC²⁰ and Humboldt County FSC²¹ websites.

²⁰ www.mattole.org/

²¹ http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/

- **Empower residents** with information and resources to act on their own to increase their wildfire readiness and decrease fire hazards around their homes and in their communities. Provide workshops for community members and devise methods of involving local youth in fire hazard mitigation. Create opportunities for fire education.
- Take action to **reduce risk to structural ignitability**. Educate and make information available to residents and landowners about measures they can take to remove fuels on, near, or against structures and improve their defensible spaces.
- **Reduce flammable vegetation** in areas where there is high ignition risk, such as around structures, along roads, and on ridge tops. Continue utilizing the FLASH program to create new fuelbreaks, and to evaluate and maintain existing ones. Take steps to implement strategic management of fuels in such a way that helps restore fire ecology within the area.
- **Enhance fire protection** capability by maintaining and increasing firefighting water sources in the area. Similarly, increase the visibility of water sources and addresses and improve access for firefighting apparatus on local roads.
- Conduct **community emergency preparedness and planning** and enhance the Emergency Communication Systems. Expand the NEST phone tree area and diversify communication methods. Equip local emergency communication systems to handle a variety of emergencies. Educate community members about being prepared for evacuation.
- Take part in **fire ecology and conservation/restoration efforts** designed to restore fire to Mattole ecosystems without damaging natural and community resources.

Firewise Action Plan

The Firewise Action Plan, which resulted from the community Firewise assessment, contains a list of short-term actions with measurable objectives that can be done within the home ignition zone, within high risk community areas, and the community at large. These actions are consistent with implementation of the Lower Mattole CWPP. The following provides a summary of the projects proposed in the Firewise Action Plan:

- Have information available to residents about home fire safety in local stores and at local events.
- Continue fuels reduction projects through the FLASH program.
- Conjoin the annual Firewise event with the HVFC's annual fundraiser and staff an information booth at the event.
- Post road or driveway signs so they are clearly visible. Assist residents in figuring out their addresses, if necessary.
- Pursue funding to help install water tanks on properties and help residents acquire proper fittings for fire protection equipment.
- Keep the Fire Atlas up to date.

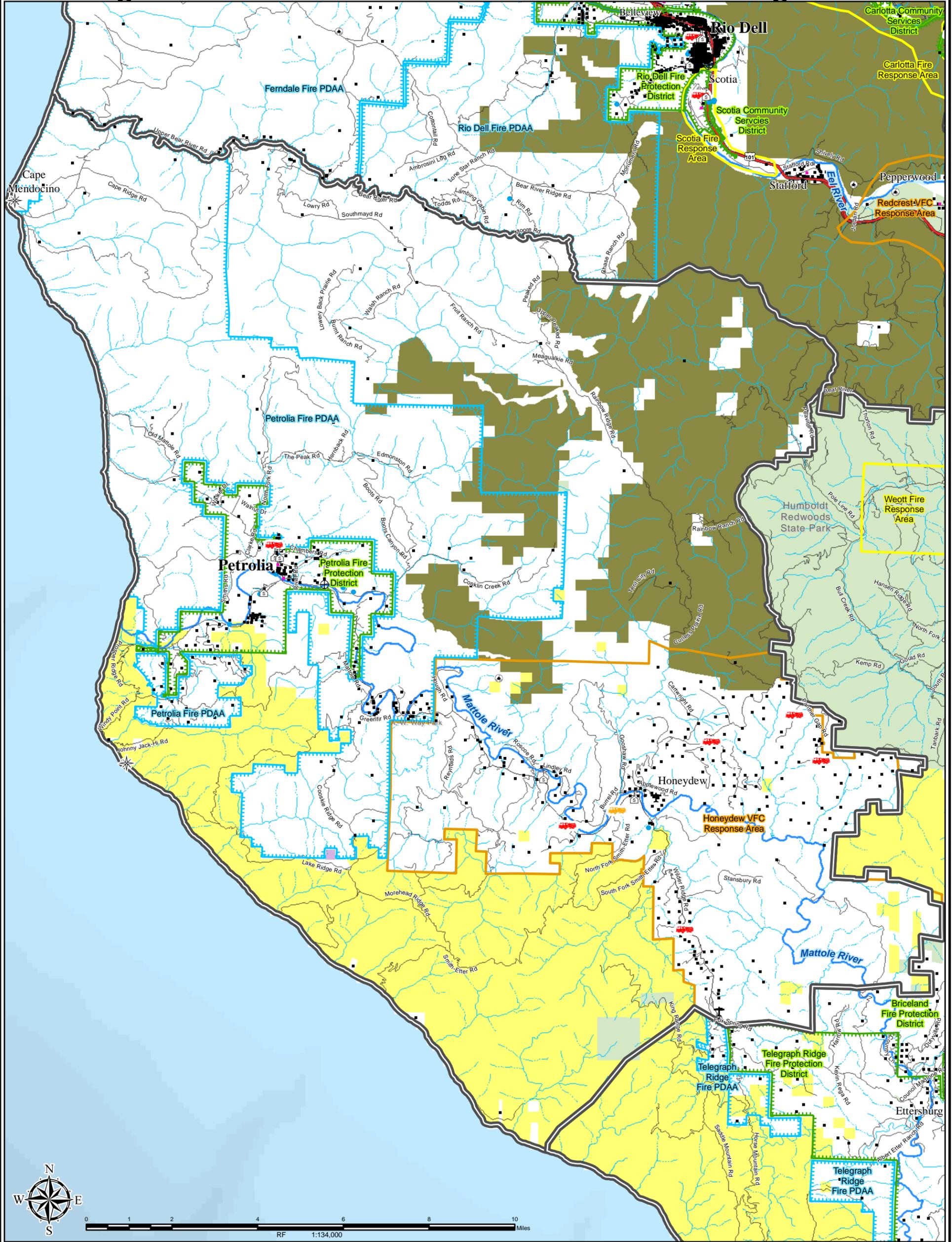
IV.12.9. Mattole-Lost Coast Action Plan

The following items are the initial priorities for community action for the Trinity Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action. No vegetation *treatments* recommended in this plan will be carried out without the

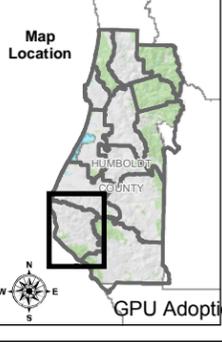
consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

- Maintain and support the LMFSC to facilitate community wildfire preparedness and mitigation.
- Ensure that the LMFSC continues to be represented on the Humboldt County FSC.
- Maintain and support the PVFD and HVFC to provide community emergency services.
- LMFSC work with the PVFD and HVFC, the MRC, and other community groups to implement the priority projects from the Lower Mattole CWPP that are summarized above (also see the project matrix in the Lower Mattole CWPP as well as projects illustrated on the Web GIS Portal).
- LMFSC assist Petrolia and Honeydew to renew participation in the Firewise Communities/USA recognition program annually. This will include an annual update of the Firewise action plan, which can be used as a short-term LMCWPP implementation tool. Actively implementing and maintaining the Firewise action plan on an annual basis will take small bites out of the local CWPP which has a five to ten year planning horizon.
- Share GIS data sets between local representatives and County staff to maintain the projects included in the County Web GIS Portal.
- LMFSC, PVFD, and HVFC work with the Humboldt County Office of Emergency Services to engage community members in evacuation preparedness. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

Figure IV.12-1 Mattole - Lost Coast Planning Unit



CWPP Unit Map



Legend

- CWPP Planning Unit Boundary
- Emergency Response**
 - Local Fire Station
 - CAL Fire Station
 - Six Rivers Fire Station
- Hospitals and Clinics**
 - Hospital/Medical Center
 - Red Cross
- Lookout, Lights, Radio**
 - Lighthouse
 - School
- Local Fire Organization Response Area**
 - District
 - Out of District
 - Non-Tax (Volunteer Fire Company (VFC))
 - Proposed District Annexation Area (PDAA)
- Improved Parcels**
 - Improved Parcel (not actual location of improvement)
 - Commercial or Industrial Lot (not actual location)
- Airports**
 - Landing Strip

- Highways and Roads**
 - HWY 101
 - State HWY
 - HWY or Secondary Road
 - Local Road or Street
- Hydrography**
 - Major River or Stream
- Infrastructure**
 - Gauging Station
 - Water Tank or Source
 - Historic Locations

- Land Ownership AGENCY**
 - Bureau of Land Management
 - National Park Service
 - State Park or Other State Lands
 - Six Rivers National Forest
 - U.S. Fish and Wildlife Service
 - Tribal Lands
 - Private
 - Industrial Timber
 - Cities



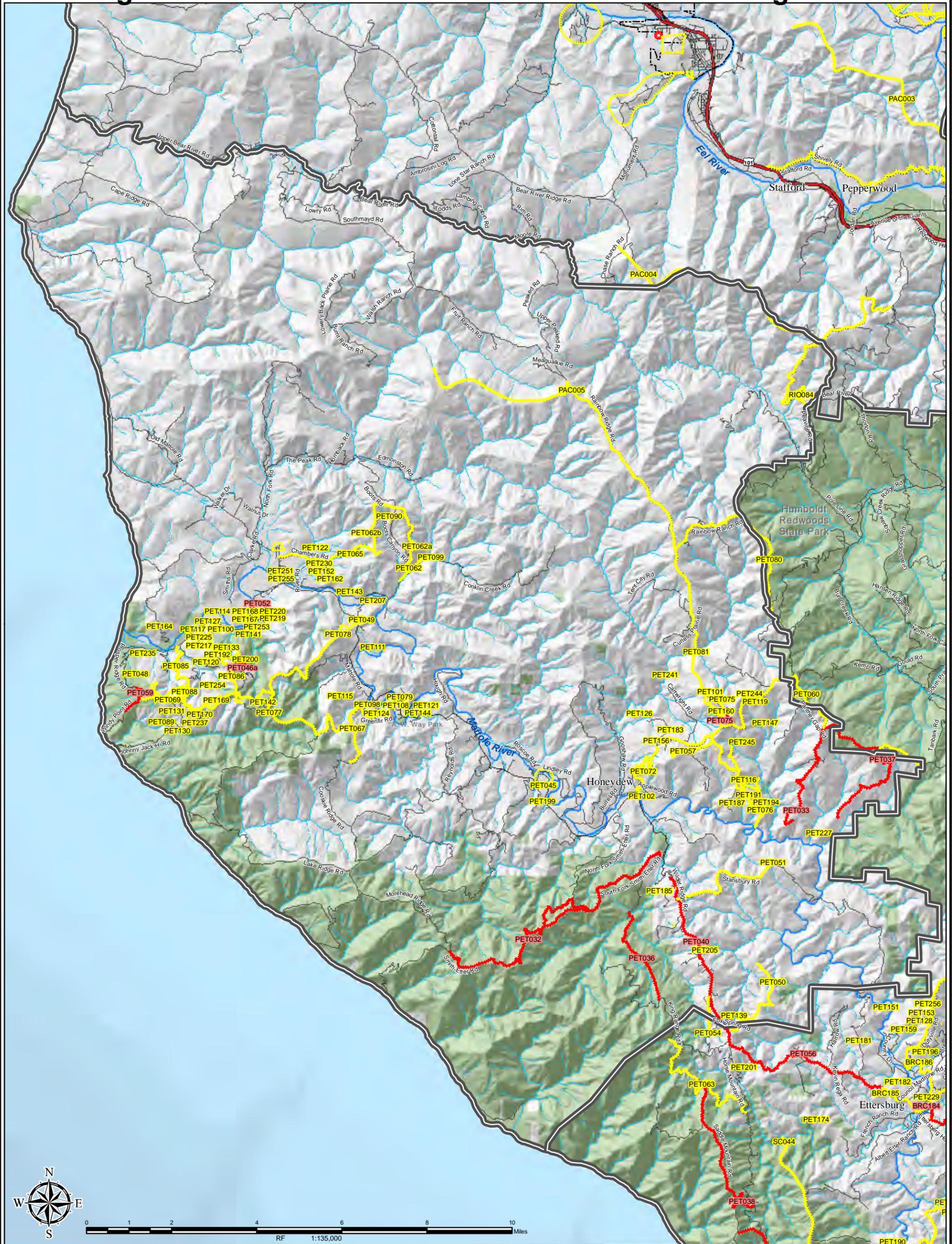
Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

October 23, 2017

Figure IV.12-3 Mattole - Lost Coast Planning Unit



CWPP - Community Identified Projects

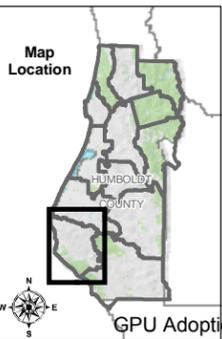
- | Legend | | Land Ownership | Highways and Roads | Hydrography |
|-----------------------------|--------------|-----------------------|----------------------|-----------------------|
| CWPP Planning Unit Boundary | Public Lands | Cities | HWY 101 | Major River or Stream |
| Proposed Project | | HWY or Secondary Road | Local Road or Street | Perennial Stream |
| Treated Project | | | | Intermittent Stream |



Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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Map compiled by County of Humboldt, March 2013.
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IV.13. .Southern Humboldt Planning Unit Action Plan

IV.13.1. Southern Humboldt Planning Unit Description

The Southern Humboldt *Planning Unit* encompasses a huge portion of the southern half of Humboldt County, totaling 375,608 acres, with a wide range of land uses and geographical types. The town of Redcrest lies just north of the Unit, while Mendocino County borders the Unit to the South and Trinity County to the East. Much of the Unit is extremely rugged and difficult to access, with a series of four major northwest-trending ridges characterizing the terrain. The difficulty of accessing this remote coastal expanse has earned the region its “Lost Coast” moniker.

Highway 101 acts as the main transportation corridor through the Unit; the highway follows the inland valley formed by the path of the South Fork of the Eel River, which traverses the Unit in a north-to-south orientation and veers slightly westward as it continues north past Phillipsville. The main stem of the Eel River also passes through this unit from the south-east corner running north-west until it is joined by the South Fork Eel River at the town aptly named “South Fork”. The Unit contains many *tributary watersheds* of the Eel River system as well. Significant tributaries of the South Fork Eel include: Salmon Creek, Dean Creek, Bull Creek, Redwood Creek, Sprowel Creek, and the East Branch South Fork Eel River. Significant tributaries of the main stem Eel include: Doby Creek, Steelhead Creek, and Jewett Creek.

The Unit also encompasses upper portions of the Mattole Watershed. The headwaters of the Mattole River are located just across the Humboldt County line in Mendocino County. The Mattole River runs through the western part of the Southern Humboldt Planning Unit in a south to north direction and enters the Mattole-Lost Coast Planning Unit just past Ettersburg. Some noteworthy tributaries of the Upper Mattole Watershed in this Planning Unit include: Gibson Creek, Harris Creek, Mill Creek, and Nooning Creek in the Whitethorn area; and Finley Creek, Blue Slide Creek, Mattole Canyon Creek, Grindstone Creek, and Bear Creek in the Ettersburg area. Many of these tributaries help distinguish the communities in this Planning Unit, and several roads and neighborhoods share the names of their nearby creeks.

The neighboring towns of Redway and Garberville comprise the community population center of this Planning Unit; however, the Unit area is populated with many distinct, widely dispersed communities. Several towns are clustered along Highway 101, from the southernmost town of Benbow, to Garberville and Redway, up to Phillipsville, Miranda, and Myers Flat, and up to the northernmost town of Weott. Many communities populate the land on either side of Highway 101 as well: South-east of Weott lies the small community of Eel Rock, with Fort Seward and Alderpoint even further to the south-east, and Palo Verde in the south eastern region, east of Benbow. Located west of the Garberville-Redway area are the communities of Briceland and Whitethorn; Ettersburg lies north of Whitethorn, with Shelter Cove tucked away into the southwestern corner of the Unit, amidst the King Range National Conservation Area. Whale Gulch is a community located in Mendocino County but primarily accessed from the Humboldt County side with its population orienting towards Redway and Garberville for services. Although Whale Gulch is not included in this countywide Community Wildfire Protection Plan (CWPP), it is a planning area within the Southern Humboldt CWPP and within the area of Southern Humboldt Fire Safe Council (FSC) activity (*learn more about the Southern Humboldt CWPP and FSC in “Community Preparedness” below*).

The Southern Humboldt Planning Unit contains a variety of land uses and ownership patterns, which include residential parcels, ranchlands of various sizes, lands managed by timber companies, state park areas, and swaths of Bureau of Land Management (BLM) land. About half of the King Range National Conservation Area exists within the Unit, bordering the coastline, while the northwestern portion of the Unit is dominated by Humboldt Redwoods State Park, which extends to Highway 101. The BLM manages a few other land areas as well, south of

Humboldt Redwoods State Park, and in the southeastern Unit area, near Palo Verde. Highway 254--known as the “Avenue of the Giants”-- parallels portions of Highway 101, from just north of Redway, up through the top of the Unit.

Richardson Grove State Park is situated in the southernmost part of the Unit, with lands owned by Barnum Timber to the west and the Benbow Lake State Recreation Area to the north. The majority of the western portion of the Unit--between Highway 101 and the King Range National Conservation Area--primarily includes rural residential parcels and small- to medium-sized ranchlands, while large tracts of ranchland dominate the eastern half of the Unit, with residential parcels distributed throughout. A map of this planning unit can be viewed in Figure IV.13-1. Southern Humboldt Unit: CWPP Unit Map.

IV.13.2. Southern Humboldt Community Process Summary

Two open-house community workshops were held within this Planning Unit for the purpose of gathering local information and garnering public input regarding various factors contributing to the extent of wildfire risk and/or preparedness among the communities in this Unit. One meeting was held on March 20, 2012 in Miranda and another was held on March 29, 2012 at the Healy Senior Center in Redway. A group exercise, which involved maps of the Planning Unit area, invited those present to help identify and pinpoint on the map where particular *fire hazards* exist, the location of *protection resources*, such as fire water drafting sites, as well as values and *assets at risk* within the community that could be threatened by wildfire. These workshop processes also provided an opportunity for participating community members to ask questions and provide information based on their local knowledge.

Participants were also asked to review pre-existing information illustrated on the maps which had been added by community members during similar workshops that took place during the initial planning process in 2006. These workshops and mapping exercises also facilitated discussion among community members about potential actions that could be taken to reduce fire risk in their communities. Through discussion and collaborative processes, participants identified major hazard areas and compiled lists of project proposals for enhancing their communities’ fire preparedness.

The community-identified fire hazards, protection resources, and values and assets at risk discussed throughout the following sections of this Planning Unit Action Plan reflect information generated by these community workshop mapping exercises, as well as information resulting from direct outreach to local fire departments and residents. The workshops in Southern Humboldt fell short on time for the mapping exercise, so additional information was gathered from community members by Bill Eastwood, who is working on the area’s CWPP.

The project proposals resulting from community member discussions are contained in section IV.13.8. Community-Identified Projects in this Planning Unit Action Plan.

IV.13.3. Southern Humboldt Wildfire Environment

Approximately 78% of the Southern Humboldt Planning Unit is zoned “High Fire Hazard Severity,” as determined by the California Department of Forestry and Fire Protection (CAL FIRE).¹ Approximately 21% of the Unit, including much of the northeastern portion and areas surrounding Garberville and Shelter Cove zoned “Very High Fire Hazard Severity,” with only about 1% of the Unit zoned “Moderate Fire Hazard Severity.” The steep topography of the Unit can accelerate the rate of fires spreading throughout the region and can make access for firefighting *apparatuses* and personnel very difficult.

¹ CAL FIRE (California Department of Forestry and Fire Protection). (2007). *Fire Resources Assessment Program (FRAP)*. [Map showing Fire Hazard Severity Zone ratings within various geographic areas, mapped by county]. Fire Hazard Severity Zones Map. Retrieved from <http://frap.cdf.ca.gov/>

The Unit is characterized by a Mediterranean climate with cool, wet winters and hot, dry summers, although the heat of summer is tempered by the coastal fog zone in some areas. Local *vegetation types* consist primarily of *conifer forests* and coastal redwoods, with Douglas-fir *dominant*. Madrone is also prevalent in the Unit, along with the Blue Blossom and Whitethorn species of Ceanothus, as well as Bay trees, which have been identified as key players in the spread of Sudden Oak Death.² Annual grassland prairies and oak woodlands cover a substantial portion of the Unit as well, particularly along ridge tops; oak species include: tan oak, black oak, white oak, and canyon live oak.

Traditionally, fire was an integral part of the *ecosystems* in this region. Forest management by indigenous tribes often included low-intensity, intentional burns that helped enhance forest ecosystems and prevent the accumulation of high *fuel loads*. Some of the early agricultural settlers in the mid-1800s used intentional burning to clear and then maintain grasslands for pasture animals. However, a heavy *fire suppression* campaign beginning in the 1940s has allowed the accumulation of dense, flammable vegetation in forest *understories*, which acts as *fuel* and increases the risk of high-intensity wildfires. Forest ecosystems, accustomed to low-intensity fires that would burn off *brush* and newer starts in the understory, become threatened by overcrowded forests and accumulated fuel. Intense timber harvests during the 20th century further exacerbated damages to forest ecosystem health. Encroachment of Douglas-fir, which was sewn into many logged areas, has contributed to alterations in *stand compositions* in redwood forests. Douglas-fir encroachment has also been witnessed in oak woodlands and grassland areas as well, threatening ecosystems, wildlife habitat, and negatively impacting the forests' *resiliency* to wildfire. The extent that the landscape has been altered as a result of fire suppression is reflected in the *condition class* of the Unit area. Condition class describes the degree of departure from the historical *natural fire regime*. Where the condition class indicates that fire has been absent for an unnaturally long time, the hazard and potential damages are high to both the environment and human developments in the area. Approximately 49% of the Southern Humboldt Planning Unit is condition class 3, meaning the fire regime is significantly altered from the historical range; and approximately 16% of the area is condition class 2, or moderately altered from the historical range.

Communities within the Southern Humboldt Planning Unit are increasingly vulnerable to damage from wildfire. The buildup of fuel has increased the potential for higher intensity of fires, loss of life and property, and higher wildfire suppression costs. The California Fire Alliance has listed many *communities at risk* within this Planning Unit. Furthermore, the increasing subdivision of timber- and ranchlands throughout the Unit area has generated an increase in the number of homes that exist in the *wildland-urban interface* (WUI), which increases the likelihood that *wildland fires* will spread to structures, and vice versa.

In 1973 a wildfire driven by Santa Anna winds burned 10,000 acres between Ettersburg and the ocean at Shelter Cove in ONE day! Fortunately the area was sparsely populated and damage was minimal. Today, Shelter Cove and nearby wildlands are heavily populated and the young brushy forest that has re-vegetated the burn area is now even more hazardous than it was in 1973. Hundreds of homes are gravely threatened. Many other communities within the Unit face similarly hazardous conditions.

Major fire events within this Planning Unit between the years 2000-2010 include:

- 10 Fire, 2003: 213 acres.
- Canoe Fire, 2003: 952.5 acres.
- Paradise Ridge Fire, 2008; 981 acres.

² For more information about Sudden Oak Death in Humboldt County, see “Vegetation and Fuels” in section II.1.3. in Chapter II.1. Wildfire Environment.

Several smaller fires occurred throughout the Unit during this period as well, including Colony Fire, Brown Fire, Pratt Fire, Casterlin Fire, and High Fire.

Humans are the most likely *ignition source* for fires in this Planning Unit. Vehicle accidents, smoking, playing with fire, poorly maintained *debris burning*, and incendiary burning are just a few potential causes. Various types of equipment use and downed power lines can also be potential ignition sources. Lightning is the most probable natural cause of fire starts within this Unit.

Dead plant matter and vegetation with low *moisture levels* within 100-150 feet of homesteads pose some of the greatest threats to *structural ignitability*. Of particular concern are houses with needles and leaves accumulating on rooftops or in rain gutters. Houses with wooden rooftops and sidings add to this risk, as do the presence of wooden decks, particularly those with dead plant matter accumulated beneath them. Figure IV.13-2 found at the end of this Planning Unit Action Plan illustrates risks and hazards identified by community members at public workshops and can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Highway 101 is the central *ingress and egress* route, and main roads such as Briceland Thorne Rd., Alderpoint Rd., and Dyerville Loop connect smaller communities and residential roads to the central highway. Poor or complete lack of *signage* at roads and intersections pose potential problems for ingress and egress; this is especially true for more remote residences that are further away from the main towns. Problems with poor signage are exacerbated by ambiguity of road names and partial addresses used throughout the Unit. The narrowness of smaller roads leading to remote residences could create serious complications for emergency vehicle response trying to gain access during simultaneous home evacuations. Routes may also be overgrown with vegetation, and many properties have inadequate *turn around spaces*. The potential for landslides in the area could also inhibit access.

Potable water and *fire protection water* are provided to the majority of communities in this Unit by a number of special districts; they include: the Garberville Sanitary District branch of the Garberville/Redway *Community Services District*, the Alderpoint County Water District, which covers approximately 370 acres,³ the Shelter Cove Resort Improvement District, and the Weott Community Services District. Residents outside of these service districts obtain water through other means, such as drawing from nearby creeks and holding tanks. Creeks and swimming holes, such as Delta Hole, are also drawn upon by firefighters to *draft* water for fire protection. Some drafting locations in this Unit, as identified at community workshops, include the following (these will need to be vetted further with local firefighting personnel):

- Bear Creek
- Lauffer Ranch Ponds - dipping
- Holmes Flat Eel River drafting site
- McCann Eel River drafting site
- Barnes Pond - drafting
- Duggans Mill drafting spot
- George Bushnell Pond
- Culvert water source on West Moody Rd – Sprowel Creek
- Myers Flat Eel River drafting site
- Williams Grove Eel River drafting site
- Fort Seward – East Side River Access.
- Miller’s Pond – Sprowel Creek
- Debra Lake Pond (150,000 gallons)
- Dyerville Bar Eel River drafting site
- Hans Ponds -drafting
- Heartwood Pool -- drafting

³ Humboldt Local Agency Formation Commission. (2009, January). *Alderpoint County Water District Municipal Service Review [Draft]*. Retrieved from http://www.humboldtlafo.org/sites/default/files/msr/Alderpoint_CWD_MSR_Jan_2009.pdf

The map in Figure IV.13-2 found at the end of this Planning Unit Action Plan illustrates these *drafting sites* as well as other community-identified wildfire *protection resources*. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

IV.13.4. Southern Humboldt Values and Assets at Risk

Assets at risk can be defined as those things that are important to quality of life that can be threatened with destruction or loss from wildfire. These may include community assets such as homes and businesses, as well as environmental values such as wildlife habitat, natural resources, and air quality, along with any other important attribute that individual communities rely on for their well being. Loss or damage to community assets as a result of wildfire can have short- or long-term impacts of varying severity, depending on the asset. Short-term loss caused by a *wildfire* can include the destruction of residences, commercial assets, timber, wildlife habitat, scenic vistas, and *watersheds*. Long-term effects may include displaced persons, smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural, ecological, and economic resources, and community infrastructure.

The assets at risk in this Planning Unit are as diverse as the land uses within the region. The majority of community assets at risk include residential homes and neighborhoods, along with a variety of commercial and service industries, community centers, schools, fire stations, churches, historic sites, post offices, medical and dental clinics, municipal buildings as well as infrastructure components, such as water treatment plants and a communication site. The ranching, agricultural, and timber industries within the Unit are also considered assets at risk. The Unit also contains several campgrounds and RV Parks.

The map in Figure IV.13-2 found at the end of this Unit Action Plan illustrates values and assets at risk to wildfire identified by community members at public workshops. The map can be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS⁴ Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>. Some of the community-identified assets at risk within this Unit include:

- Garberville Airport
- Eel River Conservation Camp
- Kekewaka Power Station
- Fort Seward Train Station – historical
- Benbow State Park
- Beginnings Community Center
- Burlington Ranger Station/Visitor Center/RSP
- Pratt Mountain Lookout (cell, communication)
- Benbow Golf Course and Clubhouse
- Grasshopper Lookout

The Unit contains many areas of great environmental significance as well. The Avenue of the Giants, Richardson Grove, and Humboldt Redwoods State Park hold some of the last remaining *stands* of old growth redwoods in the county and, along with the King Range National Conservation Area, provide valuable *habitat* for wildlife species in the region. The Eel River South Fork and its tributaries are also ecologically valuable for the fisheries they support, including coho and chinook salmon, and steelhead trout. However, the ability of these populations to reproduce successfully has been negatively affected by heavy *sedimentation* in the river, which has been exacerbated by certain timber harvest practices and road building activities.⁵ The river also provides numerous recreational opportunities for communities in the

⁴ Geographic Information Systems (GIS).

⁵ Dyett & Bhatia. (2002, September). South Fork of the Eel River Watershed. *Humboldt 2025 General Plan Update: Natural Resources and Hazards; Vol. 2: Detailed Watershed Characteristics and Regulatory Framework Analysis*. Retrieved from <http://www.co.humboldt.ca.us/gpu/documentsbackground.aspx>.

Unit. Many culturally sensitive sites of special importance to Native Americans exist throughout the Unit as well.

IV.13.5. Southern Humboldt Community Preparedness

Communities within the Southern Humboldt Planning Unit are informed and abetted by the Southern Humboldt *Fire Safe Council* (SHFSC), which operates throughout the entire Unit. The SHFSC was formed in 2002 by residents in the region who recognize the potential for community devastation by wildfire; their mission is: “to protect the region’s natural and manmade resources by mobilizing our community to make their homes, neighborhoods, and communities fire safe.”⁶ The SHFSC meets irregularly and participation has been widespread throughout the Unit, with more than forty individuals including representation from the following fire departments: Briceland, Telegraph Ridge, Sprowel Creek, Palo Verde, Whale Gulch, Shelter Cove, and Salmon Creek. Participation also includes personnel from CAL FIRE, BLM, California State Parks, the Mattole Restoration Council (MRC), and the Humboldt County Planning Department. In addition to protecting resources, the SHFSC’s goals include: reducing the risk negative impacts by wildfire, increasing community preparedness and fire planning, creating jobs through *fuels reduction* projects, utilizing materials from *hazardous fuel reduction* efforts, and improving forest health and ecosystem functioning. Their focus goes beyond wildfire concerns and includes public safety issues such as earthquake preparedness and emergency medical response as well. The SHFSC can be reached by calling (707) 923-9109 or (707) 845-3282, or by visiting their website at: <http://www.newforestry.org/shfsc/>.

The SHFSC has been successful in collaborating with a variety of fire and forestry organizations to achieve its goals; these organizations include: Beginnings Inc., the Institute for Sustainable Forestry, Ancient Forest International, Sanctuary Forest, and the Humboldt Fire Chiefs Association, with cooperation from the California Department of Forestry and Fire Protection’s Garberville Battalion Chief and other personnel from CAL FIRE’s Humboldt-Del Norte Unit in Fortuna as well. Some of the SHFSC’s primary objectives are to educate the public about fire safety, create extensive *fuelbreaks*, initiate a *prescribed burning* program, increase communication among residents as well as *volunteer fire departments* (VFDs) improve training for emergency response teams, and to conduct fundraising for these efforts. The SHFSC also attempts to coordinate their activities with other fire prevention efforts by networking with entities such as the BLM, the MRC, and the California Conservation Corps. Since 2004, the SHFSC has completed *shaded fuelbreak* projects along Salmon Creek Rd., Bell Springs Rd., Perry Meadow/Elk Ridge Rd., and King’s Peak Rd.

Collaboration with the Institute for Sustainable Forestry and the Mattole Restoration Council has led to the implementation of the *Fire-adapted Landscapes and Safe Homes (FLASH) program* throughout the Unit area. FLASH is a rebate program that reimburses property owners for *hazardous vegetation management* completed around their homes, along *access routes*, and in particularly hazardous areas. Between 2010 and 2011, over 41 acres were treated under the FLASH program and 27 site visits including a home *risk assessment* were conducted by FSC staff. The program has received additional funding for 2012-2013 and the goal is to treat approximately 53 acres.

The SHFSC and Institute for Sustainable Forestry are also in the process of producing a locally focused *community wildfire protection plan* (CWPP). Participants in this process are working to identify local and area wide needs through meetings in neighborhoods and with local fire chiefs. The purpose of this plan is to help educate and assist residents in the Unit area with information and resources for better fire planning and emergency preparedness.

⁶ Southern Humboldt Fire Safe Council. (n.d.). *Mission Statement*. Retrieved September 9, 2012, from <http://newforestry.org/shfsc/aboutSHFSC.htm>.

The Crooked Prairie Fire Safe Council (CPFSC) also exists within this Planning Unit. Located in the Ettersburg area, the CPFSC encompasses approximately four square miles with about 30 homesteads. It was established in 2005 as the result of the dissolution of the Crooked Prairie Fire Crew. The organization of the CPFSC is intentionally small and simple; it is an all-volunteer group that meets approximately once a year and obtains all of its funding from donations and fundraisers. Though small, they have been capable of some major contributions to improving fire safety in their community. Some of their activities and accomplishments include: installing a 5,000 gallon water tank adjacent to a firehouse with a grant acquired through the MRC; hosting an informative workshop on *Sudden Oak Death*; equipping firefighters with *personal protection equipment (PPE)*; and participation in the FLASH rebate program. The CPFSC can be reached by calling (707)-986-7705.

None of the communities within the Southern Humboldt Planning Unit has yet achieved *Firewise* recognition. However, the existence of two local FSCs, as well as the SHFSC's inclusive involvement with a variety of residents, and its extensive efforts to collaborate with other organizations indicate significant dedication to fire safety planning and fire *hazard mitigation* among the communities in this Unit. Considering this, *Firewise* recognition may not be far off for some of these communities.

IV.13.6. Southern Humboldt Wildfire Protection Capabilities

There are various *special districts* that provide fire protection within this Planning Unit, including a resort improvement district, a *community services district*, and *fire protection districts* (FPD). These districts are financially supported by revenue generated from a variety of sources that can include property taxes, *special taxes* and assessments, donations, and fundraisers. Fire protection services within these districts are provided by VFDs, which supply the communities in this Unit with fire protection, as well as medical and rescue services.

The following entities provide fire protection services to districts within this Planning Unit:^{7, 8}

- **Briceland Volunteer Fire Department** has 25 volunteers and serves 650+ residents in a 40 square mile area. This VFD operates out of three stations. Station 1, located in Briceland, has the following apparatuses: a 750 gallon, crew cab, type-1 engine; a 500 gallon, crew cab, type-3 engine; a 200 gallon, type-4 engine, a type T2, 1,200 gallon *water tender*, and a type-3 Basic Life Support (BLS) ambulance. Station 2 is located in Crooked Prairie and contains a 500 gallon type-3 engine, and a type T2, 1500 gallon, 500 gallon-per-minute (gpm)_pump water tender, with a 1,500 gallon portable water tank. And Station 3 has a 4WD SUV Chiefs/command C5400 with medical and rescue equipment. In August 2012, residents in the area voted on the issue of whether or not to transform this VFD into an official fire protection district, which would be funded via a special tax. The Briceland VFD secured a sufficient number of votes and the proposal passed. The Briceland VFD can be reached by calling (707) 923-7204, by email at: bricelandfire@yahoo.com, or by visiting their website at: <http://bricelandfire.org/>.
- **Garberville Volunteer Fire Department** was established in 1940 and includes approximately 702 acres. This VFD has 12 volunteers and also houses Southern Humboldt Technical Rescue, a separate agency. The Garberville VFD's apparatuses include: a 1,000 gallon, 3 passenger type-2 engine; a 750 gallon, 5 passenger type-2

⁷ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010*. Humboldt County Fire Safe Council. Retrieved from http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx

⁸ Humboldt County Fire Chiefs Association. (2012). 2012 Local Fire Protection Survey.

engine; a 1,000 gallon, 3 passenger type-2 engine; and a utility truck. The Garberville VFD can be reached by calling (707) 923-3196.

- **Miranda Volunteer Fire Department** has 12 volunteers and serves 500 residents in approximately 10 square miles. Their apparatuses include: one type-1 engine, one type-3 engine, and a type-4 quick attack engine. The Miranda VFD can be reached by calling (707) 943-3023.
- **Myers Flat Volunteer Fire Department** has three full-time volunteers. Their apparatuses include: two type-3 engines, one with a Compressed Air Foam System (CAFS). The Fire Chief of the Myers Flat VFD can be reached by calling (707) 223-3175.
- **Redway Volunteer Fire Department** has 11 volunteers. Apparatuses include: a 2000 gallon water tender, two type-1 engines, a quick attack engine, and one utility vehicle. Funding for this VFD is supplemented with annual BBQ fundraiser. The Redway VFD can be reached by calling (707) 923-2617 or (707) 223-1498, by email at redwayfire@gmail.com, or by visiting the Redway Fire Protection District's Facebook page.
- **Shelter Cove Volunteer Fire Department** has 12 volunteers who cover an area of approximately 49 square miles. Their apparatuses include: a 1,000 gallon type-1 engine; a 300 gallon type-3 engine; a 200 gallon type-4 engine; a 750 gallon type-1 pumper; a rescue truck; as well as an RHI boat and a Yamaha jet-ski with a rescue sled. The Shelter Cove VFD can be reached by calling (707) 986-7507, or by visiting their website at: <http://sheltercove-ca.gov/fire/fire.htm>.
- **Telegraph Ridge Volunteer Fire Department** is located in the Ettersburg area and has 12 members. Their apparatuses include: a 500 gallon type-3 engine, and two type-4 quick attack engines, which hold 300 and 200 gallons. The Telegraph Ridge VFD can be reached by calling (707) 986-7488.
- **Weott Volunteer Fire Department** has 8 volunteers. Their apparatuses include: a type-2 engine and a rescue truck. The Weott VFD can be reached by calling (707) 946-1953 or by email at weottvfd@att.net.
- **Whitethorn Volunteer Fire Department** has 15 volunteers. Their apparatuses include: a type-1 engine, a type-2 engine, and two type-4 quick attack engines. The Whitethorn VFD can be reached by calling (707) 986-7728.

Several *volunteer fire companies* (VFC) also exist within the Unit that have no tax-based support and rely largely on donations and various fundraising efforts from within their communities. These entities provide fire protection, as well as medical and rescue services. They include:^{9, 10}

- **Alderpoint Volunteer Fire Company** was organized November 2007 and has 12 volunteers. Their apparatuses include: a Type-3, 500 gallon fire engine, a Type-2, 750 gallon fire engine, a medical rescue vehicle, and a Chief's truck. The Alderpoint VFC can be reached by calling (707) 923-1665.
- **Fruitland Ridge Volunteer Fire Company** is located three miles east of Highway 254, in between Myers Flat and Miranda. This company has 8 volunteers and serves 338 residents in approximately 38 square miles. Their apparatuses include: a 2,250 gallon, freightliner water tender and a 900 gallon international fire engine. In August 2012, residents in the area voted on the issue of whether or not to transform this VFC

⁹ County of Humboldt, Natural Resources Planning. (2012). *Humboldt County Fire Chiefs Association Annual Report, 2010 and 2011*.

¹⁰ Humboldt County Fire Chiefs Association. (2012). 2012 Local Fire Protection Survey.

into an official fire protection district, which would be funded via a special tax. However, the Fruitland Ridge VFC was not able to secure enough votes and the proposal did not pass and is now in jeopardy. The Fruitland Ridge VFC can be reached by calling (707) 943-3402.

- **Palo Verde Volunteer Fire Company** was established in 1983 and has 8 active volunteer firefighters. Their apparatuses include: one type-3 wildland fire engine and a type-4 quick attack/brush truck. The Palo Verde VFC also receives department support from federal assistance through USFS (surplus fire engines) and the BLM (funding for fire shelters, webbing gear and fire hose). In August 2012, residents in the area voted on the issue of whether or not to transform this VFC into an official fire protection district, which would be funded via a special tax. The Palo Verde VFC was not able to secure enough votes and the proposal did not pass. The department is now reevaluating its service and reorganizing its support structure. The Palo Verde VFC can be reached by calling (707) 223-0571.
- **Phillipsville Volunteer Fire Company** has 3 volunteer firefighters along with 10 auxiliary members. Their apparatuses include: a type-2 engine that holds 2000 gallons, a type-1 engine, and a type-4 engine. The Phillipsville VFC can be reached by calling (707) 943-3555.
- **Salmon Creek Volunteer Fire Company** services a remote community of about 300 homes, located six miles west of Highway 101. This VFC is made up of 8 volunteers, with 4 auxiliary volunteers, and their apparatuses include: a 1,800 gallon, type-3 water tender, one type-3 fire engine and one type-4 quick attack engine. The Salmon Creek VFC can be reached by calling (707) 943-3006.
- **Sprowel Creek Fire Company** provides fire protection to the Neilson Ranch subdivision in Garberville, with a response area of approximately four square miles. This VFC has upwards of 20 volunteers and their apparatuses include: a 1,000 gallon water tender, and four fire engine pumpers, with capacities of 350 gallons, 700 gallons, and two with 300 gallons. The Sprowel Creek VFC can be reached by calling (707) 223-3399.
- **Whale Gulch Volunteer Fire Company** was started in the 1970s and now has 16 volunteers. Their apparatuses include two type-3 engines, each with a 500 gallon capacity, and one type-4 medical vehicle with 250 gallons. The Fire Chief of the Whale Gulch VFC can be reached by calling (707) 986-7341.

CAL FIRE also has several stations located throughout the Planning Unit. Staffing levels at the CAL FIRE stations in Weott and Garberville vary throughout the year, but remain adequate for emergency response during most of the year. Other stations, located in Alderpoint and Whitethorn (Thorn) are staffed only seasonally, during the declared *fire season*. CAL FIRE also operates two Conservation Camps in the Unit: High Rock Camp, located in Weott, and Eel River Camp, located in Redway. Each camp provides five hand crews for firefighting purposes, and each crew is made up of up to 17 firefighters and a captain. These crews are an all-risk department resource used both within Humboldt County and on a statewide basis year-round. These camp assets are maintained fire/emergency ready year-round. During non-emergency response, these crews are deployed to work on fuel reduction projects and projects requested by other public agencies throughout the year. These crews are trained in emergency responses including, but not limited to, fire, flood, earthquake, medical, and vehicle accidents.

Many of the local fire protection service groups in this Planning Unit have a need for more volunteers and face issues with inadequate facilities and equipment. Emergency response from these groups can be hindered by residential areas within the Unit that have poor signage and contain roads and driveways with insufficient clearance for firefighting apparatuses.

The Southern Humboldt Fire Chiefs Association (SHFCA) is a venue for fire departments and community organizations in the Unit to collaborate for preparedness. The SHFCA is a chapter of the Humboldt County Fire Chiefs Association, a 501(c)3, and comprises firefighters from all the Unit departments and companies as well as Redcrest and Honeydew.

The initial purpose of the SHFCA was to provide a stronger voice for fire departments to bring more training opportunities to the Unit, increase communication between local departments and with CAL FIRE, and to create a stronger fire department identification and numbering system. Successful implementation of those goals over the last 15 years has grown the SHFCA to include representatives from the SHFSC, the HCFSC, the Red Cross, the Southern Humboldt Emergency Preparedness Team (SHEPT), the County Radio Dispatch Co-op, CAL-EMA, Humboldt County OES, and other emergency preparedness groups.

The SHFCA sponsors the Southern Humboldt Technical Rescue Team. The Team is comprised of firefighters from departments within the Unit who specialize in rope, water, and wilderness rescue. Team members are highly dedicated firefighters who train and respond to rescues in addition to the normal training and duties of their respective fire departments. The Southern Humboldt Technical Rescue can be reached by calling (707) 834-1432.

The SHFCA recognizes the community living in the Unit needs to be informed about the issues surrounding wildfires, emergencies, and disaster management. One of the tools used to inform the public is the "Burning Issues" fire and rescue radio talk show on KMUD FM radio. This show provides the SHFCA an opportunity to voice information to the public about training, prevention, standards, legislation, grant writing, and new initiatives and innovations.

In times of emergency, current information needs to be communicated to the public in affected areas of the Unit. FM radios are recognized by the public as a means of getting current emergency information. The KMUD FM radio Community Emergency Response Team receives information from sources such as the SHFCA Public Information Team, CAL FIRE, the California Highway Patrol, and the Humboldt County Office of Emergency Services, and relays that information using live on-air broadcasts and internet updates.

IV.13.7. Southern Humboldt Evacuation

Evacuation from the Southern Humboldt Planning Unit will either travel north or south along Highway 101, southwest on Briceland Thorne Rd., or northeast on Alderpoint Rd., depending on the location of the community at risk and law enforcement recommendations based on *fire behavior*, wind patterns, traffic, and ingress of emergency vehicles. Communities in the western portion of the Unit rely strongly on Briceland Thorne Rd. and the smaller roads connecting to it for ingress and egress; few alternative routes exist for these communities, with the exception of Wilder Ridge Rd., which leads northwest towards Honeydew. The same is true for communities in the eastern portion of the Unit that depend on the accessibility of Alderpoint Rd. and Dyerville Loop Rd. for reaching residences and evacuating during emergencies. However, these roads could provide access away from the Unit if necessary; Briceland Thorne Rd. leads southward into the King's Range Wilderness and Alderpoint Rd. continues northward toward the community of Blocksburg. The critical necessity of these routes for many of the communities within this Planning Unit highlights the importance of maintaining these roads and suggests that residents and law enforcement groups should be thinking creatively about alternative paths that may be taken if these primary routes became inaccessible during an emergency.

Shelter Cove is perhaps the most isolated community in the Unit, however, they could potentially evacuate to the north along Kings Peak Rd., east along Briceland Thorne Rd., or south on Chemise Mountain Rd., which eventually rejoins Briceland Thorne Rd. Given their proximity to the coast, residents in this area could evacuate to the beach, if necessary.

Evacuation impediments may include: dense, steep road sections, landslides, fallen trees, overgrown vegetation preventing emergency vehicle access, poorly marked streets and

intersections, and *one-way-in, one-way-out roads* that could inhibit evacuation and emergency response vehicles, or leave residents stranded should the roads become blocked.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an *Incident Management Team*. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

If a catastrophic event occurs, residents may not be able to reach designated evacuation sites. In such cases, residents may need to make decisions on their own about seeking shelter where they can survive the passage of the wildfire until they can reach an evacuation site. It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, community members should talk to their local fire department about evacuation procedures in their neighborhood.

See section V.2.3 in Part V. Fire-Safe Communities for more information on preparing for safe evacuation and evacuation planning for pets and livestock. Also see section II.3.5 Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.

IV.13.8. Southern Humboldt Community Identified Potential Projects

The following section includes a summary of potential projects identified through the community processes discussed above. Some of the potential projects are illustrated on the community-identified projects map found at the end of this Unit Action Plan (Figure IV.13-3). This map includes projects carried over from the 2006 County fire-planning process, those identified and refined during the local CWPP development process, as well as the 2012 County CWPP update process. In addition, Figure IV.13-2 illustrates community-identified Values and Assets, Hazards and Risks, and Wildfire Protection Resources. The maps in Figure IV.13-2 and Figure IV.13-3 can each be used as a key to access detailed descriptions of community-identified fire planning features on the Humboldt County Web GIS Portal, “Fire Planning” section: <http://gis.co.humboldt.ca.us/>.

Because of the tremendous amount of work that has been accomplished within this unit and the continued refinement of priorities that is underway, a project matrix was not included in this Unit Action Plan. All of the community identified project information is cataloged in the Web GIS Portal described above and this CWPP incorporates that information by reference here. This information will continue to be made available as a resource for capturing grant funds and continued project implementation tracking.

The Southern Humboldt FSC CWPP is nearing completion and should receive final approval by mid-2013. This document will be much more area specific and will include descriptions of more than 20 neighborhood planning units.

Project ideas are also listed below that are not visible on the maps, because they are not geographically based. These proposed actions also add to and expand upon the 2006 plan, based on the 2012 process (including the County CWPP update and the local CWPP development process). No *vegetation treatments* recommended in this plan will be carried out without the consent and involvement of the property owner and all applicable local, state and federal regulations must be observed.

- Develop a wide range of opportunities for **community education on preparing for wildfire**. This effort should involve the production and distribution of a variety of **informational materials** such as:

- A “Before and After Fuels Reduction” pamphlet, describing and illustrating the process and benefits of reducing hazardous fuels around homes, in neighborhoods, and along access roads.
- A “Constructing a Shaded Fuelbreak” guide that outlines the value and process of creating shaded fuelbreaks.
- A “Living With Fire” publication with information specific to the Southern Humboldt region.
- A compilation of information on proper and safe evacuation planning during a wildfire event.

Community education efforts should also include putting on **workshops** that demonstrate best practices for mitigating fire hazard risks. Potential workshop topics include:

- An educational workshop for landowners on how to create and maintain defensible spaces around homes. This workshop should include information on the importance of defensible spaces for protecting structures, a discussion of fire safe landscaping techniques, and a hands-on demonstration of proper techniques for thinning vegetation and removing brush piles.
 - A presentation by CAL FIRE showing wildfire in action, supplemented with photos and video clips. There is potential to conjoin the efforts of this workshop with a fundraiser event for the SHFSC.
- Education efforts should also include **information on ways community members can support and assist local fire departments** by helping with fundraisers, grant writing, becoming a volunteer, etc.
 - Conduct projects to **implement more fuelbreaks** throughout the area. Fuelbreaks are needed along access roads in order to assist firefighters and to improve safety during evacuation efforts. Fuelbreaks are should also be implemented within the landscape so as to reduce the risk of rapidly spreading wildfires in the tree canopy.
 - **Increase community preparedness for emergency evacuation.** Pinpoint and identify localized evacuation site “Safe Zones” and ensure that residents are made aware of their locations.
 - **Improve signage** throughout the communities in this Unit by installing more highly visible road and address signs. This action should also include efforts to reduce confusion within the addressing system, which may contain partial addresses, and minimize ambiguity of road names.
 - **Increase available water sources and label them** within the communities so that they may be more readily identified and accessed by firefighters. Install more water tanks and fill them during the winter so as to avoid drawing from creeks that provide critical fish habitat during the summer months. Ensure that existing water tanks are equipped with the proper fittings for fire engines. Water source labeling may be undertaken by implementing the Blue Dot Program.
 - **Improve clearance for emergency vehicles** and ensure that driveways and access roads have enough width and height for firefighting apparatus to easily pass through and access properties.
 - **Amplify outreach efforts** to improve community workshop participation. Strategies may include: developing fire safety education posters to be displayed at community events; reaching out to local businesses for support; and sending announcement flyers home with students from school.

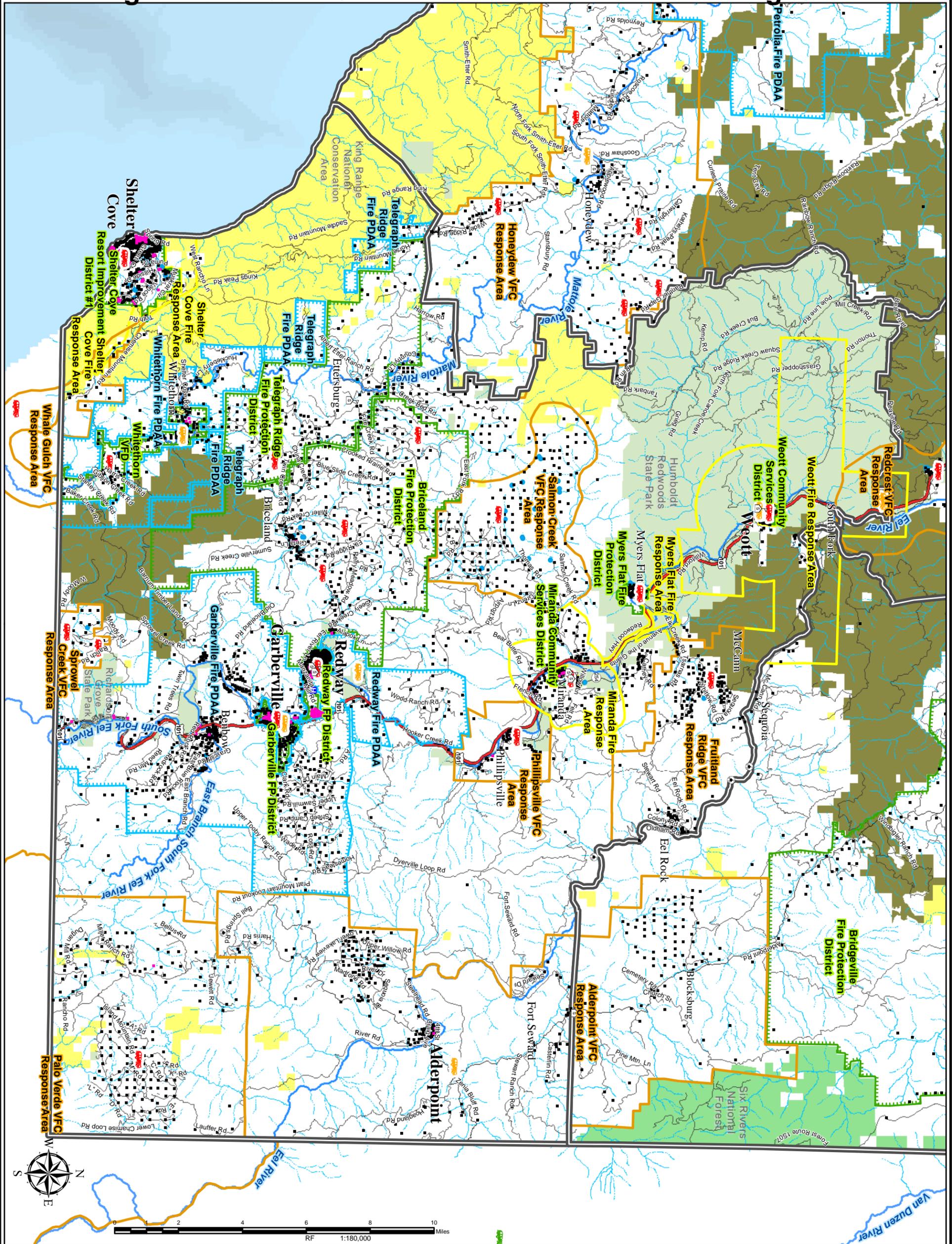
IV.13.9. Southern Humboldt Action Plan

The following items are the initial priorities for community action for the Southern Humboldt Planning Unit as recommended by this Humboldt County CWPP (not listed in order of priority). In an ideal world, everything recommended here would be implemented. However, it must be understood that implementation will be subject to the availability of funds and other resources and the willingness/ability of community members and Plan Partners to take action. This Action Plan can be cited in grant applications to leverage needed implementation funds and used to guide and inspire action.

- Maintain and support the SHFSC and CPFSC to facilitate community wildfire preparedness and mitigation. This Plan encourages more collaboration between these two active local FSCs.
- Ensure that the SHFSC continues to be represented on the Humboldt County FSC.
- Community members should support their local fire department through activities such as volunteering as firefighters or auxiliary members, making donations, supporting fundraisers, writing grants, and/or helping with administrative tasks. With community support, local fire departments can continue to provide a wide variety of vital emergency services.
- The SHFSC and local fire department representatives should work with community members to further refine and integrate the lists of potential projects identified through the various fire planning processes discussed above and collaborate to prioritize and implement them (See the list included in the section above as well as projects illustrated on the Web GIS Portal). Consider starting with these key project categories:
 - Roadside Clearance and Road Maintenance - Coordinate with Humboldt County Public Works, Roads Division to identify priority areas where collaboration between the County and the local FSC will be possible.
 - Road and Address Signs - Many homes and driveways throughout this community lack adequate signs. Actions that might begin to address this issue are the following:
 - Obtain funding to purchase address signs for residents and educate the community about the importance of signage.
 - Obtain funding to purchase and post additional street/road names.
- Identify neighborhoods that would benefit from participation in the Firewise Communities/USA recognition program and assist them with the application process. This will include an annual update of Firewise action plans, which can be used as a short-term CWPP implementation tool. Actively implementing and maintaining the Firewise action plan on an annual basis will take small bites out of the CWPP which has a five to ten year planning horizon. Focus initial efforts on the following communities:
 - Briceland
 - Telegraph Ridge
 - Salmon Creek
 - Shelter Cove
- Share GIS data sets between local representatives and County staff to maintain the projects included in the County Web GIS Portal.

The SHFSC and local fire department representatives should work with the Humboldt County Office of Emergency Services to engage community members in evacuation preparedness. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

Figure IV.13-1 Southern Humboldt Planning Unit



CWPP Unit Map

Legend

- CWPP Planning Unit Boundary
- Emergency Response**
- Local Fire Station
- CAL Fire Station \ Camp
- Six Rivers Fire Station
- Hospital/Medical Center
- Red Cross
- Lookout, Lights, Radio
- Lighthouse
- School

- Local Fire Organization Response Area**
- District
- Out of District
- Non-Tax (Volunteer Fire Company (VFC))
- Proposed District Annexation Area (PDAA)
- Improved Parcels**
- Improved Parcel (not actual location of improvement)
- Commercial or Industrial Lot (not actual location)
- Airports**
- Landing Strip

- Highways and Roads**
- HWY 101
- State HWY
- HWY or Secondary Road
- Local Road or Street
- Hydrography**
- Major River or Stream
- Infrastructure**
- Gauging Station
- Water Tank or Source
- Historic Locations

- Land Ownership AGENCY**
- Bureau of Land Management
- National Park Service
- State Park or Other State Lands
- Six Rivers National Forest
- U.S. Fish and Wildlife Service
- Tribal Lands
- Private
- Industrial Timber
- Cities

Land ownership and infrastructure data has been compiled by The County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

This map is intended for planning purposes and should not be used for precise measurement or navigation.

Map compiled by County of Humboldt, March 2013.
 Online maps visit: <http://gis.co.humboldt.ca.us>
 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

October 23, 2017

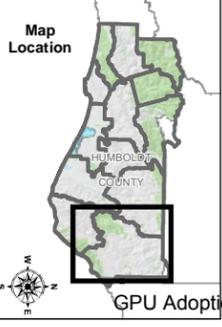
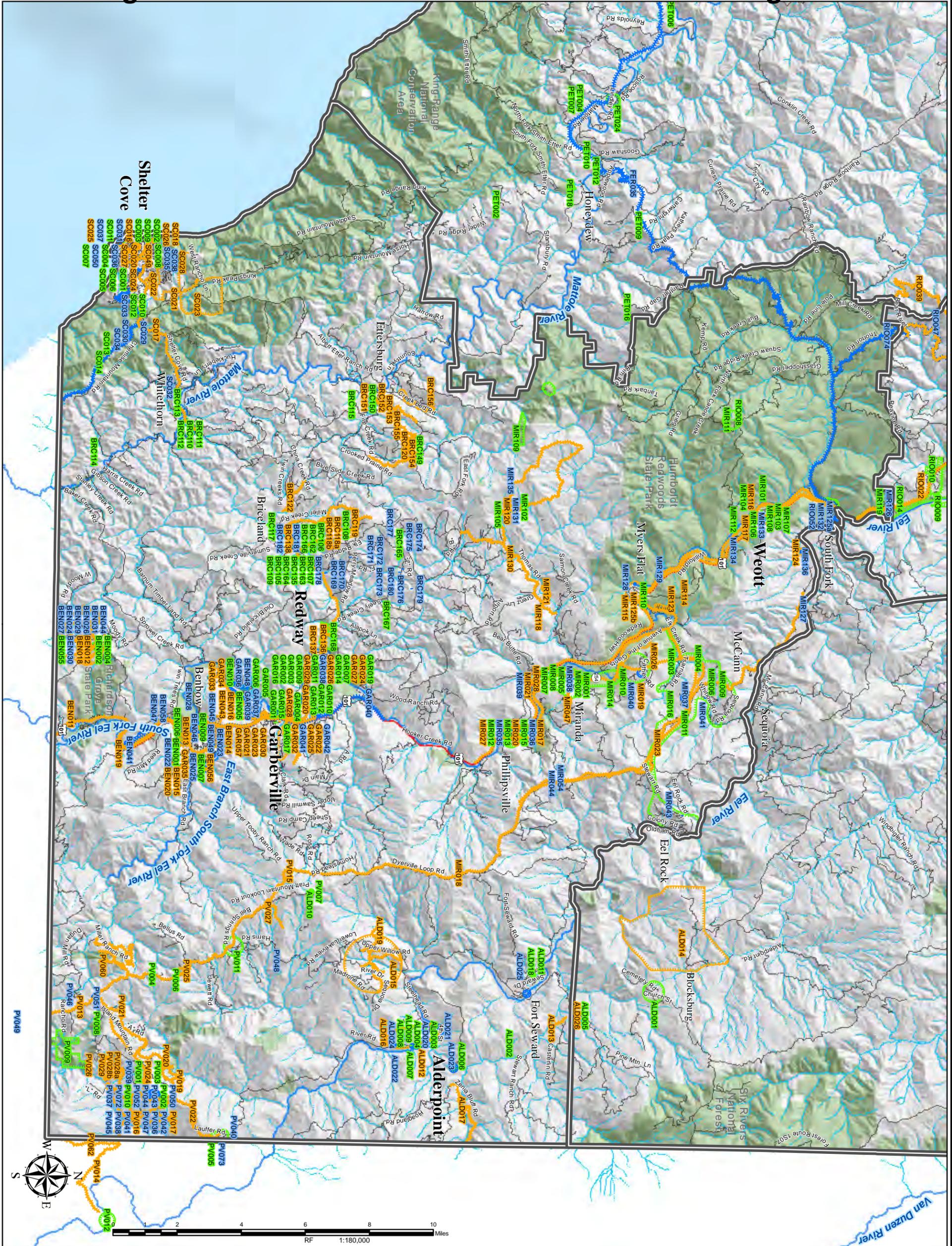


Figure IV.13-2 Southern Humboldt Planning Unit



CWPP - Community Identified Protection, Values/Assets, & Risks/Hazards

- | | | | |
|-------------------------------|-------------------|-----------------------|-----------------------|
| CWPP Planning Unit Boundary | Land Ownership | Highways and Roads | Hydrography |
| Community Identified Features | Parks/Public Land | HWY 101 | Major River or Stream |
| Protection/Evacuation | Cities | State HWY | Perennial Stream |
| Value/Asset | | HWY or Secondary Road | Intermittent Stream |
| Risk/Hazard | | Local Road or Street | |



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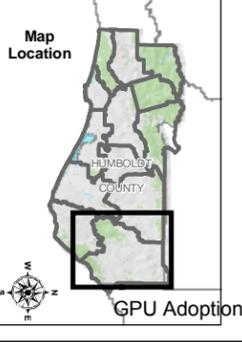
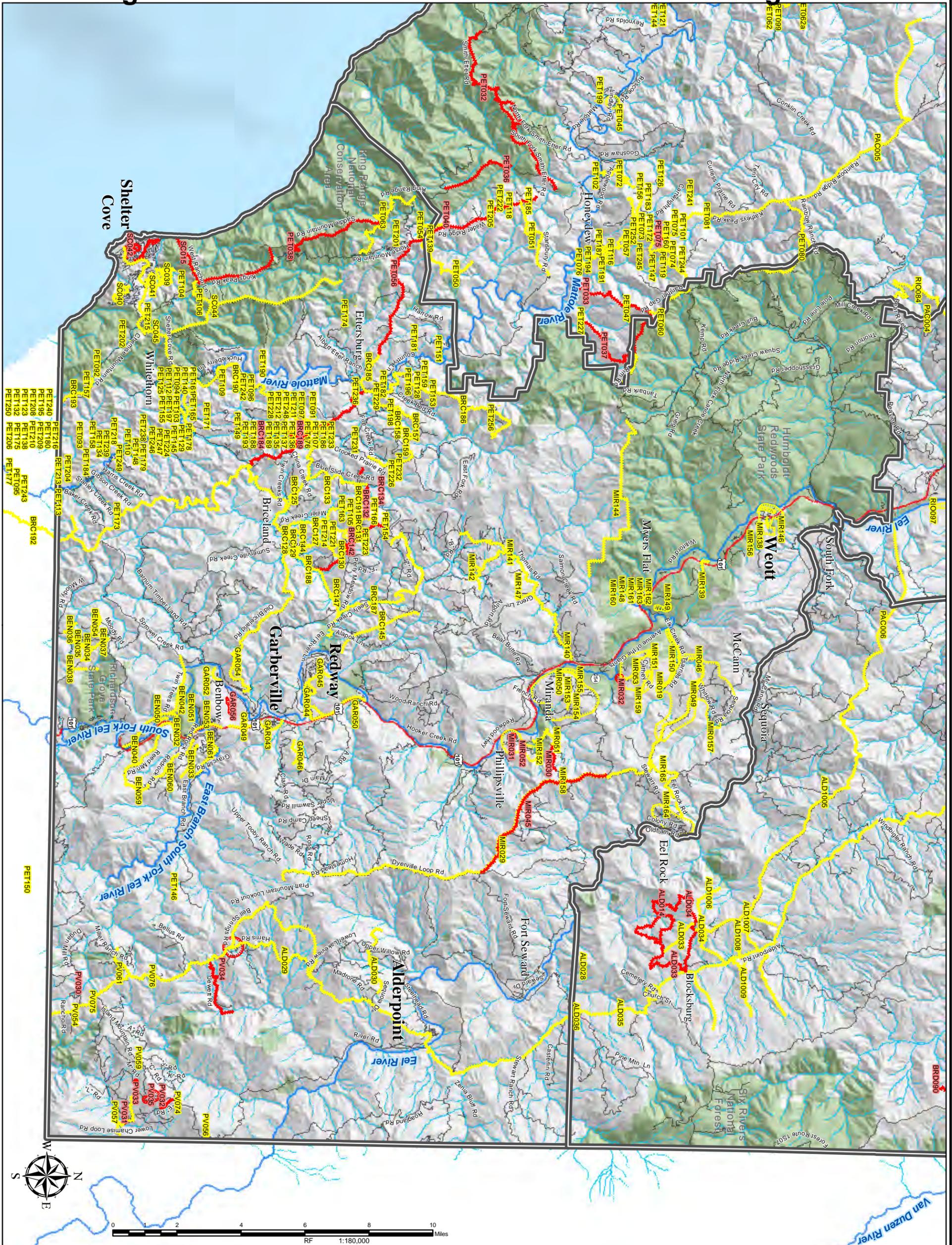
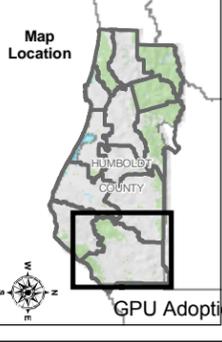


Figure IV.13-3 Southern Humboldt Planning Unit



CWPP - Community Identified Projects

- | Legend | | Land Ownership | Highways and Roads | Hydrography |
|--------|-----------------------------|----------------|--------------------|-------------|
| | CWPP Planning Unit Boundary | | | |
| | Proposed Project | | | |
| | Treated Project | | | |
| | | | | |
| | | | | |
| | | | | |



Land ownership and infrastructure data has been compiled by the County of Humboldt. Fire planning features identified at community workshops by residents; local, state, and federal fire service personnel; and Humboldt County staff. Other data sources were the 2006 Humboldt County Master Fire Protection Plan

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Map compiled by County of Humboldt, March 2013.
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 Contact: cimmit@co.humboldt.ca.us or jvondohlen@co.humboldt.ca.us

Part V. Fire-Safe Communities

Overview

This document is a guide written for you as Humboldt County residents, to use to fire-safe your homes and properties. The following chapters will show you what preventative actions can help make your home an asset during a wildfire, instead of a liability. You will also learn what steps need to be taken before, during, and after a wildfire to reduce the potential for loss of life and property. The recommendations made in these pages strive to strike a balance between fire safety and ecological health. It is important to consider ecological (and other) concerns to maximize the benefits of your fire-safety efforts and to avoid unintentionally creating one or more problems while fixing another. For this reason, conservation goals and principles are mentioned often when recommendations are being made for how to safely live with wildfire.

Chapter V.1 of this document addresses what you can do *From the House Out* to reduce your vulnerability to wildfire losses. Where fuels are abundant (including ignitable homes), a fire can burn very hot and move quickly. When little fuel is present, fires tend to slow down and burn cooler. Since cooler fires are easier to manage, reducing the amount, type, and arrangement of fuel in and around your home is your best defense against wildfire. **The content of this chapter will give you detailed information about how to manage the fuel that can be found in and around your home, the surrounding landscape, and beyond.**

Chapter V.2 provides a detailed discussion of CAL FIRE's *Ready, Set, Go!* program with recommendations for how to apply these program principles here in Humboldt County. When wildfire threatens our communities, there is often not much time to ensure the safety of your family and property. Furthermore, firefighters might have their hands full then, and therefore may be limited in their ability to assist you. For these reasons, **this chapter provides valuable information about how to prepare ahead of time and help firefighters be successful in defending your home. You will also find resources to help prepare your family for evacuation and to help you survive, should you become trapped by wildfire.**

Chapter V.3 focuses on what to do *After the Fire*. The after effects of a wildfire can pose safety threats to people as well as the natural environment. It is important to keep in mind the residual impacts that are possible, following a wildfire event. Impacts range from the dangers of damaged homes and falling snags, to ashy soil running into sensitive waterways, to invasive plant species taking hold where native plants have been destroyed. **This chapter contains advice for assessing the damage, developing a restoration plan, and prioritizing where you should start in your post-fire mitigation activities. There are also helpful tips on how to be better prepared the next time wildfire threatens.**

Chapter V.4 lists the *Legal Requirements* that all residents need to be aware of as we build our homes and work on our fire-safety tasks. There are local and state regulations required of us that are intended to protect against the negative impacts of wildfire, and to help firefighters succeed in their protection efforts. Additionally, most wildfire-mitigation activities—if they are “*ground disturbing*”—require compliance with environmental regulations in order to reduce impacts on the natural surroundings and biotic communities. **This chapter will help you better understand which regulations you need to be aware of as you move forward with your efforts to enhance your fire safety and preparedness.**

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V.1. From the House Out¹

Research and experience shows us that what you do to your house itself and the area directly adjacent to it will have the biggest impact on your home's ability to withstand a *wildfire*. Therefore, **this *Community Wildfire Protection Plan (CWPP)* promotes a strategy of preparation “from the house out.”**

Three factors are required for fire: *fuel*, oxygen, and heat; together they comprise what we call the fire triangle. If any one of these elements is missing, a fire won't start; or should it start, it won't spread. Fuel is the one element of the fire triangle that we can modify. For this reason, the general principle behind making an area “*fire-safe*” (making it as safe as possible for when a fire does pass through) is to reduce the amount of fuel that a fire could consume and to alter its arrangement and type. In other words, you do not want anything near your home that could ignite, burn, or spread fire. The fuels closest to a home—including the home itself—are often what make the difference between surviving a wildfire or not. Wildfire ignites homes through transferring heat in three ways:²

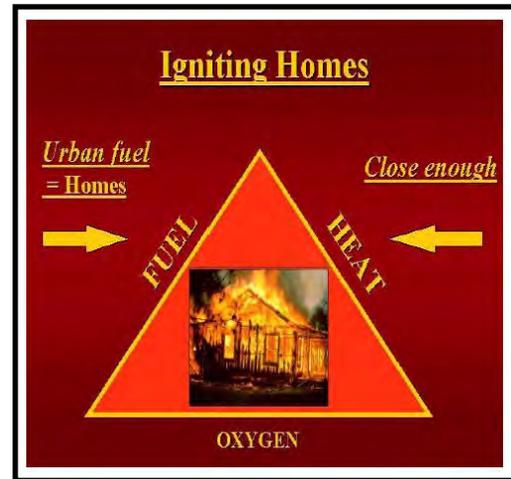


Figure V.1-1. Fuel Triangle

“In the context of wildland-urban fires, the homes are the fuel. The heat comes from burning materials adjacent to the home (e.g. vegetation, wood piles, and buildings) and firebrands (lofted burning embers) on the home. How close flames are to the home and whether or not firebrands contact the home determines how much heat the home receives.” *Source: Jack Cohen (2000), “Wildland-Urban Fire, A Different Approach.”*

Three Ways Your Home Can Be Exposed to Fire¹

Embers

These are glowing or burning pieces of vegetation or construction debris that are lofted during the wildfire. *Embers*, also known as *firebrands*, can move up to a mile ahead of a firestorm. These small embers or sparks may fall on the vegetation near your home; on dry leaves, needles, or twigs on your roof; on the roof and then subsequently concentrate within five feet of the house; or under your deck with subsequent *ignition* of vegetation or debris that could then ignite and burn down your house. If ignited from embers that come from outlying areas, a continuous sequence of vegetation can carry flames from your landscaping to your house. The concentration of embers that land on the roof and roll off of it makes the removal of all flammable material within five feet of the house critical.

Radiant Heat

This is the heat given off by burning materials that is transferred through the air to other materials or objects. *Radiant heat* from a fire near your house can heat the surface of *combustible* building materials to a point where *combustion* occurs. Radiation may also fracture large plate glass windows

Flame Impingement

This refers to the transfer of heat by direct flame exposure. Direct contact with fire flames will heat the combustible building materials of your home. Depending on the *exposure* (i.e., time and intensity) of the flame, materials can ignite or break. For example, in a high-intensity fire, your siding material could ignite or the glass in your windows could break.

¹ This document is based on the ongoing work of: Katelman, T. & ForEverGreen Forestry. (2012). Retrieved from www.forevergreenforestry.com.

² Nader, G., Nakamura, G., De Lasaux, M., Quarles, S. & Valachovic, Y. (2007). *Home Landscaping for Fire*. Regents of the University of California Division of Agriculture and Natural Resources (UCANR), Publication 8228. (p.3.) Retrieved from <http://anrcatalog.ucdavis.edu>. © 2007 Regents of the University of California. Used by permission.

Research shows that the cause for most homes igniting is usually not the fire front nor the wall of flames, but the presence of wind-carried embers or firebrands in combination with sufficient fuel to be ignited.

“Understanding how homes ignite during wildland-urban fires provides the basis for appropriately assessing the potential for home ignition and thereby effectively mitigating wildland-urban fire ignitions. Fires do not spread by flowing over the landscape, and high-intensity fires do not engulf objects, as do avalanches and tsunamis. All fires spread by meeting the requirements for combustion—that is, a sufficiency of fuel, heat, and oxygen. In the context of severe wildland-urban fires, oxygen is not a limiting factor so this type of fire spreads according to a sufficiency of fuel and heat. Homes are the fuel and the heat comes from the flames and/or firebrands of the surrounding fires.... Recent research ... indicates that the potential for home ignitions during wildfires including those of high intensity principally depends on a home’s *fuel characteristics* and the heat sources within 100-200 feet adjacent to a home (Cohen, 1995; Cohen 2000; Cohen and Butler, 1998). This relatively limited area that determines home ignition potential can be called the **home ignition zone**.”³

V.1.1 The Home Ignition Zone

The home and its immediate surroundings within 100-200 feet is referred to as the *Home Ignition Zone*; a concept introduced by Dr. Jack Cohen⁴ of the United States Forest Service (USFS) Rocky Mountain Research Station, a recognized leader in the science of how homes burn. The home’s resistance to ignition and, ultimately, its likelihood of survival during a wildfire event, is largely due to the condition of this zone. Dr. Cohen’s research of fires from the 1960s to the present reveals that more than 80% of homes with at least 30 feet of *defensible space* and a *fire-resistant* roof have survived wildfires.⁵ Dr. Cohen states:

“The results ... generally concur and indicate that the large flames of high-intensity fires do not ignite a home's wood exterior at distances greater than 100 feet. This is consistent with our understanding that local wildland fuel reduction can result in significant local fire intensity reduction. The research suggests that if the big flames are not igniting the destroyed homes then relatively low-intensity fires contacting or in near contact with a home's flammable materials and/or direct firebrand ignitions must be the ignition sources. Thus, a home's characteristics, its exterior materials and design, in relation to the immediate area around a home within 100 feet principally determine the home ignition potential. I call the home and its immediate surroundings the home ignition zone.”⁶

Dr. Cohen again, from a separate document:

“Because of time constraints, most preparation has to come before a wildfire occurs. Major changes to the home ignition zone (the home and its immediate surroundings) such as replacing a flammable roof and removal of vegetation ... cannot occur during the approach of a wildfire. Removal of firewood piles, dead leaves, conifer needles, dead grass, etc., from on and next to the home should also occur seasonally before severe fire conditions. The ignition potential of the home ignition zone largely influences the effectiveness of protection during a wildfire. Given low

³Cohen, J.D. (2000). Wildland-urban fire – a different approach. Fire Sciences Laboratory. Missoula, MT: USDA, Forest Service, Rocky Mountain Research Station. Retrieved from <http://www.firewise.org/~media/Firewise/Files/Pdfs/Research/CohenWildlandUrbanFireApproach.pdf>

⁴ National Fire Protection Association, Firewise Communities (Firewise Communities). (2012). The Jack Cohen files. Retrieved from <http://www.firewise.org/information/research-and-guidance/wui-home-ignition-research/the-jack-cohen-files.aspx>

⁵ Firewise Communities. (2008). Wildfire: Preventing home ignitions [video]. Retrieved from <http://www.firewise.org/information/video/for-the-general-public.aspx>

⁶ Cohen, J.D. (2003, June). Thoughts on the wildland-urban interface fire problem. *International Journal of Wildland Fire Science*. Retrieved from www.firewise.org/resources/files/WUI_HIR/ThoughtsOnWUI.pdf.

ignition potential and enough time, homeowners and/or wildland-urban suppression resources can make significant reductions in the little things that influence ignition potential before wildfire encroachment. Then, if possible, homeowners and/or wildland-urban firefighting resources can suppress small fires that threaten the structure during and after the wildfire approach.”⁷

Consequently, it’s the work done in the Home Ignition Zone to reduce *flammability* (i.e. the degree to which substances are likely to catch fire) that can make the difference between a wildfire disaster and successfully coexisting with wildfire.

“If homes are sufficiently resistant to ignition and do not ignite during the extreme wildfire exposure, then the homes survive without firefighter protection: we have an extreme wildfire but not a WUI⁸ fire disaster. Thus, WUI fire disasters principally depend on home ignition potential.”⁹

The concepts put forth by Dr. Cohen about the Home Ignition Zone are crucial for designing actions in and around your home to survive wildfire. Studies done after many large fires consistently conclude that homes built with *ignition-resistant* materials have a much higher fire survival rate than those that aren’t. Combining fire hardened building features with 100 feet of defensible space will dramatically improve the likelihood that your home will still be standing after a wildfire passes by—even if firefighters are unable to stay and actively protect it.

“Building loss and survival in the 1961 Bel Air fire, which destroyed 505 houses, was well documented. The report ‘Decision Analysis of Fire Protection Strategy for the Santa Monica Mountains’ found that 71% of the buildings with 26–50 feet of brush clearance survived the fire. However, the survival rate of buildings exposed to the fire increased to 95% for houses that had both brush clearance and ignition-resistant building construction (in this case non-wood roof covering). A similar pattern was seen on the 1990 Santa Barbara Paint fire...”¹⁰

Inspired by the findings of the research discussed above, the following sections focus on how you can harden your home to the impacts of wildfire and how to create the most effective defensible space.

Hardened Homes

“Fire hardened” means that your home is more secure from wildfire threats. **It does NOT mean fireproof, but rather that you have protected the weakest parts of your home’s vulnerabilities with proven building materials and/or techniques to resist some heat and flame along with the ember storm that accompanies large wildfires.** A common misconception is that buildings burn randomly during wildfire events—this is not the case. It is the most vulnerable homes, those built or retrofitted without consideration for fire-safe construction, that have the greatest likelihood of burning.

Part of learning to live with wildfire is cultivating an understanding that we have much control regarding how we address this vulnerability, and how we can prepare and manage for fire in our individual communities. *Hardened-home* features are mandatory for new construction, yet these suggested standards are also useful when remodeling or making improvements to your home to enhance its fire safety. Three priority considerations and target areas for hardening your home to wildfire are: the roof, the vents, and materials immediately surrounding the home.

Building Standards

The County of Humboldt adopts and enforces the most current state building regulations. As of 2011, the *wildland-urban interface* (WUI) standards relevant to fire-safe construction for all new structures in the *State Responsibility Area* (SRA) are the California Building Code, Chapter 7A (applied to commercial construction) and

⁷ Cohen, J.D. (2000). Wildland-Urban Fire—A Different Approach.

⁸ WUI = Wildland-Urban Interface

⁹ Cohen, J.D. (2008). The wildland-urban interface problem—A consequence of the fire exclusion paradigm. *Forest History Today, Fall 2008*: 22–23. Retrieved from www.foresthistory.org/Publications/FHT/FHTFall2008/Cohen.pdf.

¹⁰ Slaughter, Rodney (Ed.). (1996). *California’s I-Zone: urban/wildland fire prevention & mitigation*. (p. 120.) Sacramento, CA: Governor’s Office of Emergency Services.

the California Residential Code, Chapter 3, Section R327 (applied to residential construction).¹¹ These building standards are required by state law and are part of the California Building Standards to which all jurisdictions must adhere. The recommendations forming the basis of California's WUI Building Standards became law in 2003. Related work on the standards was completed and adopted by the California Building Standards Commission in 2007. *For the latest information on these Standards, see:*

www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php and the 2009 supplement:
www.fire.ca.gov/fire_prevention/downloads/ICC_2009_Ch7A_2007_rev_1Jan09_Supplement.pdf.

These standards are updated every three years and may change from time to time to keep pace with the latest products, research, and testing.¹² The WUI standards are designed to be used in conjunction with adequate defensible space; without both—defensible space and fire-safe construction or retrofit—your home is not hardened. Both require maintenance throughout the life of your home.

In addition, Section R313 of the California Residential Code requires all new dwellings, dwelling units, and one and two family townhomes to be equipped with an automatic fire sprinkler system.¹³ This system must comply with National Fire Protection Association standard 13D, as modified by the California State Fire Marshall.

To keep this CWPP current, code updates can be added to this section of future versions. The following information is current as of 2012. For more information on building standards, please see:

- **Humboldt County Building Division, Building Codes**
<http://www.co.humboldt.ca.us/planning/building/#codes>
- **California Wildland-Urban Interface Code, including Chapter 7A**
http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php
- **California WUI Building Standards, 2009 Supplement**
http://www.fire.ca.gov/fire_prevention/downloads/ICC_2009_Ch7A_2007_rev_1Jan09_Supplement.pdf
- **2010 California Fire Code, Title 24, Part 9, based on 2009 International Fire Code with California Amendments**
<http://publicecodes.citation.com/st/ca/st/b300v10/index.htm>
(The County of Humboldt has not adopted this code. However, several fire districts within the county have adopted the code and it is enforced within the jurisdictional boundaries of those agencies.)
- **Humboldt County Fire Safe Regulations**
http://co.humboldt.ca.us/planning/planning_library/fire_regs/firesafe.pdf or Appendix F
- **Humboldt County Fire Safe Regulation Checklist (Building Permit)**
http://co.humboldt.ca.us/planning/building/documents/sra_regulation_chklst.pdf or Appendix H.

Building Features and Ignition-Resistant Construction

The concept behind ignition-resistant is not that you are creating a fireproof bunker, but that you are hardening your home against the most likely threat—embers. This means that you can still build with many of the same materials you have used in the past. Now, however, you (or your contractor) will need to pay attention to small details like gaps between boards, vents with air holes where embers can enter, and places where embers can pile up and become glowing beds of coals. This is a detail issue as much as it is a big-picture issue.

Remember, you must also maintain your defensible space. Building design and construction, and *vegetation management* are equally vital variables in the defensible space equation. **Focus your fire-safe building and retrofits on these top three features: roofs, vents, and the materials immediately surrounding the home.**

¹¹ The most up-to-date versions of these codes can be viewed online at: County of Humboldt, Planning and Building Department. (n.d.). *Building Codes*. Building Inspection Division. Available at: www.co.humboldt.ca.us/planning/building/#codes.

¹² California Health and Safety Code, section 13108.5, (2011).

¹³ The full text on Automatic Fire Sprinkler Systems can be viewed online at: County of Humboldt, Planning and Building Department (n.d.). *Sprinkler Systems*. Building Inspection Division. Available at: www.co.humboldt.ca.us/planning/building/#forms.

Finally, be sure all fire-safe building products you use carry the State Fire Marshal’s approval. Unfortunately, there are people trying to take advantage of your fears of wildfire to sell inferior products that claim to meet these standards but do not. These products may not protect your home from wildfire.

The “Building Materials Listing Program” (available through the CAL FIRE website) provides an online listing service to help users identify which products have been approved by the State Fire Marshal to harden homes. ¹⁴. This tool is located at: http://osfm.fire.ca.gov/licensinglistings/licenseslisting_bml_searchcotest.php.

The following recommendations for particularly vulnerable features of your home are intended to provide some initial guidance and are based on current WUI building standards.

Roofs

The roof is the most vulnerable part of any home to wildfire since embers can land, lodge, and start fires in the nooks and crannies of roofs. Places where there are horizontal-to-vertical intersections on roofs, along dormers, for example, are particularly vulnerable spots, as ignitable debris can collect within these crevasses. Once a roof covering ignites, chances are that the rest of the home will follow. ¹⁵ If you have a shake roof, your house is more likely to burn down and ignite your neighbors’ homes. One of your first actions should be to replace a shake or wood-shingle roof. Humboldt County prohibits all wood roofs in Very High *Fire Hazard Severity Zones*.

Fire ratings for roofs describe their fire-resistance protection level, where Class A provides the highest level of protection and Class C provides the lowest level. All new roofs need to be Class A, which means they must meet certain requirements pertaining to fire-penetration resistance, surface-flame spread, and ember-generation potential. Some roof coverings obtain a stand-alone Class A rating, while others require an additional underlying material to enhance fire protection. Class A roofs are constructed of non-combustible coverings like tile, metal, or concrete with proper underlayment and sealing below. Roof tiles must always be completely sealed at their edges. Regularly clearing your roof of debris is an important fire-safe practice, no matter what the fire rating is.

Eaves

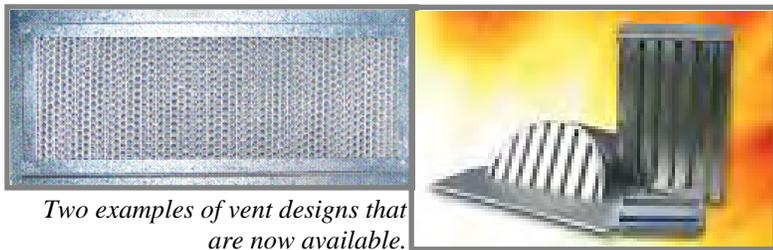
Embers can gather under open *eaves* and *soffits* and ignite exposed wood or other combustible material. Eaves should be “boxed” or enclosed. ¹⁶ If eaves cannot be enclosed, then residents should be extra vigilant about keeping all flammable materials at least 10 feet away from the home. Absolutely minimize any heat or flame that can work its way up a wall and get trapped under the eaves.

Vents

Vents are important housing features that allow air flow and let out moisture; however, vents are also points of vulnerability for home ignitions. Embers that enter through vents can reach attics or other concealed spaces and ignite combustible materials. Unscreened vents



Vents are vulnerable openings that must be protected in order to harden your home. This is a great retrofit opportunity. Source: Cal Chiefs Fire Prevention Officers WUI Workshop, Cliff Hunter/Rolland



Two examples of vent designs that are now available.

¹⁴ CAL FIRE, Office of the State Fire Marshal. (2007). *Building Materials Listing Program*. Retrieved from http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php

¹⁵ Firewise Communities. (2012). *Communities Compatible with Nature* [brochure]. Retrieved from www.firewise.org/information/brochures-and-booklets.aspx.

¹⁶ Firewise (2012). *Communities Compatible with Nature*.

are extremely hazardous and should be retrofitted immediately. The Building Code requires that vents be covered with a noncombustible wire-mesh screen. Keeping the areas underneath vents free of combustible vegetation and debris can help prevent ember-entry as well. There are several products coming onto the market that address this need and are very good candidates for your home. They combine a back-up system (such as baffles or honeycombs) in addition to the required screening. *See the Building Materials Listing Service mentioned above.*

Walls and Siding

Walls need to resist heat and flames as well as embers. Non-combustible material like stucco, concrete, and tile obviously resist flames but may not always resist heat and embers. Sidings made out of wood can be made less combustible when treated with an exterior *fire-retardant* chemical. Ensure that there is a sheet-rock barrier underneath the finishing material and that any gaps along the bottom or top edges have been sealed or caulked. Sealing cracks and gaps within walls and siding is important as these are vulnerability points for flame entry. Underlying sheathing can significantly improve fire resistance in sidings as well. Seriously consider replacing your charming wood-shingle siding with look-alike concrete products that will help save your home when wildfire rages.

Windows and Doors

Windows are vulnerable to heat because they will break. Many homes are lost when radiant heat or flames from burning vegetation shatter the window glass. Embers then fly into the home through the broken window and ignite the home from within—even when no other ignition has occurred. All windows should be double paned and have an outside panel of tempered glass. The tempering allows just enough extra heat resistivity to protect against moderate heat exposure. (Remember, you still have that defensible space outside the window.) Embers can enter gaps in doors, including garage doors, so have solid-closing doors made of non-combustible material or heavy, solid wood. If you have a pet door, be sure to have a way to completely close it to keep it from opening during a wildfire and allowing embers a pathway into your home.

Balconies and Decks

Embers can collect in or on surfaces or undersides of decks and balconies, ignite the material, and then enter the home through walls or windows. In addition, many people store materials underneath decks and balconies that create a ready nest of flammable stuff for embers to ignite. These are also locations where debris and dead vegetation can accumulate easily. Often, it is the stored materials and debris located under decks and balconies, rather than the construction materials that result in ignition. To harden a home's deck and balconies, or any cantilevered addition, enclose the projection all the way to the ground and keep it ember-resistant by sealing cracks and joints. It is also important to maintain these areas clear of debris and to resist the temptation to stack flammable items like firewood near them.

There are also many appropriate fire resistant building materials for decks and balconies for those living in high fire risk areas. Heavy wood decking, if protected by excellent defensible space, may be allowed, but a better choice might be fire-retardant treated wood (FRX) if you want a wood deck. Other naturally fire-resistant choices (not non-combustible) are available; consult the Building Materials Listing—Search Listing Services¹⁷ to see the latest products.

*Composite decking*¹⁸ manufacturers are developing fire-resistant products as well; ask your local building supplier if they carry products that are especially formulated for wildfire hazards. There are a growing number of products on the market designed for wildfire safety. The key to remember is that building or retrofitting with the right decking must be combined with good debris maintenance and keeping the area clear of flammable items.

¹⁷ CAL FIRE, Office of the State Fire Marshal. (2007). *Building Materials Listing—Search Listing Services*. Retrieved from http://osfm.fire.ca.gov/licensinglistings/licenselisting_bml_searchcotest.php

¹⁸ Deck boards manufactured from wood fiber and plastic to form a profile that requires less maintenance and generally has a longer lifespan than natural wood.

Retrofitting Your Home

While it is easier to construct a new home to a “fire-hardened” standard, it is also possible to dramatically improve an existing home’s resistance to wildfire. If you live in an older home, you should begin your fire hardening improvements with the home and then work your way out from there. All of the recommendations above apply to both new construction as well as retrofits. Retrofitting your home with ignition-resistant materials and rigorously maintaining your defensible space will give you significant built-in protection.

Resources

The following resources can assist you in creating a hardened home with effective defensible space:

Ready, Set, Go: Hardening Your Home, www.readyforwildfire.org/hardening_your_home

Builders Wildfire Mitigation Guide, <http://firecenter.berkeley.edu/bwmg/decks-1.html>

Home Survival in Wildfire Prone Areas: Building Materials and Design Considerations, <http://anrcatalog.ucdavis.edu/pdf/8393.pdf>

Safer from the Start: A Guide for Firewise-Friendly Development, <http://www.firewise.org/information/brochures-and-booklets.aspx>

Is Your Home Protected From Wildfire Disaster? A Homeowner’s Guide to Wildfire Retrofit is a bit dated but remains a great introductory resource.

<http://files.dnr.state.mn.us/assistance/backyard/firewise/isyourhomeprotected.pdf>

There are many great online resources for fire-safe construction, several from the University of California, Berkeley. Their **Homeowners Wildfire Mitigation Guide**¹⁹ has an easy-to-use format explaining the different areas of your home and what you can do to make each one fire safe. Their **Builders Wildfire Mitigation Guide**²⁰ has more information for those building or remodeling a home.

Creating Your Defensible Space

As stated above, homes ignite because of the little things—especially those items that are easily ignited by embers. This can happen even before the fire has arrived, or after it has passed. **There are many simple steps you can take to prepare the areas around your home for wildfire, in other words, to create your defensible space.** We focused above on what you can do to your home, the following sections will provide you some practical steps to prepare the area around the outside of your home for the eventuality of wildfire.

The California Department of Forestry and Fire Protection (CAL FIRE) defines defensible space as:

“...the buffer you create between a building on your property and the grass, trees, shrubs, or any wildland area that surround it. This space is needed to slow or stop the spread of wildfire and it protects your home from catching fire—either from direct flame contact or radiant heat. Defensible space is also important for the protection of firefighters defending your home.”²¹

Firefighters sometimes use the terms “winners” and “losers” (preferable terms are “defendable” and “not defendable”) to distinguish between those houses with defensible space versus those that do not have it. In a larger emergency situation (where many homes are threatened), homes without defensible space may get passed over in favor of protecting those with defensible space, which have a greater chance of survival and offer firefighters a safer environment. Firefighter safety is often more threatened in structure protection, i.e. homes and buildings, than in wildland situations. Homeowners should provide an inviting condition; after all, firefighters may be your friends, neighbors, or relatives. If it is too dangerous for firefighters to get in and out of an area, they are instructed not to risk their lives and equipment to save something that is not defensible.

¹⁹ University of California, Division of Agriculture and Natural Resources (UCANR). (2012.) *Homeowner’s Wildfire Mitigation Guide*. Retrieved from <http://ucanr.edu/sites/Wildfire/>

²⁰ UCANR. (n.d.) *Builders Wildfire Mitigation Guide*. Retrieved from <http://firecenter.berkeley.edu/bwmg/default.html>

²¹ CAL FIRE, Ready for Wildfire. (2012.) *Defensible Space*. Retrieved from http://www.readyforwildfire.org/defensible_space

Interface Fuels

Throughout the state, one of the greatest threats to home survival in wildfire events is the presence of *interface fuels*—meaning anything related to human development that is flammable. In other words, interface fuels include everything people have brought into the area that has the potential to burn—homes, belongings, ornamental vegetation, etc. It is this interface fuel that must be contended with to maintain effective defensible space.

Generally, interface fuels, also known as “*urban fuels*” in California, can be grouped into three categories:

1. Urban structures—Flammable structures of any kind: homes, businesses, schools, any and all outbuildings such as sheds, fences, gazebos, play structures, etc.

2. Landscaping—Flammable vegetation of any kind growing in the human environment. Includes all horticultural plantings and vegetation in the areas associated with human development without distinction between native or exotic, live or dead.

3. Urban "debris"—Anything else that is flammable and does not fall into the above two classes, such as wood piles, doormats, outdoor furniture, toys, tools, vehicles, the 2x4 that the outdoor faucet is attached to, etc. In other words, flammable materials of any kind stored in areas associated with human development.²²

The term “urban fuels,” (or in our case, “interface” fuels) is also used in California to describe all the ornamental plants we have added to the landscape. Even though it may look lush and inviting around homes, it is often that very vegetation that is the cause of home ignition during wildfire. It is possible to maintain some ornamental landscaping and be fire safe. However, this requires paying attention to horizontal and vertical separation of fuels,²³ especially separating any and all urban fuels from directly impacting your house.

Defensible Space and Fire-Resistant Landscaping Basics

We will explain how to create your defensible space in detail in the pages that follow in this chapter. Here is a summary of some of the basics to keep in mind.

- Provide a minimum of 100 ft. clearance of flammable materials around your home. Clearance does not mean dirt or gravel—it’s about *flammability*—remove things that are easily ignitable from this area. If you live on a hill, you should extend this up to 200 ft., depending upon the steepness of the *slope* and the presence of surrounding fuel.
- Landscape your defensible space with fire-resistant plants. While no plant is immune to fire, certain plants do exhibit traits that can slow or reduce the spread of fire. Most deciduous trees and shrubs are fire-resistant. Fire-resistant plants generally look green (not brown), healthy, and vibrant. In addition, they have:
 - Leaves that are moist and supple;
 - Little dead wood, and tend not to accumulate dry, dead material within the plant;
 - Sap that is water-like (versus thicker or stickier) and does not have a strong odor.²⁴
- Keep your gutters and roofs clean of vegetation and debris, especially redwood, Douglas-fir, and/or pine needles.
- Move all flammable materials (such as firewood or propane tanks) at least 30 ft. from homes or structures.
- Remember the other species that share the land. Leave a vegetation buffer around streams and other wildlife corridors.

²² Fotheringham, C.J. & Taylor, R., personal communication, March 2010.

²³ For more information on horizontal and vertical separation of fuels, please see Zone 2 text, in Section V.I.2 below.

²⁴ Fitzgerald, S. & Waldo, A.J. (2002, April). *Fire-Resistant Plants for Oregon Home Landscapes*. Redmond, OR: Oregon State University Extension Service. Retrieved from www.fs.fed.us/r6/centraloregon/local-resources/images/fires/pimpact-plant.pdf.

Note: Defensible space and clearing does not mean that you denude or clearcut your property. Rather, your goal is to remove the most flammable materials. Balance your fire-safety actions with general *ecosystem* health. Don't disturb the ground around streams or you will cause *erosion* that will harm fish. If you have the good fortune to live along a stream or river with fish in it, make sure you stay at least 100 ft. away from the stream or outside of the Streamside Management Area (SMA) in your clearing activities. It's okay to remove some dead vegetation there (like *pruning* in your garden). However, don't take out live vegetation—especially trees—near streams or rivers. Always maintain a dense shade canopy for the fish. Finally, many species of wildlife—such as bear, fox, bobcat, songbirds, and others—use streams as corridors in which to move from one area to another. Leave them some cover to be able to do this without disturbing you, or vice versa. If you feel that more intensive treatment is necessary near a stream (which may be the case in some instances), contact the Humboldt County Planning and Building Department to determine if a Special Permit is required for work within the Streamside Management Area. County Planning and Building may be reached by calling (707)-445-7541, or visiting www.co.humboldt.ca.us/planning/. See section V.4.2 for more information on SMAs.

Spend a few hours reviewing your home and property with the *Home Risk Assessment* tool (See Appendix E). Identify where you are safe and what other steps you need to take to protect your home and family. You can get help with identifying fire safety and defensible-space issues around your home. Contact your local *fire safe council* (FSC), fire department, or other fire agencies for more information on defensible space:

- **Humboldt County Fire Safe Council** (HCFSC): (707) 268-3736, cimmitt@co.humboldt.ca.us, or www.co.humboldt.ca.us/natural-resources/fire_safe_council/
- Contact information for **local fire safe councils** can be found in the Community Preparedness section of Part II. Risk Assessment, or in the Planning Unit Action Plan in Part IV for the area they serve.
- Contact information for **local fire departments** can be found in the Planning Unit Action Plan in Part IV for the area they serve or in the Annual Report posted each year on the HCFSC website: http://www.co.humboldt.ca.us/natural-resources/fire_safe_council/fireserviceannualreport.aspx
- **California Dept. of Forestry and Fire Protection** (CAL FIRE): Mark Rodgers, 707-726-1206
- **US Forest Service**: Robert Rivelle, 707-441-3604
- **US Bureau of Land Management** (BLM): Tim Jones, 707-825-2306

V.1.2 Fuel Reduction Zones for Your Property

Cohen's Home Ignition Zone²⁵ can be divided into three sub-zones. The zone concept can help you break up your property to develop the appropriate treatment for each area. The concept of *fuel reduction* zones around your home is now common. Several organizations have developed their own set of literature on fuel reduction zones, including:

- California Fire Safe Council, *A Homeowner's Guide to Fire-Safe Landscaping*: www.firesafecouncil.org/education/attachments/landscapingbrushland.pdf
- Firewise, *Communities Compatible with Nature*: www.firewise.org/~media/Firewise/Files/Pdfs/Booklets%20and%20Brochures/BrochureCommunitiesCompatibleNature.pdf
- California Board of Forestry, *General Guidelines for Creating Defensible Space*: www.fire.ca.gov/CDFBOFDB/pdfs/Copyof4291finalguidelines9_29_06.pdf
- CAL FIRE's "Ready, Set, Go!" Program, *Wildfire is Coming- Is Your Home Ready?*: http://www.readyforwildfire.org/docs/files/CALFIRE_Ready_Brochure.pdf

²⁵ See Section V.1.1 above for more information on the Home Ignition Zone.

- University of California Division of Agriculture and Natural Resources, *Home Landscaping for Fire* at: http://firecenter.berkeley.edu/docs/CE_homelandscaping.pdf

These various classifications all follow the same basic concept of increasing the intensity of your fuel-reduction efforts the closer you work to your home or other buildings. The following zones are used in this CWPP:

Zone 1: The Lean, Clean, and Green Zone (Sometime referred to as the Structure Protection Zone or the Home Defense Zone) extends from your home out to thirty feet. Within this, we like to refer to your house and the first five feet surrounding it as the **Fire-Free Zone**, which should be made of concrete, gravel, sand, or rock, or some other non-flammable surface. It can include irrigated plants if they are low-growing, well-watered, and not touching your house. Remove any and all flammable materials in this zone, especially during *fire season*. The most important objectives of this zone are homesite protection and thorough fuel reduction. The main focus of the **Lean, Clean, and Green Zone** is to keep all vegetation healthy and green. The objective in this zone is to keep all flammable fuels away from your home to facilitate fire protection. The idea is to reduce or remove any and all fuels that could threaten your home such as dry vegetation, clutter, and debris.

Zone 2: The Reduced Fuel Zone (Sometime referred to as the Defensible Space Zone) extends 30 to 100 feet or to the property line, whichever is greater. In this zone you will encounter more wildland characteristics and will need to begin to balance your fire safety and conservation goals. Both fuel reduction and ecosystem health are objectives here. In this zone, efforts need to be made to break up the vertical and horizontal spacing between plants and eliminate *fire ladders* – which are the continuous line of vegetation from the ground into the upper branches of trees. The objective is to minimize the chance of fire jumping from plant to plant by removing, separating, and/or *thinning* the vegetation.

Zone 3: The Wildland Fuel Reduction Zone is the last zone, extending from the Defensible Space Zone out an additional 100 to 200 feet or farther. This is the zone where you will carry out wildland fuel-treatment prescriptions. The objective here is to aid in the health and productivity of your wildland while conserving natural values. Within this zone, restoration work can be coupled with fuel reduction efforts for the long-term health, resiliency, safety, and productivity of the more remote areas of your property.

Zone 1: Lean, Clean, and Green Zone

Once you have your home hardened, you can start moving outward from the structure. Within the Lean, Clean and Green Zone, we call the first five feet the **Fire-Free Zone**. This is the area immediately surrounding your house. Remember that embers landing on your roof will fall into this zone. Ground cover should be gravel, sand, rock, or some other non-flammable surface. It can include irrigated plants if they are low growing, well watered, and not touching your house.

The true test of whether your home is adequately hardened and your Fire-Free Zone sufficiently prepared is to imagine someone coming over on a hot, windy day with a box of wooden matches. If this person were to walk around your house lighting and tossing matches at or near the structure, is there anything at all that might ignite (i.e. catch fire)? If not, congratulations, you've passed. If there is anything that could ignite, you need to begin your fire-safety efforts there, to ensure that this zone is truly fire free.

Another approach is to think about your home in terms of flammability. When you start a campfire or a fire in your woodstove, small pieces of wood and paper are required to ignite split wood, then the bigger logs. The same is true for your home. Anything around your home that will ignite easily can and will threaten the larger structure. It can serve as “kindling” for your house in the event of a fire. Start your fuel-reduction efforts by removing any of this “kindling” around your house, especially any dead or dying vegetation. Once you do this, you may begin to see the area differently. You are beginning to gain a fire-safe perspective of your property. You may be surprised at what you begin to notice.

The following *Best Management Practices* summarize specific steps you can take to create your Fire-Free Zone.²⁶

Zone 1: Fire-Free Zone Best Management Practices

- Use gravel, sand, rock, or other non-flammable surface wherever possible.
- Only use non-flammable *mulches* (e.g. not redwood bark or straw).
- Ensure that all plants in this zone are low growing, well watered, and not flammable.
- Remove all dead and dying vegetation; prune dead material frequently on any vegetation in this zone.
- Remove overhanging dead branches in proximity to your roof.
- Prune trees at least 10 feet away from structures and chimneys; ensure that they are free of any dead wood.
- Clean all dead leaves from your roof and rain gutters.
- Plants can be in pots, as long as they are moved away during extreme fire conditions.
- Remove all flammable materials, including baskets, pinecones, brooms, furniture, hanging plants, etc.
- Make sure your decks, porches, and landings are free of clutter, and that anything remaining can be quickly and easily moved into your house or garage, or at least 30 feet from all structures.
- Review your home and this area using the kindling concept described above. Look for anything that would catch fire if an ember landed on it and was left alone to smolder.

The remainder of the Lean, Clean, and Green Zone—from five feet to 30 feet—should be maintained so that it will not support the spread of fire to your home. Keep any vegetation here healthy and green, using fire-resistant plants, while conserving precious water resources. Keep any flammable items well separated from each other. Think of fuel separation both horizontally and vertically. Vertically, you don't want plants or grass on the ground to be connected to shrubs, and then those to higher trees, decks, or your roof. Horizontally, think about fences connected to houses that are then touching shrubs and/or trees further out, which could facilitate a path for fire to travel to your house (or vice versa); or a deck that is next to branches of shrubs or trees. Remember that your house is a major fuel source itself.

In Humboldt County, residents are required:

“To reduce the intensity of wildfire by reducing the volume and density of flammable vegetation, . . . all parcels one (1) acre and larger shall provide a minimum 30 foot setback for buildings and accessory buildings from all property lines and/or the center of a road, except as provided herein.”²⁷

Parcels under one acre in size that cannot meet the 30-foot Fire Safe setback requirement can apply for a “SRA Small Parcel Setback Exception,” to have that area reduced. To qualify, you must meet the WUI Building Standards, other requirements may also be asked of you, depending on how much the setback is reduced. You can find the Setback Exemption application on the County's website at:

http://co.humboldt.ca.us/planning/building/documents/sra_exception_forms.pdf.

²⁶ Best Management Practices throughout this chapter are taken from the following sources:

ForEverGreen Forestry. (n.d.) Retrieved from www.forevergreenforestry.com; University of California Cooperative Extension (UCCE). (n.d.) *Sustainable and Fire: Safe Landscapes*. Retrieved from <http://ucanr.edu/sites/SAFELandscapes/>; UCCE. (n.d.) *Master Gardeners of San Mateo and San Francisco Counties*. Retrieved from <http://ucanr.org/sites/MGsSMSE>; CAL FIRE, Ready for Wildfire. (2012).; CAL FIRE. (2012). *Fire Safety Education*. Retrieved from http://calfire.ca.gov/communications/communications_firesafety.php; Firewise Communities. (2012). *Communities Compatible with Nature*.

²⁷ See Appendix F: County Fire Safe Regulations, or: County of Humboldt, Planning and Building Department. (n.d.). *Fire Safe Regulations*. Building Inspection Division. Retrieved from <http://www.co.humboldt.ca.us/planning/building/>; SRA Exemption Request Forms are also available at this website.

Zone 1: Lean, Clean, and Green Zone Best Management Practices

- Separate all fuels (anything that can ignite and burn) both horizontally and vertically from each other and from your home. Create this separation between trees, shrubs, and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.
- Keep lawn chairs, umbrellas, and other canvas furniture a safe distance from structures. These can be easily ignited from sparks.
- Trim trees regularly to keep branches a minimum of 10 feet from other trees. Keep canopies of large trees separated by 10 to 30 feet depending on the slope (the steeper the slope, the more space is needed).
- Remove or prune flammable plants and shrubs near windows.
- Clear all vegetation and other combustible or flammable materials from around and under deck areas.
- Remove all climbing or vining plants that connect your home to anything flammable.
- Prune, trim, or remove highly flammable species such as eucalyptus within 50 feet of any structure. Replace with less-flammable native species such as oak and maple.
- Pull weeds or weed-whip/weed-whack weeds before seed heads mature to reduce fire hazard and the spread of *invasive plants*.
- Utilize primarily low-growing plant material, less than 4 feet in height, with the exception of trees. Plants should have low fuels and be fire-resistant.
- Cut or mow annual grass down to a maximum height of 4 inches.
- Keep vegetation watered and free of dead material.
- Irrigate to maintain high *moisture content* in plants, but do not over-water. Prevent irrigation from flowing out of this area (except under extreme drought conditions); this is to avoid encouraging plant growth in the Reduced Fuel Zone (see below).
- Remove all debris (*slash*) from fuel-reduction efforts.
- Enclose underside of elevated decks with fire-resistant materials.
- Ensure that structures such as fences are made of noncombustible or *1-hour* fire-rated materials.
- Call your local utility company for a yearly inspection if utility lines touch any trees on your property.
- Remove or separate wood decks, fences, and other flammable structures and materials wherever possible.
- Stack wood at least 30 feet from structures; remove flammable vegetation within 10 feet of any woodpile.
- Remove all stacks of construction materials, needles, leaves, and debris.
- Locate fixed butane, propane, and/or diesel tanks at least 30 feet from any structure and with at least 30 feet of clearance from any flammable materials.
- Provide a minimum of 3 feet of clearance around all fire hydrants.
- Ensure that all your fuel-reduction efforts are done safely and never cause a fire. For example, do not use metal blades during dry weather, as they can spark on rocks and ignite nearby vegetation.
- Maintain this zone free of flammable materials throughout the year.

Figure V.1-2. Fire-Resistant Plant Characteristics²⁸

Remember, any plant can burn under the right conditions. For all plants, make sure to trim back and remove any dead vegetation and *litter*. When choosing species to plant or keep when performing *fuel modification*, look for plants with fire-resistant characteristics:

- Able to store water in leaves and stems
- Produce limited dead and fine material
- Extensive, deep root systems for controlling erosion
- Maintain high moisture content with limited watering
- Low-growing or prostrate form
- Open loose branches with a low volume of total vegetation
- Low levels of volatile oils or resins
- Ability to re-sprout after a fire
- Slow growing with little maintenance needed
- Not considered invasive

The moisture content of plants is important because high levels of plant moisture can lower fire risk and act as a heat sink, reducing the intensity and spread of fire.

Characteristics of Flammable Plants

Consider removing plants from your property and avoid purchasing new plants that tend to retain large amounts of dead material within the plant, produce a large volume of litter, and contain volatile substances such as oils, resins, wax, or pitch.

See www.bewaterwise.com/fire.html for fire-resistant and drought-resistant California plants.

Zone 2: Reduced-Fuel Zone

The Reduced-Fuel Zone extends from your home out to a distance of approximately 100 feet. **In many suburban and exurban settings this zone extends onto neighboring properties and may include nearby homes, so cooperation with neighbors is essential.** In this zone you will encounter more wildland characteristics and will need to begin to balance your fire safety and conservation goals. See the before and after photo below illustrating management in the Reduced-Fuel Zone.



²⁸ UCANR. (2009, March). *Making Your Property Fire-Safe* [Fact sheet]. Los Angeles County: UCCE. Retrieved from <http://groups.ucanr.org/SAFE/files/72154.pdf> © 2007 Regents of the University of California. Used by permission.

Figure V.1-3. CAL FIRE Minimum Vertical Clearance



good example of this is seen with decks on steep slopes, where the edge of the deck is next to the crowns or tops of the trees (forest canopy). If a fire started either at the house or in the forest, it would have a continuous line of fuel to spread from one to the other via the deck. (See “Hardened Homes” above, regarding fire-safe construction for information about how to mitigate this hazardous situation).

The CAL FIRE graphics in Figures V.1-3 and V.1-4 on this page illustrate the concepts of vertical and horizontal separation of fuels.²⁹

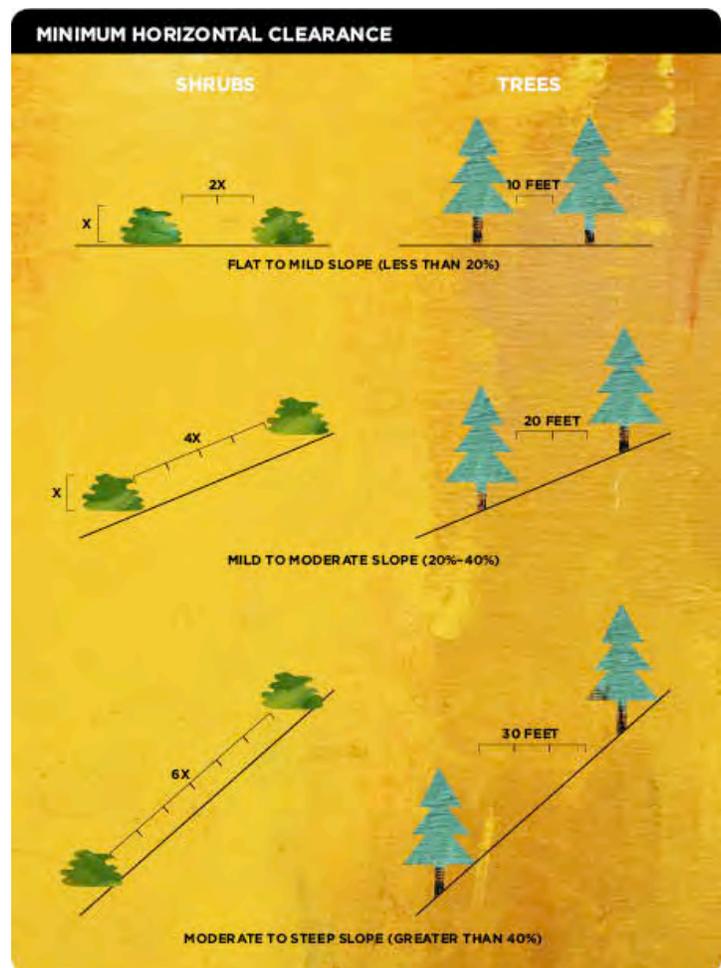
An example of a fuel ladder (or vertical continuity) in a forest or woodland setting is grass and/or brush on the ground climbing, or leading into smaller trees, especially via dead limbs, reaching up into the canopy of taller or dominant trees. With this continuous fuel ladder into the canopy, it is easier for fire to climb into trees and spread quickly. Hence, it is especially important near buildings and along roads to reduce and remove fuel ladders. The same is true for non-forested landscapes; the main difference is the height of different vegetation layers.

To reduce forest-type ladder fuels, start in the wildlands within 100 ft. of your home, and along your roads. Remove brush on the ground (but don’t scrape it clean as this could cause erosion problems when it rains). Removing ground fuels does not mean removing everything growing on the ground. Rather, you can leave clumps of vegetation. The objective is to leave vertical and horizontal space between fuels (in this case, plants).

To achieve ideal vertical spacing, *limb up* or prune young trees (remove the lower limbs to create

Much of what you need to do comes down to common sense and an awareness of your physical surroundings. An important concept to understand is that of *fuel ladders*—the continuous line of vegetation from the ground into the *canopy* (or upper branches) of trees. The concept of *fuel continuity* is similar and includes both vertical and horizontal directions. Vertical continuity is the fuel ladder concept; horizontal fuel continuity thus means a continuous horizontal line of fuel (usually on the ground). In the latter case, the fuel extends from something—like your house—continuously out into the wildland. A

Figure V.1-4. CAL FIRE Minimum Horizontal Clearance



²⁹ CAL FIRE, Ready for Wildfire. (2012). *Defensible Space*.

open space between the tree canopy and ground) to a minimum of 6- to 10-feet aboveground. If you leave clumps of shrubs, create at least three times the shrub height in space before the bottom branches of the trees. For example, if you have a 3-ft.-high bush, leave 9 ft. of open, clear space (no vegetation) below the bottom branches of the nearby trees, (see Figure V.1-3). To reduce the chance of shock, young, short trees should be pruned higher incrementally. A rule of thumb when limbing trees is to leave at least one-half to two-thirds of the tree’s height in live canopy so you don’t harm its ability to grow. You can remove more later—do it in stages so the tree has a chance to adapt.

Horizontal spacing is also important to slow the spread of a fire. Figure V.1-5³⁰ below (and the figures on the previous page) show how much space you need to have between your trees in your defensible-space area. Note: The clearance suggested in this table is appropriate for the smaller Lean, Clean, and Green Zone, (i.e. within 100 ft. of structures or roads). However, it is often too much canopy opening for wildland areas. This is because the opening in the vegetation will likely increase the amount of sun on the ground and encourage more shrub and herbaceous *understory* growth, increasing these fuels.

In some places it is enough to only *brush* (clearing or “cleaning up”) an area. *Brushing* entails removing brush alongside a road or structure to keep the ground relatively open. Removal of all *dead plant matter*—shrubs, branches, etc.—is especially important. The idea is to remove anything that is particularly flammable from anywhere near an *ignition source*, such as you, your kids, your car, or your house. When brushing or removing fuel ladders, focus on the fine or *flashy fuels* such as small sticks as these can ignite quickly. If you remove this “kindling” around your larger fuel sources (e.g. large trees, your home, other structures), chances are much greater that those fuels will not ignite. In the forest, make sure there are not concentrations of small sticks or brush against tree trunks.

Figure V.1-5. Plant Spacing Guidelines for Structural Protection and Defensible Space Zones

Plant Spacing Guidelines		
Guidelines are designed to break the continuity of fuels and be used as a “rule of thumb” for achieving compliance with Regulation 14 CCR 1299.		
Trees	Minimum horizontal space from edge of one tree canopy to the edge of the next	
	Slope	Spacing
	0% to 20 %	10 feet
	20% to 40%	20 feet
	Greater than 40%	30 feet
Shrubs	Minimum horizontal space between edges of shrub	
	Slope	Spacing
	0% to 20 %	2 times the height of the shrub
	20% to 40%	4 times the height of the shrub
	Greater than 40%	6 times the height of the shrub
Vertical Space	Minimum vertical space between top of shrub and bottom of lower tree branches: 3 times the height of the shrub	

³⁰ CAL FIRE, State Board of Forestry and Fire Protection. (2006). *General Guidelines for Creating Defensible Space*. Retrieved from http://calfire.ca.gov/cdfbofdb/pdfs/4291finalguidelines2_23_06.pdf

Zone 2: Reduced-Fuel Zone Best Management Practices

- Start by measuring how far 100 feet actually is from your home, so you have a clear concept of where you need to work, and where not. It isn't as far as many people think. Remember that on a slope you will have to figure out how far to go to get a 100-foot horizontal distance from your structure. The steeper the slope and the greater the amount of fuels below your structure, the greater this distance will be. Your local fire department can help you determine what is necessary. You are not responsible or authorized to work beyond your property line unless provided permission by the other landowner.
- Continue to separate fuels in this zone both horizontally and vertically, and “*feather out*” your treatments as you go, meaning less treatment the further you get from your house.
- Choose landscaping plants that are drought-tolerant and fire-resistant.
- Leave a buffer of less-treated vegetation around *sensitive habitats*. This will help maintain the normal conditions within the sensitive habitat and make it more useful to wildlife.
- Cut or mow annual grass down to a maximum height of four inches.
- Keep shrubs low (18 inches or less in height) and widely spaced (The spacing depends on the slope of the property, see Figure V.3. CAL FIRE Minimum Horizontal Clearance graphic above).
- Space trees to allow a minimum of 30 feet between canopies at maturity. Thin and trim trees to maintain adequate spacing from other trees (spacing will also depend on slope).
- Remove lower limbs within a minimum of six-to-ten feet off the ground, or prune lower branches to one-third the height of the tree (use the latter measure if the tree is less than 18 feet tall).
- Selectively thin and prune native or naturalized vegetation to preserve the natural appearance of the area while reducing the amount of flammable vegetation. Regularly remove dead branches, leaves, and related materials.
- To help prevent future *erosion* on steep slopes, balance clearance versus erosion control. Thin shrubs to reduce fuel volume. Don't excavate, remove, or disturb existing plant root systems.
- Inspect vegetation regularly and maintain it periodically. Maintain single trees, ornamental shrubbery, and ground covers to ensure they do not readily transmit fire from the surrounding vegetation to your structures.
- Provide clearance of minimum 100-feet upslope from structures located mid-slope.
- Remove only dead materials in *riparian* (wet) areas. (These will likely be Streamside Management Areas, see Section V.4.2. Environmental Protection Compliance, below for more information.) Consult a resource professional and or the Humboldt County Planning and Building Departments before disturbing any soil in these sensitive areas.
- Don't irrigate here except under extreme drought conditions that threaten your perennial vegetation, as irrigation encourages further vegetative growth, often of flashy fuels.
- Remove all debris and trimmings from the site. Chip native vegetation on-site up to a maximum depth of six inches to help prevent erosion, retain soil moisture, and reduce material going to landfills. Rake chips away from base of trees and shrubs out to the *drip line* of these plants to prevent root rot or rot at the base of the plants. Do not allow chips to accumulate on or underneath any groundcover.
- Remove all stacks of combustible materials.
- Provide a minimum of three feet of clearance around all fire hydrants.
- Keep fire access roads clear to sky.

Figures V.1-6³¹ and V.1-7³² below demonstrate how to properly prune your trees and other plants. Figure V.1-2 in the section above (Zone 1: Lean, Clean, and Green Zone) describes characteristics of fire-resistant plants.

Figure V.1-6. Pruning for Healthy Plants

Pruning for Healthy Plants

Most plants will benefit from occasional corrective pruning, and all will benefit from the removal of dead wood. Time the pruning of individual plants over several years to allow them to recover. Try pruning about a third of your plants in a given year, so that all are pruned at the end of three years.

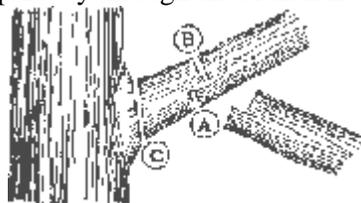
Regularly remove dead material and branches from trees and shrubs. For deciduous trees and shrubs, prune before they lose their leaves, when it is easier to see the dead branches.

Hand-prune inside branches to reduce flush of growth. Hedging and shearing alone result in weak, fast growth and more fuel.

Figure V.1-7. Proper Pruning Techniques

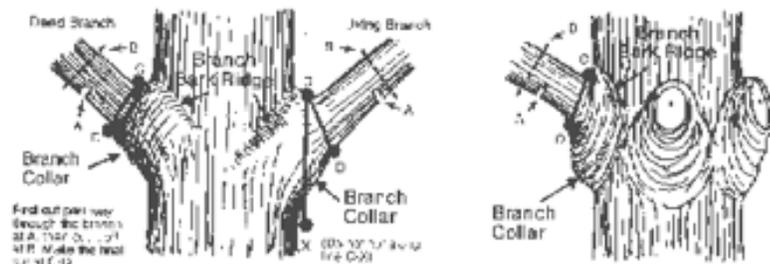
Prune correctly. The object of the operation is to remove the branches as close to the tree stem as possible without leaving any stubs.

A. Cut partway through the branch from beneath at a point one or two inches from the trunk.



B. Make a second cut on the top of the branch, at a distance of 1/3 to 1/2 the diameter of the limb from the first cut. This should allow the length of the limb to fall from its own weight and be safely removed.

C. Complete the job by making a final cut next to the trunk, just outside the branch collar, with the lower edge farther away from the trunk than at the top.



Using the illustrations above, final cuts should be made from points C to D. Do not cut along C–X, which is an imaginary vertical line to help you locate C–D. First cut partway through the branch at A, then cut it off at B. Make the final cut at C–D.

³¹ UCANR. (2009, March). *Making Your Property Fire-Safe* [Fact sheet]. Los Angeles County: UCCE. Retrieved from <http://groups.ucanr.org/SAFE/files/72154.pdf> © 2007 Regents of the University of California. Used by permission.

³² California Forest Stewardship Program. (2002). Prune trees for better health and higher value. *Forestland Steward Newsletter*, Winter 2002. Retrieved from <http://ceres.ca.gov/foreststeward/pdf/newsletter21.pdf>

Zone 3: Wildland-Interface Zone

Finally, the Wildland-Interface Zone (or the Wildland Fuel-Reduction Zone) extends from your house out to 200 feet, or (under special circumstances) even further—an exception being on very steep ground where Zone 2 extends beyond 200 ft. This is the zone where you will carry out wildland fuel-treatment prescriptions. The objective here is to reduce fire intensity to the point where firefighters can safely work next to the home to protect a structure from ember ignition.

Fuel treatment prescriptions in this zone can be designed to function within a range of conditions. A key concept to consider is that under a worst-case scenario (triple-digit temperatures, single-digit *relative humidities*, and high winds on steep terrain), the effects of a *fuelbreak* (i.e. a break in the fuels, or barrier, intended to stop or check a spreading fire) will likely be minimized, especially if the prescription was less than extreme. However, there is a very low likelihood of extreme fire conditions existing on the day that your fuelbreak in particular gets tested.

The Wildland Interface Zone can be treated similarly to roadside *shaded fuelbreaks* as well as more amorphously shaped units on the landscape. *For more detailed explanations of prescriptions, fuelbreaks, and slash disposal, please see the section Fuel-Reduction Treatment Methods below.*

For any *treatments* that extend beyond your Home Ignition Zone into the native landscape, you will need to ensure that you are meeting all *environmental compliance* regulations (*see Section V.4.2 Environmental Protection Compliance for more details*). Generally, but not always, if you are following conservation principles and the best management practices in this CWPP, your actions will be consistent with these regulations. However, you will likely still need to complete the required documentation before beginning any fuel-management actions.

Balancing Fire Safety with Ecosystem Health³³

A healthy forest is *resilient* to fire, as well as other potentially negative impacts such as *pathogens*. An important distinction to consider is that resilience does mean immunity; *disturbance* is natural and necessary in any ecosystem. The key concept is balance, both within the ecosystem itself and between the ecosystem and the human values and developments that reside within it. One example of this is *snags* (standing dead trees). Snags provide important wildlife habitat, but also can be serious problems for *fire suppression*. They are often vectors for *spot fires*, distributing embers from burning portions high above the ground; they can also be extremely dangerous to cut, especially during fire suppression. With this in mind, one way to balance safety and ecological goals is to leave snags in areas where they're not likely to threaten human development if they do ignite; for instance, leave shorter snags in a riparian area well below a home rather than taller ones on a ridge above a home. This concept of balancing can help you decide which trees and shrubs to leave versus remove. Education is key to analyzing how the physical characteristics, location, and relation to surrounding individual plants all relate to both fire safety and ecological function. Having all the information and balancing factors in mind, you can choose to leave particular plants in areas where they minimize undermining one goal or another, and maximize both ecological health and fire safety.

Ecological fuel reduction seeks to reduce surface fuels, ladder fuels, and canopy density (the volume of easily ignitable materials like foliage and dead twigs in the canopy of a stand of trees) while implementing treatments that work to enhance plant community health and biodiversity. Ecologically based fuel-reduction techniques assist degraded ecosystems in becoming more stable, resilient, and *productive*.

Fuel treatments are designed to be site-specific; they take into consideration vegetation, soil types, slope, aspect, ecosystem-health needs, and individual landowner objectives. Fuel-reduction objectives are most successfully accomplished when combined with an emphasis on ecological treatments. In the forest, these include *forest stand enhancement* and restoration techniques such as thinning and *controlled burning*.

Methods for ecological fuel reduction seek to strike a balance among the following:

³³ This section is based on previous work by: Bey, M. (n.d.). Lomakatsi Ecological Services. Retrieved from www.lomakatsi.org; and current work by: Kahan, D. (n.d.). Full Circle Forestry. Whitethorn, CA, for ForEverGreen Forestry (www.forevergreenforestry.com).

Goals

- To make all vegetative communities less susceptible to *crown fire*.
- To reduce wildfire intensity through activities that separate surface and ladder fuel continuity and volume.
- To manage and modify fuels and configurations of trees and plants.
- To reintroduce low-intensity (cool-burning) fire.
- To positively contribute to the ecological processes and functions of local forest and *plant communities*.
- To improve the health of vegetation most suited to the site.
- To emulate a plant regime similar to what occurred with natural fire.
- To maintain and enhance native species diversity.
- To maintain and enhance wildlife habitat.
- To control problematic, invasive, non-native species.
- To provide erosion control where appropriate, in conjunction with fuel-reduction activities.
- To make fire-suppression efforts safer and more effective as a result of reduced *fuel loads* in the vicinity of roads, homes, and other important areas.
- To utilize byproducts of fuel-reduction activities where ecologically appropriate and economically feasible, to help offset costs.

Methods

This document proposes methods that emulate lightning and other *anthropogenic* low-intensity fires that have helped shape the landscape for thousands of years. These methods include:

- Selectively thinning portions of the forest or shrub understory.
- Selectively thinning or burning dense vegetative communities such as *chaparral*.
- Favoring and retaining the largest, most fire-resilient, and healthiest trees adapted to the location.
- Favoring and retaining native vegetation.
- Burning, chipping, and/or masticating the smaller fuel loads

Zone 3: Wildland-Interface Zone Best Management Practices

- If not experienced with this work and/or familiar with the concepts presented, err on the side of conservatism; better to necessitate another entry than to apply too intensive a treatment. Contact a Registered Professional Forester or other resource professional to provide you with guidance.
- Conversely, if you are confident intellectually that an individual plant should be removed, do so; focus more on what is left in the forest rather than on what is removed. Make the treatment function as intended.
- Be thorough in implementation to reduce and delay maintenance needs; apply patience and discipline to work methodically to achieve this with less time and effort.
- Monitor how conditions change from one spot to the next and modify prescription applications accordingly.
- Favor healthy individuals of native species.
- Foster biodiversity.
- Focus on the big picture – don't create one problem in the course of fixing another.
- Address multiple issues where appropriate and feasible (e.g. use some cut materials to stabilize soil).
- Take great care while pruning – it is one of the more difficult skills to master but one of the most important to avoid negative impacts. (*See Figures V.1-5. Pruning for Healthy Plants and V.1-6. Proper Pruning Techniques above for more information.*)
- Work within your skill and comfort range. Utilize protective gear and maintain communication with co-workers and bystanders. Take time to mitigate known hazards and expect the unexpected to avoid accidents.
- Educate yourself on ecological health for your *vegetative types*, then restore, enhance, and maintain.
- If working within *Sudden Oak Death* (SOD) infestation, clean tools, boots, and vehicle wheels and wheel wells before working anywhere else.
- Monitor effects over time to inform subsequent treatments.
- Mow or graze grasses and small woody plants.
- Savor the gratification inherent in doing good work for something important!

V.1.3 Fuel-Reduction Treatment Methods

This section provides detailed information about various methods of managing hazardous wildfire fuels. These methods are most applicable to the Wildland Interface Zone and beyond.

Fuelbreak vs. Fireline

Fuelbreaks usually differ from *firelines* in several respects. Firelines are constructed during fire suppression activities to arrest the spread of an existing fire, and are commonly scraped to *surface mineral soil* level with machinery or hand tools, along with an associated break in the overstory canopy. Fuelbreaks, on the other hand, can be natural or human-made, are generally a less invasive or extreme treatment, and are usually created prior to a wildfire in strategic places to facilitate *suppression*. Vegetation is manipulated to reduce the intensity of a fire, which may allow suppression personnel to *contain the fire* at that point, as well as providing a safer route for both residents to evacuate and suppression forces to enter and leave. Prescriptions for fuelbreaks can vary widely, especially between different vegetation types, with a range of methods available to implement them. As with most activities of this nature, it is important to consider ecological (and other) concerns to maximize the benefits, and to avoid creating one or more problems while fixing another. Aiming to achieve several goals at once, or “*stacking functions*” is a good approach when implementing these activities.

Forest and Woodland Shaded Fuelbreak

When creating a shaded fuelbreak, fuels are reduced and otherwise modified but the overstory canopy is either left intact or only partially removed, hence it is shaded. Shaded fuelbreaks create a break in the continuity of both surface and ladder fuels, which is critically helpful in preventing a *surface fire* (a fire burning on the ground), from becoming a *crown fire* (a fire travelling through the forest canopy). Surface fires can be subject to fire suppression, but crown fires require firefighters to retreat to a safer place.

It is important to understand here that the range of variability in all the factors determining the effectiveness of a fuelbreak is almost infinite. These include the stand conditions before treatment, as well as the prescription and the quality of its implementation, maintenance, *topography*, and the weather conditions at the time of the fire. Additionally, one must consider how all these factors differ in the adjacent, untreated area.

Location is the first consideration. FSCs, in conjunction with federal, state, and local agencies and other concerned groups and individuals, have been prioritizing and implementing regionally strategic fuelbreaks in Humboldt County for over a decade. For most private landowners, the first priority is home protection. Shaded fuelbreaks are appropriate in the outer layers of the concentric rings of treatment intensity that comprise defensible space around a home or other objects of value; i.e. the zone concept described above. It serves as the transition zone between the more rigorously crafted, near-home area (Zones 1 and 2), and the untreated wildland (Zone 3 and beyond). Consider the shaded fuelbreak as a buffer; the more effective it is at tempering an approaching fire, the more effective the inner structure protection zone can be. Likewise, if a home ignites independently of a wildfire, these treatments will help keep the fire from spreading to neighboring areas.

Defensible space treatments are undermined unless access routes are also managed in such a way as to provide a measure of safety. Two crucial realities are that most civilian deaths in wildfires come during evacuation; and suppression leaders will not deploy their people if they don't feel they have a safe evacuation path. A corollary to this is that the safer the evacuation route is, the longer firefighters can delay using it and stay to defend the home. The presence of shaded fuelbreaks can help improve evacuation routes, as they provide a place where fire might slow down or decrease in intensity, making it safer to get out. Shaded fuelbreaks can also offer firefighters a safer place to fight fires from; in addition to a break-up in the fuel continuity from which to station themselves, the shade also creates cooler temperatures. Once the defensible space zone and access routes are treated, a landowner may wish to locate fuelbreaks strategically to help compartmentalize a fire. Auxiliary roads, ridges, and flatter areas are likely places for additional strategic fuelbreaks. Wherever feasible, link features like rock outcrops, wet areas, and meadows together with fuelbreaks.

Most of the second-growth forests in Humboldt County would benefit from restorative management.³⁴ Motivated land stewards can integrate a comprehensive program to enhance forest ecological health and economic productivity across their landscapes, which would serve to complement fire security and afford the greatest levels of protection. Coordinating treatments with multiple adjacent landowners has great value in protecting larger areas and more homes.

Prescriptions can vary widely. General principles include:

- Reduce the volume of fuel.
- Adjust the types of fuel—eliminate as much as is feasible of the flashier fuels that function as kindling on the surface and in the understory, and reduce the amount of dead wood.
- Modify the structure and arrangement of fuels; break up fuel continuity both horizontally and vertically so as to make it more difficult for the fire to spread.
- Raise the height of the base of the canopy.
- Keep in mind that most of the fuel that burns and spreads the fire is finer and flashier (foliage and small diameter wood) and/or dead and seasoned.

An important decision to make initially is whether or not to open the *canopy*. Opening the canopy can reduce the potential for crown fire issues within the continuous canopy. However, it often involves tradeoffs. Opening the

³⁴ For more information on restoration forestry, see: Institute for Sustainable Forestry. (n.d.). Retrieved from www.newforestry.org.

canopy can create increased maintenance needs; sprouting species do so more vigorously when exposed to more sunlight through the gaps in the overstory. There are also increased risks of *windthrow* (if opening the canopy, consider doing so incrementally to allow for root systems to adapt), as well as greatly increased cost (which may be mitigated if removed materials have enough economic value). Another consideration is that if the canopy is opened, whatever lower branches remain will continue to grow; keeping the canopy closed will encourage lower branches to die back (self-prune), and will raise the height of the base of the canopy (the area where the lowest tree branches begin) over time beyond the reach of ground-based saws. This has additional economic benefit by producing more clear wood if these trees ever were to become *sawlogs*.

A general prescription commonly used in southwestern Humboldt—for mechanical treatment by hand crews with chainsaws—is to leave a closed overstory by retaining all *dominant* trees.

- Remove most of the snags.
- Eliminate surface brush and small trees overtopped by larger ones.
- Prune all *leave-trees* as high as safely and economically feasible.
- If budget allows, remove most if not all of the intermediate trees, utilizing them in the *felling* process to break mid-trunk branches off the leave trees higher than those which can be reached with a saw.
- Burn cuttings too small for firewood in small piles approximately 50 ft. apart, and then chip, or lop and scatter (see Section V.1.4. *What To Do With Thinned Materials, below for more information on these options*).
- If wood left in the forest is not to be utilized, cut it into sections to maximize ground contact and then scatter so they are left in one layer (not piled on top of each other).

Prescribed burning and/or mastication are other methods that can be used independently, or mixed and matched accordingly. Each of these techniques has its strengths, weaknesses, and tradeoffs. Resource professionals and reputable implementation contractors can help advise how best to determine and achieve goals. (See Section V.1.4 below for more information.)

It is advisable to proceed conservatively, especially at first, and if contemplating opening the canopy. Consider implementing the work sequentially to allow time for monitoring effects to show, and to allow leave-trees to adjust. Monitoring the response of the forest and ecological community will be the guiding influence on what time intervals to use for further thinning entries. Ecological monitoring can be accomplished by a visual assessment of the stand's response, *photo-point monitoring*, or by establishing permanent monitoring plots to closely measure ecological benefits or impacts.

Varying levels of light on the forest floor will generate different re-sprouting responses; therefore creating shaded fuelbreaks requires the commitment to maintain them. As in all fuel-reduction treatments, regular annual or bi-annual maintenance is often necessary as stump-sprouting plants, invasive species, and/or shrubs begin to colonize the understory (although this is theoretically minimized with the shade provided by the intact canopy). Maintenance can be accomplished either by pruning and cutting back re-growth, or through use of prescribed-burning techniques. Shaded fuelbreaks in appropriate locations provide a good opportunity for the use of fire.

Following thinning and controlled-burning applications, restoration of native grasses and forbs along shaded fuelbreaks is a long-term objective for the prevention of invasive species. In situations where treated acres border other properties, invasive species can travel into these neighboring public lands and “spread like wildfire;” hence it is critical that long-term stewardship principles be applied.

Shaded Fuelbreak Basic Prescription for First Entry³⁵

- For the first entry, cut as much of the *1-hour* (0–0.24 inches in diameter) and *10-hour fuel* (0.25–1.0 inch in diameter) as possible, i.e. the finer fuel. Focus on the most obvious candidates for removal; those for which there is little or no question about removing.
- Start low in the area and work gradually uphill in a zigzag pattern. Prioritize the lowest-growing plants and then work up the fuel ladder. This will help keep you from burying your work, and the result will be cleaner and more thorough.

³⁵ This prescription is also based on the work of: Kahan, D. (n.d.) Full Circle Forestry. Whitethorn, CA.

- Remove trees that look brushy (versus a more tree-like form), or unhealthy, are lacking in vigor, or are overtopped by larger and/or more vigorous trees that block access to open spaces in the canopy.
- Eliminate dead vegetation of all sizes.
- Prune up all trees left behind as high as you can safely reach, with a chainsaw or pole saw.
- Ideally, work in teams with a sawyer and a brush hauler. This method requires teamwork and awareness, but will result in a more thorough job with less effort, once safety and logistical issues have been mitigated. The sawyer can make a small to moderate mess in one spot and then move to the next spot while the brush hauler cleans up the mess in the first spot. They then flip-flop and the sawyer returns to the first spot to expand upon what's been done, while the brush hauler cleans up the mess in the second spot. This method requires teamwork and awareness, and it will enable the sawyer to cut with more ease. Meanwhile the brush hauler is not in danger from falling trees and limbs.

Second Entry, or Advanced First Entry

- Go to those trees and shrubs that you weren't sure about on the first pass.
- Think about position in the *stand* hierarchy (how trees occupy space vertically, and to some extent horizontally), and *species composition*. You will generally want to favor less abundant species, if all else is equal.
- Compare the leaders (the annual new growth at the top of the tree which is a good indicator of vigor) of neighboring trees. Shake adjacent trunks to compare leaders of taller trees that are hard to see. Favor the healthiest and most vigorous trees. Is there space for them to grow in the upper canopy? If not, can you create that space by removing less desirable trees? If not, the tree is a good candidate for removal regardless of health and vigor. Imagine the same place in ten or twenty years. Will there be room for all the trees you have left to share space in the overstory without being overtopped? If not, consider removing more trees to achieve this objective.

How to Decide which Trees to Leave or Take

- First look for the vigorous, healthy trees that are in the overstory or can reach it with unimpeded access to overhead sunlight before the canopy closes. If trees that are similar in height, vigor, and health are growing in crowded conditions, consider retaining them all (until they differentiate and establish a hierarchy among themselves) to encourage prolonged self-pruning which will raise the base of the canopy beyond the reach of ground-based saws with no additional implementation costs.
- Apply "favored species criteria," if appropriate. For example, in southwestern Humboldt, it is common to find vigorous young Douglas-fir growing into and through the crowns of older, larger hardwoods like madrone and black oak. The fir will eventually shade out and kill the hardwood, has more flammable foliage, and functions as ladder fuel into the larger tree. The firs usually will not make viable timber and the hardwoods generally provide better wildlife habitat. Consider *girdling* firs tangled in larger hardwood crowns to remove them over time and mitigate felling hazards. (Girdling is a technique of killing trees gradually by cutting through the cambium and sapwood layer around the circumference of the tree so that its water and nutrient flow is cut off.) Encourage groves of fir in between the crowns of the big hardwoods.
- In areas where SOD is a concern, remove most if not all bay laurel (pepperwood, or *Umbellularia californica*) from the understory. Contemplate removal or girdling of overstory bay laurel (monitor results of SOD experimental *silvicultural* treatments from University of California Cooperative Extension (UCCE)³⁶ to help inform your decision). If girdling, be sure to remove all bark and *cambium* in a 24"-wide ring. Consider leaving trees of species other than tanoak that are overtopped by tanoak as potential replacements. If harvesting removed wood is an option, think about removing tanoaks that would otherwise be kept if suitable replacement

³⁶ See: California Oak Mortality Force. (2012). *Diagnosis and Management*. Retrieved from www.suddenoakdeath.org/diagnosis-and-management/, or visit: UCCE-- Humboldt - Del Norte Counties. (2012). Available at <http://cehumboldt.ucdavis.edu/>; or call the UCCE Eureka, CA office at: (707) 445-7351.

trees of other species exist underneath them or can be planted. This will facilitate salvage of economic value and allow for brush disposal without necessitating another entry.

- If budget considerations preclude removal of otherwise targeted trees such as those that are intermediate in the canopy hierarchy, consider removal in a subsequent entry. Incremental growth in the interim along with a steady upward trend in firewood values or other value-added opportunities may improve prospects for mitigating costs in the future.

After you've created your shaded fuelbreak, take a final pass through the area. How does it look? Evaluate the completeness of your work. The more thorough the treatment is, the longer it will function without, or with less maintenance.

Shrubland Fuelbreak

Historically, the preferred method to managing fuels in *shrublands* was to use controlled fire on a 5-10 year cycle, limiting the amount of accumulating fuel by repeatedly burning the "brush." Today, it is common to observe large, cleared pathways meandering through these communities serving as a fuelbreak. Removal of surface and ladder fuels, as well as reduction of horizontal continuity of fuels, are the major objectives in reducing fire intensity and *rate of spread* within shrublands.

On residential properties vegetation can be removed in clumps or thinned throughout a selected area. When creating clumps be sure to separate them by a distance of approximately three times the height of the plant, as explained for the Defensible Space Zone above. Identify clumps throughout the area that will be left as wildlife habitat. When thinning in clumps or over entire areas, focus on removing dead plants, trees, and branches before cutting live vegetation. Where present, identify hardwood and/or conifer snags that will be retained as wildlife habitat. If trees are present they should be pruned to reduce the ladder fuels that could carry fire into their canopy. *For more information on pruning, see: Figures V.1-6 and V.1-7 above.*

When thinning in shrubland areas that are far away from roads, it may be best to deal with slash created during thinning operations by either "lopping and scattering" or by creating burn piles. *(See Section V.1.4 below for an explanation on how to properly burn piles.)*

When thinning next to a road much of the thinned material can either be chipped back onto the site or loaded into a chip truck for removal. When chipping material back onto a site, be sure the chips do not exceed more than several inches in depth. Some of the thinned material can also be lopped and scattered back onto the site for soil stabilization and wildlife habitat *(see Lop and Scatter below)*.

Grassland Fuelbreak

The purpose of treating grassland fuels is to lower the flame length and fire intensity in desired locations as well as to restore damaged landscapes. A grassland fuelbreak consists of mowing, burning, or grazing a desired area. Areas adjacent to roads or *ecotone* edges are treated to lower grass height. Grasses can be treated approximately 50-100 feet on each side of roads to create a sufficient fuelbreak. Prior to initiating any fuel reduction within grassland areas it is important to identify native grasses to be retained as future seed sources. Grazing and fire are two potential approaches to treating grassland areas. When using fire as a management tool within grasslands, trees and shrubs should be protected by first reducing the amount of vegetative fuels around their base, which helps protect them from damage caused by direct flame contact.

Upon completion of grassland fuel treatments it is highly recommended to begin the process of sowing native perennial grasses. Work with local resource and restoration professionals, and/or rangeland managers to create a restoration plan that will convert non-native grasslands into native grasslands over time.

V.1.4 What To Do With Thinned Materials

Fuel-reduction projects commonly produce large amounts of cut woody material, especially in Humboldt County where climate and soil combine with historical land management patterns to result in dense-to-very dense forest stands. Dealing with the sheer volume of cut materials is a large and critical part of the restoration equation that has stymied many a do-it-yourself land steward. It is important to have a clear plan on how to treat the slash before beginning work. Failure to do so will undermine success of your project and likely create new problems. The

only current exceptions to this are if prescribed *broadcast burning* alone (without pretreatment) or mastication is the technique used to modify the fuels. Both of these methods dispose of the slash as the essence of the stand modification treatment itself, although broadcast burning alone may require a second application to consume dead fuels created by the first fire.

Continue to think about ways of stacking functions as you move forward with your fuel-reduction projects. One of your first decisions will be whether or not to utilize any of the materials offsite. Options for utilizing materials offsite could include timber sawlogs, firewood, mushroom cultivation logs, biomass for electricity generation, and *biochar* (see below). Onsite utilization choices include erosion control and water infiltration enhancement structures, and spreading materials to decompose in place to enhance soil fertility. Keep in mind that any economic activity involving wood products is regulated by the state through CAL FIRE. If you intend to sell logs that result from your treatment, you may avoid the need for a Timber Harvest Plan by taking advantage of CAL FIRE's Forest Fire Prevention Exemption.³⁷ In addition to researching the CAL FIRE exemption resources, the Mattole Restoration Council (MRC) has published a helpful summary of exemption requirements.³⁸

Regardless of how you decide to utilize materials resulting from fuels reduction, there will always be unutilized material to deal with as well, generally in the category of finer, flashier fuels. Some fuels treatments have focused on removing trees to open the canopy to address crown fire potential. These prescriptions in particular have the potential to increase certain elements of fire hazard unless the finer fuels are also treated.³⁹ Burning and/or chipping are the most common treatments. In addition, lopping and scattering can be appropriate in some situations. Another possible treatment method gaining attention is woody biomass utilization. All options have their strengths, weaknesses, and tradeoffs. Each method is discussed below.

Burning

Pile burning and broadcast burning are the basic types of this method. *Pile burning* involves collecting and moving brush to one large, or multiple smaller piles, by hand or with machinery. The piles can be burned later, or on an ongoing basis at the time of piling (sometimes called *swamper burning*, since personnel that handle the brush and otherwise assist the sawyers are called "swampers.") Broadcast burning entails applying fire to the surface of an area and "broadcasting" it so that the fire spreads throughout the treatment unit and reaches most if not all of the square footage. *Patch burning* is a form of broadcast burning that applies the fire only to specific patches within the unit. While both basic techniques have their risks to personal and public safety, it must be emphasized that broadcast burning in particular requires a level of training and experience to mitigate hazards that render it an invalid option for the vast majority of private landowners to attempt on a "do-it-yourself" basis. However, professionals both public and private are available to manage and implement this procedure. CAL FIRE offers the Vegetation Management Program⁴⁰ (VMP) to assist in this regard.

In any case, all forms of burning are subject to regulation by CAL FIRE and/or the North Coast Unified Air Quality Management District (NCUAQMD), www.ncuaqmd.org/. Be sure to research and implement all legal requirements prior to using any burning treatment method. (See Section V.4.1 below for more detailed information on local burning regulations.)

Pros and cons to the types of burning include:

- In some circumstances broadcast burning can be applied as a one-step process without a cutting treatment preceding it.

³⁷ The Forest Fire Prevention Exemption Form and the Forest Fire Prevention Exemption Checklist will be useful forms. These forms can be found on line at: CAL FIRE. (2012). *Harvesting Forms*. Retrieved from www.fire.ca.gov/resource_mgt/resource_mgt_forestpractice_harvestingforms.php

³⁸ Mattole Restoration Council. (2008, November 20). *Fire Hazard Prevention Exemption (AB 2420)*. Retrieved from www.mattole.org/content/fire-hazard-prevention-exemption-ab-2420.

³⁹ Keyes, C.R. & Varner, J.M. (2006). Pitfalls in the silvicultural treatment of canopy fuels. In: *Fire Management Today*, 66(3), 46-50. Retrieved from http://www.fs.fed.us/fire/fmt/fmt_pdfs/F

⁴⁰ CAL FIRE. (2009, January). *Vegetation Management Program*. Retrieved from www.fire.ca.gov/communications/downloads/fact_sheets/VegetationManagement.pdf

- Broadcast burning most closely emulates the pattern of disturbance that the ecosystem has evolved with over millennia, incorporating ecological benefits that cannot be replicated otherwise; when applied properly, it leaves nutrients in the ash to leach into the soil with subsequent rainfall.
- Broadcast burning treats surface fuels more thoroughly than other forms of burning.
- Broadcast burning is the riskiest of the burning procedures, takes the most training and experience to implement, and therefore carries the most liability; pre-application preparation and logistics are usually extensive.
- Some effects of broadcast burning may be undesirable to some landowners/managers.
- Pile burning (particularly swamper burning) allows practitioners to fine tune where and how severe the fire effects will be, enabling avoidance of some negative impacts.
- Pile burning can be safely and effectively accomplished in a much wider range of weather and fuel moisture conditions than broadcast burning.
- Pile burning may be accomplished by one knowledgeable and well-equipped person working alone.
- Pile burning can sometimes scorch and/or sterilize the soil below the pile by concentrating burning materials for longer *residence times*.

Caution and conservatism (at the least, if not actual avoidance) should be practiced concerning applying fire in riparian areas. Take care to avoid negative impacts to crucial wildlife habitats.

Chipping

Chipping utilizes machinery to break down woody material into small chips, distributing them into a pile or a truck, or spreading them in a small area near the chipper.

Pros and cons of chipper use include:

- Cost of purchase or rental (some FSCs occasionally organize and offer free chipping or chipping services).
- Cost of operation, including fuel, maintenance, and repairs, plus a suitable vehicle to tow the chipper.
- Necessitates use of fossil fuels.
- Chippers generally do not leave the road, so all brush must be accessible; all brush downhill of the road must be dragged uphill which is usually not the case with burn piles.
- Usually only one or two chippers are available at once, representing an operational bottleneck for brush disposal compared to the possibility of multiple burn piles simultaneously or a broadcast burn.
- Piles or carpets of chips are an unnatural addition to the ecosystem; piles are subject to possibility of spontaneous combustion at a later date.
- Chippers can be dangerous to operate and usually create severe noise.
- Learning to feed chippers safely and effectively is simpler than similar requirements for application of fire, but can still be very dangerous.
- Weather and fuel moisture are usually not a limiting factor.
- Chips can be useful for landscaping, agricultural, and horticultural purposes.
- It is often less labor intensive to prepare brush for chipping vs. pile burning.
- No regulatory processes involved.

Lop and Scatter

In this method, materials are cut into small pieces to maximize ground contact and then distributed evenly on the forest floor and left to decompose. This method guarantees that all nutrients stay on site and contribute to soil fertility gradually, without negatively impacting air quality (assuming no wildfire in the treated area before decomposition is complete). It can also provide short-term habitat for some wildlife species. Access is usually not a limiting factor, and this method is generally not subject to regulation (except as part of a commercial timber harvest or cost-share subsidy).

Disadvantages include:

- Seasoned fuels remain viable until decomposed (this can take up to 12 or more years depending on the situation). This increases certain elements of fire hazard during that period. Therefore, this method is usually not suitable in defensible space zones.
- Often very labor intensive for sawyers, who usually command significantly higher wages than swampers.
- Significant volumes of green material created during spring-growth season can invite insect infestation.

Mastication

Various types of machinery are available that can travel through a stand and transform trees and brush into chips. This strategy can be very cost effective in certain situations. Disadvantages include:

- Possible widespread soil compaction.
- Inability to do fine work, especially in tight quarters (possibly resulting in mechanical damage to leave trees).
- Possible inaccessibility on steeper slopes.
- Compacted mats of chips throughout the treatment area may be relatively slow to decompose.

Biomass

This method involves gathering the slash and byproducts left over from fuel reduction and timber harvest projects and converting them into energy stocks, such as wood pellets, wood chips, *biochar*,⁴¹ and liquid biofuels. *Biomass utilization* as a method for utilizing the byproducts of community-level fuel reduction is somewhat up and coming in Humboldt County, with many promising prospects as well as challenges.

Pros and cons for biomass utilization include:

- Biomass utilization can generate products for a wide variety of purposes, including fuel-heat systems, fuel for power plants, pulp and panel board, pulp chips for paper products, lumber and roundwood, firewood, landscape amendments, soil additives for mulching and compost, and animal bedding.
- The ability to produce particular products depends on the quality of the biomass, which can be unreliable when originating from fuel reduction projects.
- Biomass is considered a “carbon neutral” fuel source; the trees comprising woody biomass have absorbed carbon from the atmosphere equal to the amount released when the fuel is burned.
- Technologies for biomass utilization are still developing and cost can be a limiting factor for those seeking to employ this method.
- Community fuel reduction projects are sporadic and will vary in the amounts of woody debris they produce. Therefore, finding a reliable supply of fuel stocks can be challenging in generating a worthwhile cost-benefit analysis.
- Transportation of woody debris for biomass utilization can be a financial consideration. However, for small-scale projects, transportation can be managed using simple equipment and all-terrain vehicles.
- There are currently three biomass power plants in Humboldt County: Blue Lake Power, DG Fairhaven Power, and the Greenleaf Power Plant a located in the town of Scotia.

⁴¹ Biochar is organic matter that is burned slowly with limited oxygen until it becomes charcoal, which is then used as a soil amendment.

V.2. Ready, Set, Go!

“Ready, Set, Go” is the statewide public education approach to prepare California residents for wildfire. It is explained and detailed here for Humboldt County residents.

V.2.1 Ready: What to Do Before Wildfire

Being “ready” means preparing your home and property to survive wildfire. As explained in the first section, “From the House Out,” that means hardening your home and creating a fire-safe landscape to best survive wildfire. It also means ensuring that your home is a safe place for firefighters when they arrive to help protect it during a wildfire. If you are truly ready, then chances are good that you and your home will survive. If you are not ready, your home may be one of those lost in your neighborhood. **Your actions can make a significant difference in your odds of surviving the next wildfire intact.** As explained in the previous chapter,

“Being Ready for wildfire starts with maintaining an adequate Defensible Space and by hardening your home by using fire resistant building materials... It takes the combination of both Defensible Space and the hardening of your home to really give your house the best chance of surviving a wildfire.”⁴²

You can download the CAL FIRE “Ready For Wildfire” brochure at:
www.readyforwildfire.org/docs/files/File/brochures2012/calfire_ready_brochure_LINOweb.pdf

As the quote below illustrates, lack of preparation can result in the least desirable outcome:

“The WUI⁴³ fire disaster context can be generally described as a set of contingencies. The disaster sequence starts when a wildfire or multiple wildfires burn during extreme fire conditions. The combination of vegetation, weather conditions, and topography produces fast-spreading, intensely burning fire behavior that overwhelms suppression efforts. If the extreme wildfire spreads close enough to residential development with its flames and firebrands (lofted burning embers), hundreds of ignitable homes can be simultaneously exposed. Although protection may be effective for some homes, an extreme wildfire’s high intensities and high rate of area growth (rapid spread and spot ignitions) ignites too many houses and threatens firefighters’ safety, preventing them from protecting all structures. With homeowners likely evacuated and firefighters unable to protect every house, initially small, easy-to-extinguish ignitions can result in total home destruction.”⁴⁴

The best defense under this conflagration scenario is to ensure that your home, property, and family are all thoroughly prepared for wildfire, as described throughout this section.

Help Firefighters Help You

Work with your local fire station staff and volunteers well before fire season to acquaint them with your property. Rural residents should create a map of your property that illustrates the locations of the most valuable structures and other resources. Mark on your map the location of your water sources, septic system, where your gas/propane/diesel tanks and shut-offs are located, and any other highly flammable or explosive materials. Include locations of any locked gates and the combinations to those gates or locations of keys. Be sure to include locations of any pets or livestock. Put your name, phone number (and/or cell number), street address, and parcel number or *Global Positioning System* (GPS) coordinates on this map. Put a copy on the wall by a phone, with the number of your local fire department, so you can use it in case of an emergency. When a fire is imminent, place this information in an envelope clearly marked for firefighters and leave it out in a visible place just before evacuating. Invite local firefighters out to your property (long before fire season) to review this and show them where everything is. This will help them effectively protect your property when wildfire occurs.

⁴²CAL FIRE, Ready for Wildfire. (2012). *Being Ready*. Retrieved from www.readyforwildfire.org/being_ready

⁴³ WUI = Wildland Urban Interface

⁴⁴ Cohen, J.D. (2008). The wildland-urban interface problem—A consequence of the fire exclusion paradigm. (p.22).

If you have any experience or training in fighting fire, create a firefighting tool area that is easily accessible. Keep this in a non-flammable structure, such as a metal shed or garage. Your collection should include tools like shovels, hoes, Pulaskis, and McLeods. Keep a set of firefighting clothes there as well, including heavy cotton or wool clothing, leather boots, eye protection, and gloves. Put a fire hose at your water source and mark it well so you, your neighbors, and/or firefighters can easily find and use it. Remember, you should only attempt to fight a fire if you have legitimate experience, and if the fire is small, such as from ember ignitions. Never attempt to fight a wind-driven fire. Under those circumstances, the best option is to prepare your home and evacuate early.

Water Storage and Supply

The amount of water you have stored at your homesite could have a significant impact on the ease (or difficulty) of successfully fighting a fire there. For those not on a community or public water system, 2,500 gallons of water storage for firefighting is the minimum required for new construction on SRA lands in California. In Humboldt County, 2,500 gallons of water storage is also required in the SRA for the development of new parcels and for new construction and additions built with an alternative owner builders (AOB) permit per the County Modified Limited Density Owner Built Rural Dwelling Regulations.⁴⁵

Storing water in the winter for use in the summer and fall, and conserving water are both critical in our environment. (Where freeze protection is required by the County, such measures should be provided.) There are many options available in terms of water tanks. Ideally, you should have a dedicated firefighting water tank, with a fire-ready standpipe, and a separate tank for domestic use, (*see the diagram in Figure V.2-1. Developing Rural Residential Water Supplies for Fire Protection*). If you cannot do this, position your domestic water line to emerge out of your water tank in the middle of the tank, so you don't accidentally drain your entire tank into the garden or elsewhere. This ensures that the bottom half is maintained for emergency use. Combined water storage is allowed as long as the minimum required gallons for fire department use (2,500 gallons) are always maintained. Typically, this requires plumbing the domestic water flow line above the minimum water storage requirements mark of your tank. *For County regulations and guidance on developing emergency water supply, please see Appendix I: Emergency Water Supply Systems.*

Your fire water line should be three inches in diameter. It is recommended that water lines be buried 12 inches underground in order to prevent degradation of the piping materials from sunlight corrosion, fire damage, freezing, and other types of exposure. Although an aboveground plastic water line will likely burn in a fire, a full plastic water tank probably will not. Put a metal standpipe (hydrant) or fire valve at the end of the water line with a 2½-inch “national hose male fire hose threaded adapter” (National Hose Thread). This is so firefighters can quickly attach to your water source. Fire hose thread is known as national thread, national standard, NST, NSFH, NH, or FHT. For County standards, please refer to Fire Safe Regulations, Chapter 4. Emergency Water Standards, http://co.humboldt.ca.us/planning/planning_library/fire_regs/firesafe.pdf.

Your water tank can be located most anywhere on your property, but generally near a road, not too close to your house, and ideally at an elevation equal to or higher than the base elevation of the house. Tanks of 5,000 gallons or greater require a building permit issued by the Humboldt County Building Division. *See Figure V.2-1 below, or CAL FIRE's Emergency Water Supply Systems in Appendix I for guidance and illustrations on how to properly locate your fire protection water supply system on your property.*

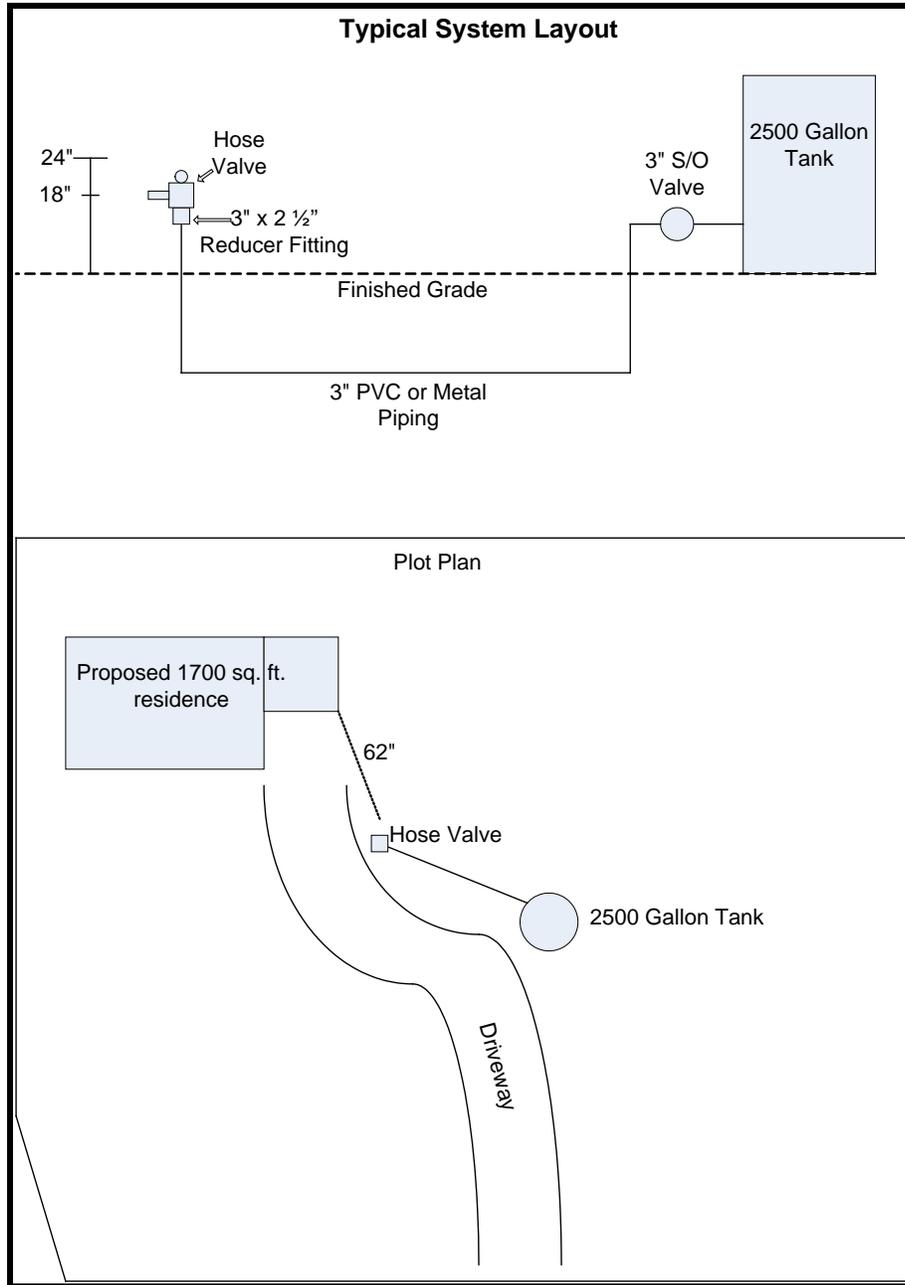
To ensure that firefighters can use your water to protect your home, the fire department connection (hydrant) must be located no closer than four feet and no further than 12 feet from the road edge; and no closer than 50 feet nor further than ½ mile from the structure.

“The hydrant or fire valve shall be 18 inches above grade, eight (8) feet from flammable vegetation, no closer than four (4) feet nor farther than 12 feet from a roadway, and in a location where fire apparatus using it will not block the roadway.”⁴⁶

⁴⁵ Information about the Alternative Owner Builder Ordinance can be found at: County of Humboldt, Planning and Building Department. (n.d.). *Alternative Owner Builder (AOB) Ordinance*. Building Inspection Division. Retrieved from www.co.humboldt.ca.us/planning/building/#forms.

⁴⁶ See Appendix F, or: County of Humboldt, Planning and Building Department. (n.d.). *Fire Safe Regulations*.

Figure V.2-1. Developing Rural Residential Water Supplies for Fire Protection⁴⁷



Make sure that your standpipe (hydrant) is somewhere visible, kept clear of flammable vegetation out to three feet, and positioned where a fire truck can access it and turn around to leave. The following County regulation applies to the signage of water sources:

“If located along a driveway, except where the residence is served with an individual water supply, a wooden sign with a minimum 3 inch letter height, 3/8 inch stroke, contrasting with the background color of the sign, with the wording "FIRE WATER" mounted on a wooden post or ... if located along a street or road, (1) a reflectorized blue marker, with a minimum dimension of 3 inches, shall be mounted on a fire retardant post. The sign post shall be within 3 feet of said hydrant/fire

⁴⁷ Diagram based on Humboldt County Fire-Safe Regulations; obtained from: Humboldt #1 Fire Protection District, personal communication, November 25, 2012.

valve, with the sign no less than 3 feet nor greater than 5 feet above the ground, in a horizontal position and visible from the roadway, or (2) as specified in the State Fire Marshall's Guidelines for Hydrant Markings Along State Highways and Freeways, May 1988.”⁴⁸

If firefighters don't know where the water connection is or if it is not accessible, it is not going to be very useful. Hence, make sure your local firefighters know exactly where your tank is located, well before any fires. Homes have been lost because firefighters could not find a nearby, but hidden water tank. The roadway must also be wide enough to accommodate the fire apparatus without blocking it. (See “Roads and Access” section below.)

In an emergency, swimming pools and ponds provide a great source of *fire protection water*. Firefighters can *draft* directly from these sources if they can get close to them. **Indicating the existence of ponds and swimming pools that may be drafted for fire protection water by posting blue reflective dots along driveways is recommended to help alert firefighters to their availability.** If you are going to depend on this water as your first response to a fire, you will need a pump and a generator for backup, or a gas engine pump. Remember that when there is a *large fire* the power will likely go out; therefore, the generator is needed to pump water from your pool or pond if your pump requires electricity. *For more information, see the Mendocino County Fire Safe Council's pamphlet, Developing Water Supplies for Fire Protection.*⁴⁹

Options are expanding for inexpensively storing water. Cisterns (catchment to collect rainwater) are becoming increasingly popular. Several websites describe how to make these. Low-cost water tanks are also available. The easily transported Pioneer Tanks from Australia are now seen throughout Humboldt County (www.pioneertanks.com.au).

Roads and Access

Roads are critical components in the fire equation. They can be a great place for a fuelbreak for firefighters to fight a fire. They are also vital for evacuation and for firefighters to access your home. Fire engines generally need a minimum clearance of 20 feet wide by 15 feet high. Humboldt County regulations require *turn-arounds* on driveways and dead-end roads to provide enough space for fire engines to turn around. The minimum turning radius required for a turn-around is 40 feet from the center line of the road. If a hammerhead “T” is used, the top of the “T” shall be a minimum of 60 feet in length. *For more information on County road standards, see the County Fire Safe Regulations, Chapter 2, Emergency Access.*⁵⁰

Fuel reduction treatments along roadways improve safety during emergency evacuations and help ensure access for firefighting apparatuses. A common shaded fuelbreak prescription along roadways is 50 feet on each side of the road. This can vary depending on slope and density of vegetation. You also need plenty of places on the road where vehicles can pass each other, i.e., adequate *turn-outs* properly designed and spaced along your access road or driveway. If a wildfire is threatening and a fire engine is trying to get to your home or business while you're trying to evacuate, there need to be areas in the road wide enough to accommodate traffic safely from both directions.

Remember, when a wildfire is near, chances are it will be very dark and smoky, thus very disorienting. Take the time now to get to know your evacuation routes, to make it easier on yourself later, and so you are prepared if and when a wildfire comes.

Most firefighters will not and should not unnecessarily risk their equipment or lives to protect your property. Firefighters will almost always turn their vehicles around immediately when they arrive to a fire, for safer and quicker escape. This is good advice for you too. Get in the habit of parking your vehicle(s) facing out at home so you can leave quickly if necessary. You should always do this if there is a wildfire, or the potential for one, anywhere near you.

If you have locked gates, they will likely be cut by firefighters. If you don't want that to happen, make sure you leave them unlocked. Another option is to install a *Knox Box* and make sure your local fire department can access it. A

⁴⁸ See Appendix F, or: County of Humboldt, Planning and Building Department. (n.d.). *Fire Safe Regulations*.

⁴⁹ Mendocino County Fire Safe Council. (2011). *Water Supplies for Fire Protection*. Publications and Information. Retrieved from <http://firesafemendocino.org/pdf/Water%20Supplies%20for%20Fire%20Protection%204%20pages.pdf>.

⁵⁰ See Appendix F, or: County of Humboldt, Planning and Building Department. (n.d.). *Fire Safe Regulations*.

Knox Box is a secure key box system accessible only by fire personnel during emergencies requiring immediate access to a facility. The system eliminates the need to use forcible entry techniques resulting in costly damage to the facility. If you have electric gates, make sure they have a back-up power source or other way to open when the power is out, which is likely during a large wildfire.

Bridges also need to be evaluated for safe fire truck passage as per the County Fire Safe Regulations (*see Appendix F*). Weight limits must always be posted on private bridges. Generally, if a propane (or other fuel) truck or water truck can make it across the bridge, then a fire truck can. If you have a bridge that will not safely carry a fire engine, you must contact your local fire department and let them know. Don't make their job any more dangerous than it already is. Instead, help them to help you.

Finally, many private dirt roads can become impassable, especially to large and/or heavily laden fire engines after a rough winter. A heavily potholed, washboarded, or otherwise severely degraded driving surface will at minimum drastically slow *response times* if not preclude response whatsoever. Making sure your road has proper surfacing and drainage is an important long-term investment. If applied properly and driven on reasonably, maintenance inputs are minimized regardless of relative weather severity, and could make the difference between saving and losing a home (or a life during other emergency response situations). Each individual engine captain will decide site-specifically if a road surface is acceptable; they will not risk a broken axle, which could endanger the crew. A simple rule of thumb here is that the smoother the surface is maintained, the quicker the response time will be. .

Maintaining your dirt and gravel road is important for many reasons, including keeping *sediment* out of streams and ensuring safe evacuation in an emergency. If several households share the same road, consider rotating the responsibility for coordinating road maintenance every few years. The identified coordinator can collect an agreed-upon annual assessment from all those who regularly use the road, and organize the maintenance. For information on how to maintain private roads, see *Rural Roads: A Construction and Maintenance Guide for California Landowners*,⁵¹ and *Handbook for Forest and Ranch Roads*.⁵²

Fuel Treatments along Roads and Driveways

Fuel treatments along driveways and roads are a high priority. While ecological concerns regarding vegetation types are considered, fuel reduction remains the primary management objective in these areas. The main objective for *ingress-egress* corridors is to create a defensible perimeter along and adjacent to all roads and driveways. These access routes are also where a fire would decrease in intensity and provide safer access for firefighters.

Roads can be a potential *ignition source* for wildfires (from vehicles and people). When treated, they serve important functions as fuelbreaks, as well as *anchor points* for tactical fire-suppression activities. Thus, treatment of these areas is a top priority in any *fuel management* strategy. Treatments along driveways and road corridors benefit multiple landowners in the event of a wildfire, thus providing an opportunity for community planning and collaboration.

Roads and Driveways Best Management Practices

- Retain larger trees while aggressively thinning understory vegetation in 100-ft. area from roads or driveways.
- *High-prune* all branches that are hanging over the road to a height of at least 15 feet above the ground, especially any highly flammable vegetation such as eucalyptus and other flammable *exotic species*.
- Remove all dead and dying vegetation; separate fuel continuity and clear back all flammable vegetation along driveways and roads, for up to 10 feet on either side. Focus treatments first on critical evacuation routes.
- Identify at least two exit routes from your neighborhood.
- Post clearly visible road signs to show traffic restrictions such as dead-end roads and height and weight limits.

⁵¹ Kocher, S.D., Gerstein, J.M., & Harris, R.R., (2007). *Rural Roads: A Construction and Maintenance Guide for California Landowners*. UCANR Publication 8262. Retrieved from <http://cecentralsierra.ucanr.edu/files/88233.pdf>

⁵² Weaver, W.E. & Hagans, D.K. (1994, June). Handbook for forest and ranch roads: A guide for planning, designing, constructing, reconstruction, maintaining and closing wildland roads. Mendocino County Resource Conservation District. Retrieved from http://www.krisweb.com/biblio/gen_mcrd_weaveretal_1994_handbook.pdf.

- Construct roads that allow two-way traffic.
- Design road width, grade, and curves to allow access for large emergency vehicles.
- Ensure that parking restrictions are followed, thereby keeping roadways clear of obstructions.
- Keep roads clear of impediments such as trash cans.
- Ensure that fences, hedges, and other impediments are well clear of the road right-of-away, to ensure safe passage and off-street parking.
- Design bridges to carry heavy emergency vehicles. Post weight limits on all private bridges.
- Make sure that dead-end roads and long driveways have turn-around areas wide enough for emergency vehicles.
- Construct and/or ensure turnouts along one-way roads.
- Make sure that street names and numbers are visibly posted at each intersection.
- Post your house address on the street fronting the property.
- If your house is not visible from the street, post a sign next to the vehicle entrance using a minimum of 4-inch address numbers on a visible, elevated post. Use noncombustible materials with a contrasting background. (*See below for more information on signage and addressing.*)

Signage and Addressing

Chances are firefighters are not going to know where you live, especially in the case of a large fire where out-of-town firefighters are present. **Make sure you have visible road and address signs.** This is not only common sense—it is legally required. If you have a visible address sign on your house and/or driveway, and a road sign at the street, emergency service personnel (fire, ambulance, police) will likely find it. If not, your home may not be defended from wildfire. This is also crucial when emergency vehicles such as ambulances are trying to find you in the case of a medical emergency, where a few minutes can be the difference between life and death. Work with your local fire department if you have questions regarding how to do this most effectively. If you want emergency personnel to be able to find you, do your part.

Your address sign should be of reflective material so it is visible at night, and non-flammable (metal on metal post). The letters must be at least 3 inches high and 3/8 reflective stroke,⁵³ and of a contrasting color to the sign's background.⁵⁴ Where the structure is not visible from the roadway, they need to be on an elevated post and visible from both directions.

V.2.2 Set: Being Prepared for Wildfire's Approach

Fire can be extremely frightening. As stated throughout this document, taking steps now to prepare you, your family, and your home will make it easier to survive a wildfire crisis. It may also help you reduce panic and effectively address the situation. Even the most organized of us will forget something when a crisis arrives. Create easy-to-follow checklists based on those in this section for your family to use in an emergency. CAL FIRE has developed a set of such checklists on their Ready, Set, Go website (www.readyforwildfire.org). You can download the SET brochure at www.readyforwildfire.org/docs/files/CALFIRE_Set_Brochure.pdf.

“Before wildfire strikes, it is important that you get Set. Prepare yourself and your home for the possibility of having to evacuate (www.readyforwildfire.org/evacuation_steps). The following three main preparation actions should be completed and familiar to all members of your household long in advance of a wildfire.

➔ Create a **Wildfire Action Plan** (www.readyforwildfire.org/wildfire_action_plan) that includes evacuation planning for your home, family, and pets.

➔ Assemble an **Emergency Supply Kit** (www.readyforwildfire.org/emergency_supply_kit) for each person in your household.

⁵³ Meaning that the characters need to be at least 3/8-inch thick.

⁵⁴ See *Appendix F, or: County of Humboldt, Planning and Building Department. (n.d.). Fire Safe Regulations.*

→ Fill-out a **Family Communication Plan** (www.readyforwildfire.org/family_communication_plan) that includes important evacuation and contact information.”⁵⁵

Create a Wildfire Action Plan⁵⁶

Your Wildfire Action Plan must be prepared and familiar to all members of your household well in advance of a wildfire. Use the checklist below to help create your plan. Each family’s plan will be different, depending on a variety of issues, needs, and situations. **We have included many checklists in this document (indicated with the dashed-line border, that you can copy and cut out to use to prepare you and your family for the eventuality of wildfire.**

Your Wildfire Action Plan Checklist

Create an **evacuation plan** that includes:

- A designated emergency meeting location outside the fire or hazard area. This is critical to determine who has safely evacuated from the affected area.
- Several different escape routes from your home and community. Practice these often so everyone in your family is familiar in case of emergency.
- Have an evacuation plan for pets and large animals such as horses and other livestock.
- Create a Family Communication Plan (*see below*) that designates an out-of-area friend or relative as a point of contact to act as a single source of communication among family members in case of separation. (It is easier to call or message one person and let them contact others than to try and call everyone when phone, cell, and internet systems can be overloaded or limited during a disaster.)

Be Prepared:

- Have fire extinguishers on hand and train your family how to use them, (check expiration dates regularly).
- Ensure that your family knows where your gas, electric, and water main shut-off controls are located and how to safely shut them down in an emergency.
- Assemble an Emergency Supply Kit for each person, as recommended by the American Red Cross. (*See below for details.*)
- Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit.
- Keep an extra Emergency Supply Kit in your car in case you cannot get to your home because of fire or other emergency.
- Have a portable radio or scanner so you can stay updated on the fire.
- Tell your neighbors about Ready, Set, Go! and your Wildfire Action Plan.

⁵⁵ CAL FIRE, Ready for Wildfire. (2012). *Family Communication Plan*. Retrieved from http://www.readyforwildfire.org/family_communication_plan

⁵⁶ CAL FIRE, Ready for Wildfire. (2012). *Create a Wildfire Action Plan*. Retrieved from www.readyforwildfire.org/wildfire_action_plan

Figure V.2-2. The Six P's for Evacuation



Assemble an Emergency Supply Kit⁵⁷

Put together your emergency supply kit long before a wildfire or other disaster occurs, and keep it easily accessible so you can take it with you when you have to evacuate. Plan to be away from your home for an extended period of time. Each person should have a readily accessible emergency supply kit. Backpacks work great for storing these items (except for food and water) and are quick to grab. Storing food and water in a tub or chest on wheels will make it easier to transport. Keep it light enough to be able to lift it into your car.

Emergency Supply Kit Checklist

- Three-day supply of non-perishable food and three gallons of water per person
- Map marked with at least two evacuation routes
- Prescriptions or special medications
- Change of clothing
- Extra eyeglasses or contact lenses
- An extra set of car keys, credit cards, cash or traveler's checks
- First aid kit
- Flashlight
- Battery-powered radio and extra batteries
- Sanitation supplies
- Copies of important documents (birth certificates, passports, etc.)
- Don't forget pet food and water!
- Items to take if time allows:
 - Easily carried valuables
 - Family photos and other irreplaceable items
 - Personal computer information on hard drives and disks
- Chargers for cell phones, laptops, etc. (especially car chargers)
- Always keep a sturdy pair of shoes and a flashlight near your bed and handy in case of a sudden evacuation at night.

For more information on emergency supplies, visit www.Ready.gov.

⁵⁷ CAL FIRE, Ready for Wildfire. (2012). *Assemble an Emergency Supply Kit*. Retrieved from www.readyforwildfire.org/emergency_supply_kit

Family Communication Plan⁵⁸

Download and fill out the Family Communication Plan (www.readyforwildfire.org/docs/files/File/commplan.pdf), or copy it from Figure V.2-3 on the following page. Place it near your telephone, where it can easily be found by everyone in your household. Copy the form and keep it in each of your Emergency Supply Kits. This will allow all family members to have access to this key information in case you get separated.

Figure V.2-3. Family Communication Plan (next page)

⁵⁸ CAL FIRE, Ready for Wildfire. (2012). *Family Communication Plan*.

SAVE THIS FAMILY COMMUNICATION PLAN

Fill out this form and place it near your telephone where it can easily be found by everyone in your household. Copy the form and keep it in your Emergency Supply Kits. This will allow all family members to have access to this key information in case you get separated.

WHEN WE HAVE TO EVACUATE, WE WILL MEET AT:

OUR OUT-OF-AREA EMERGENCY CONTACT PERSON IS:

Name: _____ Relationship: _____

Home Phone #: _____ Cell Phone #: _____

E-mail: _____

OTHER IMPORTANT NUMBERS ARE:

Emergency 911: _____ Local Police: _____

Local Fire Department: _____ Other: _____

Other: _____ Other: _____

OUR TWO EVACUATION ROUTES ARE (SKETCH ROUTES BELOW):

Mass Notification Systems

There are mass notification programs for residents in various parts of California. This is a service provided by local governments to call residents in the case of an emergency in their community. The County of Humboldt has an operable reverse calling notification system available for use during emergency events. However, the system does not include access to all area telephone numbers. The system only includes listed numbers by AT&T and Frontier, which are updated monthly. There is currently no process whereby individual telephone numbers can be input into the system by the public. For additional emergency preparedness information please see the Humboldt County Sheriff's Office: Office of Emergency Services.⁵⁹

There are also commercial services in place for organizations, businesses, and other groups of people to create automated phone calling in a short time frame. One service is called One Call Now, www.onecallnow.com/Default.aspx; another is Call-Em-All, www.callemall.com. These are potential community notification options for homeowner's associations, schools, and other neighborhood groups.

V.2.3 Go: What to Do During Wildfire—Evacuating Safely⁶⁰

Give your household the best chance of surviving a wildfire by being ready to go and evacuating early. Evacuating early means you help firefighters by keeping roads clear of congestion, enabling them to move more freely to do their job. This includes going through **pre-evacuation preparation steps** (only if time allows) to increase your home's defenses, as well as creating a **Wildfire Action Plan** for your family. (See V.2.1. *Ready: What to Do Before Wildfire*, and V.2.2. *Set: Being Prepared for Wildfire's Approach*, above for more information.) Being ready to go also means knowing when to evacuate and what to do if you become trapped.

CAL FIRE: Says GO!

Remember: When immediate evacuation is necessary, follow these steps as soon as possible to get ready to GO!

- Review your **Evacuation Plan Checklist**
- Ensure your **Emergency Supply Kit** is in your vehicle.
- Cover up, to protect against heat and flying embers. Wear long pants, long sleeve shirt, heavy shoes/boots, cap, dry bandanna for face cover, goggles, or glasses. 100% cotton is preferable.
- Locate your pets and take them with you.

Pre-Evacuation

As stated above, to ensure that your family is prepared to evacuate, begin by walking around your property while looking for anything removable outside your home that could ignite or burn. This includes lawn furniture, door mats, hanging plants, etc. Move all of these into your garage, shed, or other enclosed space (including your house), or 30–50 feet away from your home. You want to ensure that these do not ignite and spread fire to your home.

IF A FIRE STARTS IN YOUR NEIGHBORHOOD, REMEMBER TO CALL 9-1-1. In the midst of the excitement and panic of a fire, and attempts to extinguish it, it is possible to forget to call 9-1-1 to alert firefighters. Do not call the office/station phone numbers of the firefighting services. Instead 9-1-1 is the number to report a fire; every second counts in fighting a fire. Should the time come that you do have to call 9-1-1, give them your address (which must be visibly marked on the road so firefighters can find your home) or GPS coordinates if you have them (especially if you live in an area where addresses are confusing). If you live in a remote area, tell the dispatcher the name of your local fire department (which you should be sure to know).

⁵⁹ County of Humboldt, Office of Emergency Services. (2003). Retrieved from <http://www.co.humboldt.ca.us/sheriff/oes/>

⁶⁰ CAL FIRE, Ready for Wildfire. (2012). *Go! Evacuation Guide*. Retrieved from <http://www.readyforwildfire.org/go>

If you live in a remote area and a fire has started on your property, and conditions are safe for you to leave your house, after you call 9-1-1 go to the beginning of your road and either post a person there or put up a non-flammable flag or some other sign to let firefighters know where the emergency is and the way to your house. The easier you can make it for the firefighters, the greater your chance of surviving a fire.

CAL FIRE Pre-Evacuation Preparation Steps

When an evacuation is anticipated, follow these checklists (if time allows) to give your home the best chance of surviving a wildfire:

Inside the House

- Shut all windows and doors, leaving them unlocked.
- Remove flammable window shades, curtains and close metal shutters.
- Remove lightweight curtains.
- Move flammable furniture to the center of the room, away from windows and doors.
- Shut off gas at the meter. Turn off pilot lights.
- Leave your lights on so firefighters can see your house under smoky conditions.
- Shut off the air conditioning.

Outside

- Gather up flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, trash cans, etc.) or place them in your pool.
- Turn off propane tanks.
- Move propane BBQ appliances away from structures.
- Connect garden hoses to outside water valves or spigots for use by firefighters. Fill water buckets and place them around the house.
- Don't leave sprinklers on or water running, they can affect critical water pressure.
- Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night.
- Put your Emergency Supply Kit in your vehicle.
- Back your car into the driveway with vehicle loaded and all doors and windows closed. Carry your car keys with you.
- Have a ladder (preferably not wooden) available and place it at the corner of the house for firefighters to quickly access your roof.
- Seal attic and ground vents with pre-cut plywood or commercial seals.
- Patrol your property and monitor the fire situation. Don't wait for an evacuation order if you feel threatened.
- Check on neighbors and make sure they are preparing to leave.

Animals

- Locate your pets and keep them nearby.
- Prepare farm animals for transport and think about moving them to a safe location early.

For more information, see www.readyforwildfire.org/pre-evacuation_preparation.

What to Do When Wildfire is Imminent

- Back your car in the garage heading out with windows closed and keys in the ignition.
- Close the garage door, leave it unlocked, and disconnect the automatic door opener (if applicable) in the case of power failure.
- Keep a flashlight and portable radio with you at all times, and stay tuned to your local news station.
- Move combustible yard furniture and other flammable items away from the house or store them inside.
- Cover windows, attic openings, eaves, and vents with fire-resistant materials such as ½-inch or thicker plywood. Close window shutters and blinds if they are fire-resistant.
- Attach garden hoses to spigots and place them so that they can reach all areas of your house.
- Fill all sinks, bathtubs, trash cans, buckets, and other containers with water. Keep small rags or wet towels handy to dip into the water and extinguish spot fires.
- If you have an emergency generator or a portable gasoline-powered pump that will supply water from a swimming pool, pond, well, or tank, clearly mark its location and be ready to operate it.
- Place a metal (preferably not wooden) ladder against the house on the opposite side of the approaching fire for access to the roof.
- Close all windows and doors (including securely closing pet doors) around your home to prevent sparks from blowing inside.
- Close all doors within the house to slow fire spread inside.
- Turn on the lights in all rooms of your house, on the porch, and in the yard. Your house will be more visible through the smoke or darkness.
- Shut off butane/propane, diesel, or natural gas valves.
- Move furniture away from windows and sliding glass doors to keep them from igniting from the radiant heat of the fire.
- Keep everything possible off roadways, including cars, garbage cans, trailers, etc.
- If you are relying on a cordless telephone, be sure you have a backup non-electric phone.
- If you have a cellular phone, be sure you have your car charger available so you can charge it from your car battery. Purchase a 12-volt “cigarette-lighter” inverter so you can charge critical items from your vehicle. Put both of these into your car so you can charge your phone and laptop. If you have an Internet air card (cellular USB modem), add that to your car emergency communication kit. Internet may be your easiest communication avenue at first, especially for reaching family members outside the immediate area.
- Conserve your water. Save it for when the fire is at your house, or the fire has passed. This is when you may need it to put out any smoldering embers or sparks. Remember that if the power goes out and you use a system with a pump, you won't have water unless you have a backup generator. Fill bathtubs and any available containers to store water as soon as possible, ahead of any potential power outage.
- Be sure to keep your "water reservoirs" and portable tanks filled, and have mops and hoses stored with the rest of your emergency supplies (ladders, shovels, etc.).
- Finally, ensure that all backup generators have an approved crossover switch, installed by a licensed electrician, so when the power company is fixing downed lines, you don't harm or kill a lineman with your generator.

Evacuation

Be ready if you need to evacuate. Have everything you need packed beforehand (including your cellular phone car charger). Some residents in high fire-risk areas move their valuables to a safer location during extreme fire weather. Identify all alternate evacuation routes and drive them now so you know them well. Do this in the dark too so you will

be comfortable during a large fire, where visibility can be very low. Know at least two ways out. Make sure you are comfortable with both routes. Have keys or combinations to locked gates in your vehicle. Turn on your headlights, and drive SLOWLY and carefully. There could be many people trying to leave and/or firefighters and other emergency service personnel trying to enter.

During wildfire events that have the potential to threaten personal safety, community evacuation sites may be established where residents can go to survive a wildfire. Evacuation sites will be established in different locations depending on the anticipated path of the wildfire⁶¹. The determination for the location of these sites is normally made by Humboldt County Emergency Operations Center Incident Commander in cooperation with an Incident Management Team. The Humboldt County Sheriffs and Emergency Officials will use mass communication and door-to-door methods to inform residents about the threat and where residents should go to take shelter.

See CAL FIRE's evacuation information in Appendix J.

When to Evacuate

- Leave as soon as evacuation is recommended by fire officials to avoid being caught in fire, smoke or road congestion. Don't wait to be ordered by authorities to leave. Evacuating early also helps firefighters keep roads clear of congestion, and lets them move more freely to do their job. In an intense wildfire, they will not have time to knock on every door. If you are advised to leave, don't hesitate!
- Officials will determine the areas to be evacuated and escape routes to use depending upon the fire's location, behavior, winds, terrain, etc.
- The Humboldt County Sheriff's Office is responsible for implementing evacuation procedures and enforcing evacuation orders. Follow their directions promptly.
- You will be advised of potential evacuations as early as possible. You must take the initiative to stay informed and aware. Listen to your local radio and TV stations for announcements from law enforcement and emergency personnel.
- You may be directed to temporary assembly areas to await transfer to a safe location.
- The terms "Voluntary" and "Mandatory" are often used to describe evacuation orders. However, Humboldt County uses the terms: "Precautionary" and "Immediate Threat." These terms are used to alert you to the significance of the danger. All evacuation instructions provided by officials should be followed immediately for your safety. It must be noted that there is no statute that can be used to force residents from their homes. However, once you voluntarily evacuate, you can be refused re-entry.
- Do not return to your home until fire officials determine it is safe. Notification that it is safe to return home will be given as soon as possible considering safety and accessibility.
- When you return home:
 - Be alert for downed power lines and other hazards.
 - Check propane tanks, regulators, and lines before turning gas on.
 - Check your residence carefully for hidden embers or smoldering fires.

For more information, see www.readyforwildfire.org/evacuation_steps.

If You Are Unable to Evacuate

If a catastrophic event occurs, you may not be able to reach designated evacuation sites. In such cases, you may need to make decisions on your own about seeking shelter where you can survive the passage of the wildfire until an evacuation site can be reached. This is sometimes referred to as "*sheltering in place*". Firefighters and law

⁶¹ See section II.3.5 *Evacuation Routes and Vulnerability in Part II. Risk Assessment for information about evacuation procedures and challenges in Humboldt County.*

enforcement do not recommend sheltering in place, especially given the 2009 tragedy in Australia when many did not evacuate and died. Often, residents do not have the proper equipment or training to stay behind as opposed to evacuating.

Although there are areas in Humboldt County that may be suited to sheltering in place, this practice is not recommended. There are several factors that make sheltering in place a very dangerous option in many parts of the county, including steep terrain, dense forest canopies, the direction from which wildfires come, and narrow and dead-end roads. Therefore, you should not shelter in place unless told to do so by a Sheriff's deputy, other law enforcement, or the fire department. If the fire department knows there are citizens who have stayed, they must attempt to rescue these citizens. This pulls critical resources away from fighting the fire and saving homes and jeopardizes the lives of firefighters as well as other citizens who are trying to evacuate.

However, if you are trapped and evacuation is not an option, the safest location may be your home. This should only be considered as an option if adequate defensible space has been maintained, if a water supply is available, and if fire safe construction materials are used. If the home does not have these qualities, a near-by temporary survival area will need to be found. Temporary survival areas should be clear of flammable vegetation and are often located on large river bars, irrigated fields, or an open area that has already been burned. The recommended size of the area will vary depending on surrounding conditions. The greater the size of the flame height, the greater the volume of surrounding vegetation, the steeper the slope, the greater the wind speed, the higher the fire severity, or the larger the number of people or vehicles in the area, the larger the area needs to be⁶². Temporary survival areas follow similar size criteria as evacuation sites for determining their suitability. However, evacuation sites are places with facilities, such as bathrooms and cleaning stations that allow displaced residents to remain until the wildfire threat has passed. Evacuation sites are intended for much longer stays than temporary survival areas.

It can be very difficult to determine the right thing to do as the fire approaches. Before a wildfire threatens, you should talk to your local fire department about defensible space and possible appropriate survival areas in your neighborhood. It is important to note that the suitability of a survival area may vary depending on the location and severity of the wildfire. There is rarely a survival area in the wildland that is adequate for all wildfire conditions. It is also important to know the location of the wildfire before attempting to travel to a survival area or evacuation site, as roads are often blocked during wildfire events by flames and rolling debris.

⁶² Survival areas are similar to safety zones used by firefighters which are defined by the National Wildfire Coordinating Group. The NWCG provides guidelines for safety zone size assuming no wind, no slope, and one fire truck; these guidelines could be used by resident as a rule of thumb if no other options are available. The distance from any vegetation that has the potential to burn should be at least four times greater than the continuous maximum flame length (flame length is used as a flame height approximation). For more information see the 2004 Fireline Handbook pages 12-15 (National Wildfire Coordinating Group. (2004). Fireline Handbook. NWCG Handbook 3, PMS 410-1, NFES 0065. Available at http://www.wildfirelessons.net/documents/flhb_410-1.pdf) and the 2010 Incident Response Pocket Guide page 7 (National Wildlife Coordinating Group. (2010). Incident Response Pocket Book. PMS 461, NFES 1077. Available at <http://www.wildfirelessons.net/documents/nfes1077.pdf>).

What to Do if You Become Trapped...

While in your vehicle:

- Stay calm.
- Park your vehicle in an area clear of vegetation.
- Close all vehicle windows and vents.
- Cover yourself with wool blanket or jacket.
- Lie on vehicle floor.
- Use your cell phone to advise officials—Call 9-1-1.

While on foot:

- Stay calm.
- Go to an area clear of vegetation (see description of a temporary survival area above)
- Lie face down, cover up your body
- Use your cell phone to advise officials—Call 9-1-1.

While in your home:

- Stay calm—keep your family together.
- Call 9-1-1 and inform authorities of your location.
- Fill sinks and tubs with cold water.
- Keep doors and windows closed, but unlocked.
- Stay inside your house.
- Stay away from outside walls and windows.

Preparing Pets and Livestock

In some areas, animals are not permitted at community evacuation sites. Pet and livestock owners should work with local fire officials to determine the protocol for managing animals in their communities. If you have pets and/or livestock, take the time now to plan how best to ensure their survival. The following text is from a brochure produced by the California Department of Food and Agriculture, “Disaster Preparedness for Dog and Cat Owners,” which is available here: http://www.cdffa.ca.gov/ahfss/animal_health/pdfs/dompets.pdf. There is also a brochure for birds and reptiles, available here: http://www.cdffa.ca.gov/ahfss/animal_health/pdfs/birdexot.pdf. And a brochure pertaining to horses and livestock is available here: http://www.cdffa.ca.gov/ahfss/animal_health/pdfs/lgeanim.pdf.

For more information on evacuating animals, please check out the following resources:

- CAL FIRE Animal Evacuation Fact Sheet:
www.fire.ca.gov/communications/downloads/fact_sheets/Animalevacuation.pdf
 - Also available in Spanish:
www.fire.ca.gov/communications/downloads/fact_sheets/Animalevacuationspanish.pdf
- Sequoia Humane Society, 6073 Loma Ave, Eureka, CA 95503-6869, (707) 442-1782, www.sequoiahumane.org
- FEMA, Ready – Caring for Animals website & “Information for Pet Owners” brochure:
<http://www.ready.gov/animals>
- ASPCA – Disaster Preparedness website: <http://www.asPCA.org/Home/Pet-care/disaster-preparedness>

Figure V.2-4. Disaster Preparedness for Dog and Cat Owners⁶³

**WITH A LITTLE ADVANCE PLANNING,
YOU CAN SAVE YOUR PET'S LIFE IN A DISASTER**

BEFORE:

PLAN AHEAD. In the event of an evacuation, pets may not be allowed inside human emergency shelters. Determine the best place to leave your pet in case of a disaster. Identify an off-site location as well as a place in your home.

IDENTIFICATION AND PHOTOGRAPHS. Dogs and cats should always wear properly fitting collars, personal identification, and rabies and license tags. Make sure all the information on the tags is current. Keep a current photo of each pet. Make sure any distinguishing markings are visible in a photo. You will need proof of ownership to retrieve your pet from a shelter.

DISASTER KIT. Maintain a disaster preparedness supply kit for each of your pets (*see below*).

PAPERWORK AND RECORDS. Store important animal documents in a zip-lock or waterproof plastic bag. These should include vaccination and medical records.

VACCINATIONS. Your pets need to be current on vaccinations. You will be required to show proof of vaccination if you need to board your pet.

TRANSPORTATION. Each animal should have his or her own pet carrier. Familiarize your pet with the carrier or cage before an emergency.

LEASHES AND COLLARS. Keep a leash handy for each dog and cat in your home. Consider using a harness.

BUDDY SYSTEM. In case you are not home when disaster strikes, ask a trusted neighbor to check on your animals. Exchange veterinary information and file a permission slip with your veterinarian authorizing the neighbor to get emergency treatment for your pet if you can't be located.

DURING:

IF YOU TAKE YOUR PET:

- **Evacuate your pet early, if possible.**
- **Take your disaster preparedness kit**, including the pet's vaccination and medical records, as well as identification photographs.

IF YOU CAN'T TAKE YOUR PET WITH YOU:

- **Bring your pet indoors.** Never leave pets chained outdoors.
- **Prepare a pre-selected site indoors for your pet.** Use a room with no windows but adequate ventilation, such as a utility room, garage, bathroom, or other area that can be easily cleaned. Do not tie the animal(s) up.
- **Leave only dry foods and fresh water in non-spill containers.** If possible, open a faucet to let water drip into a large container or partially fill a bathtub with water. Do not leave vitamin treats, which could be fatal if over-eaten.
- **House cats and dogs separately, even if they normally get along.**
- **What about pets other than dogs and cats?** Plans for birds and reptiles can be found in the brochure entitled "Disaster Preparedness for Bird and Reptile Owners."
- **Small mammals, or pocket pets, should be transported in carriers suitable for maintaining the animals while sheltered.** Remember to take bedding materials. Keep animals in a quiet, safe place.

⁶³Pacific Northwest Wildfire Coordinating Group. (n.d.) *Living With Fire*. Retrieved from http://www.auburnlaketrails.org/picture/living_with_fire.pdf

AFTER:

- **Pet behavior may change after an emergency.** Monitor your pets closely and keep them leashed. Familiar scents and landmarks may be altered, causing confusion and abnormal behavior.
- **Be aware of downed power lines, fallen trees, debris, and local wildlife that may be disturbed.**
- **If you find a pet,** call animal control or any emergency phone numbers set up after the disaster. Isolate it from your animals until it is returned to its owner or can be examined by a veterinarian.

IF YOU'VE LOST YOUR PET:

- **Visit each shelter in your area at least once every other day.** You must check the shelter in person; only you can truly identify your animal. Keep a current photo of your pet showing or describing any distinctive markings.
- **Create a flyer** with your pet's photo and description, pet's name, your name, and phone numbers where you can be reached.
- **When you do find your pet, immediately examine it for illness or injuries.** Obtain medical attention from your veterinarian if needed. Use caution when handling animals. Panicky or injured animals may bite.

Practice Your Plan!

Pet Disaster Preparedness Kit

- Pet carrier or cage for each pet
- Two-week supply of food and water
- Non-spill food and water bowls
- Medications and dosing instructions
- Pet first-aid kit
- Vaccination and medical records
- Your veterinarian's information
- Cat litter box and litter
- Be sure to provide your pets with as many amenities as possible.
- Remember, they are counting on you for their survival and support!
- Newspaper
- Plastic bags for waste disposal
- Paper towels
- Disinfectants
- Leash and collar/harness
- Blankets
- Toys and treats

Emergency Contact Information

- You will need to have your emergency contact information in one easily accessible place. This information is different in every county.

A well-planned and executed evacuation can reduce the impact of wildfire on you and your family. Start preparing today by reviewing "Ready, Set, Go!" Pick up a copy at your local fire station, or download it here: www.readyforwildfire.org/.

V.3. After the Fire

Once a fire burns through an area, a separate set of actions commences. For instance, wildfires that have burned at high severity may have dangerous adverse effects on *watershed* health and pose extreme safety issues to local communities. Water erosion is one of the main concerns. Hillsides that are completely burned, with all or most of the trees and vegetation gone, will not have the ability to hold back or absorb water when rainfall is heavy. In these situations the potential is high for catastrophic events like landslides—where entire hillsides can turn to liquid and move downslope. This was seen in 2010 in the communities surrounding the Angeles National Forest following the Station Fire and in the 2004 summer fires in Shasta County, where some homes were threatened that had burned only a few years ago.

In addition to *slope instability*, invasive species can take hold after fire, changing the ecological balance for decades. Once established, these invasive species increase future fire risk, as they are highly flammable in late summer when they carry fire very well. This increases the likelihood of more fires and, in turn, more weeds to perpetuate this cycle far into the future.

Directly following a fire the land is at its most sensitive. It is in an unstable state. Therefore, very careful consideration will need to be taken to ensure that your actions benefit its recovery. Section V.3.2 below details how to go about developing a restoration plan.

One of the best resources on this topic is the document *After the Burn* created by the Idaho Forest, Wildlife, and Range Experiment Station. Although it is not written for Humboldt County ecosystem types, it's still full of excellent information for those dealing with the after affects of wildfire on forestlands. You can find the document on the Oregon State Extension website at:

http://extension.oregonstate.edu/sites/default/files/community_pgs/wildfire_after_the_burn_2011.pdf.

V.3.1 Assess Your Situation

Because you lived through a fire does not mean it could not happen again. Learn to be better prepared next time. *Forestland Steward*⁶⁴ published this article after the 2003 firestorms:

Post-Fire Response, Assess Your Situation

Although we all know that the California landscape is adapted to burn, we are seldom prepared for the reality of a large wildfire. The effects of a fire will have consequences for years. Approach the post-fire period thoughtfully. After a fire, there are important decisions to be made. What should you be concerned about and what needs to be done? The wrong choices could lead to problems down the road, so take some time to assess your situation before taking any action.

Areas of concern:

The Homesite

- Damage to the home or other structures
- Loss of landscaping
- Hazardous trees or vegetation
- Danger of flooding, on-site sedimentation
- Drinking water quality and other environmental impacts

⁶⁴ California Forest Stewardship Program. (2004). Post-fire response, assess your situation. *Forestland Steward* Newsletter, Spring 2004. Retrieved from <http://ceres.ca.gov/foreststeward/pdf/newsspring04.pdf>.

Post-Fire Response, Assess Your Situation

The Landscape

- Safety hazards—trees, power lines, etc.
- *Regeneration* and recovery
- Wildlife habitat
- Watershed functions
- Erosion concerns
- Condition of remaining vegetation

Streams

- Proximity to home, roads, other facilities
- Hydrologic connectivity of existing drainage facilities
- Potential of increased woody debris load, stream flow, flooding, debris flow
- Need for treatments to upper watershed to minimize downstream impacts, impacts to property

Roads

- Existing problems may be exacerbated by wildfire effects
- Damage to stream crossings, culverts
- Gullies, potholes, fill-slope failure, cut-slope failure, sediment deposits, wet spots
- Potential for culvert obstruction and diversion.

V.3.2 Developing and Implementing a Restoration Plan⁶⁵

After a wildfire has burned through your property you will need to assess the impacts and decide what measures are necessary to restore and mitigate the damage. Similar to developing a fuel-treatment prescription, you will need to develop a post-wildfire recovery plan. It will outline the priority areas on your property to begin work, and the sequence, schedule, and timing of that work. Post-fire restoration activities focus on mitigating ecological damage and improving safety for your homesite and road network.

It is highly recommended that trained resource professionals be consulted in developing your plan. Sometimes a team of specialists (including hydrologists, geologists, soil scientists, botanists, foresters, and engineers) may need to be consulted to assess the impacts the fire may have caused. They can give you direction regarding how to develop a restoration plan to start the healing process. In addition to their advice, consider consulting with an ecologist to review your restoration plan. Often, activities that some professionals consider to be restoration can set back the cycle of ecological recovery, inflicting more damage on the already disturbed land. Some Humboldt residents live adjacent to state or national park lands. The resource staffs at those agencies can be a great help in developing a post-fire restoration plan.

Where to Begin?

Immediate and Long-Term Needs

In developing your restoration plan, prioritize both immediate needs and longer-term actions. Immediate needs relate to seasonal timelines and activities that need to occur right away, for both human safety and the mitigation of ecological impacts. Following a wildfire, you will likely need to be thinking about winter rains. To mitigate slides and erosion, your first step will be to stabilize these areas. Roadway infrastructure, homesite, and riparian areas are other places to immediately begin restoration projects.

⁶⁵ This section is based on the work of: Bey, M. (n.d.). Lomakatsi Restoration Project. Retrieved from www.lomakatsi.org, for ForEverGreen Forestry (www.forevergreenforestry.com).

Long-term actions are the recovery work that you will undertake over time. Restoration is a process and not a one-time occurrence. Planting native trees, shrubs, and grasses is part of long-term *restoration activity*. Planting locally appropriate native species is important to minimize the invasion of exotic weeds in the short term.

Restoration Plan Mapping and Layout

Following fire, consult with natural resource professionals to help you assess the damage. Get an aerial photograph of your property and designate zones for restoration priorities. Free aerial pictures can be obtained from online sites such as Google Earth;⁶⁶ be sure to check the photo date however, as it may not be as current as the fire. With this photo and subsequent map you can define those areas that burned the hottest, require immediate restoration, and need long-term restoration; and you can project locations of greatest concern. This map will correspond to a written plan that describes the proposed restoration activities. Using *Geographic Information Systems* (GIS) and *GPS* tools and technology can be extremely helpful in creating your maps and plan.

Developing a Restoration Priority List

Priority #1: Roads, Driveways, Homesite, and Steep Areas

In order to undertake restoration work, you need access to your property. Following a wildfire, weakened trees can fall across roads or threaten driveways and roads. Ensure safe access and exit by removing them.

Slope movement from a high-intensity fire followed by rains can cause slides above and below roads. Stabilize these areas with erosion-control methods. Trees that burned can pose safety issues along roads. These trees can be used to stabilize road banks by *contour-falling* them. You can achieve several goals with one activity. In restoration we call this *stacking functions*. In this situation you can increase safety of travel along your driveway, in turn using the trees to hold slopes in place. Always check with an experienced local arborist before removing any trees, especially native trees such as oaks.

If the fire burned hot within 100 feet of your home, you will need to take measures here to increase safety. If you have steep slopes below or above your house, perform safety-mitigation work and erosion control. If your homesite is on a steep slope directly above your neighbors, prioritize developing a mitigation plan.

Priority #2: Streams, Riparian Areas, and Sensitive Habitat Areas

After safety and access are ensured, focus restoration activities on mitigating stream impacts. To prevent sedimentation and erosion from entering streams, focus your attention on these locations. In addition to riparian areas and streams, think about upland slopes above stream corridors.

If you have identified important wildlife corridors, sensitive species and their habitat, and ecologically significant locations, you will also want to focus your attention on these places.

Priority #3: Remaining Wildlands

Following restoration treatments of the priority areas described above, focus the rest of your restoration activities on the long-term recovery of your wildlands.

It is important when planning post-fire restoration efforts that you focus attention on areas that have the greatest need. Following fire, some areas on your property may be fine left alone for natural recovery. Ultimately the natural world will heal itself—the land has been here longer than any one of us. What we are attempting to do is assist that recovery and mitigate further damage without causing additional problems. When developing your restoration plan, take into account each location and its specific needs. Directly after a fire things look charred and heavily impacted; however, new life is there and will literally rise from the ashes.

⁶⁶ Google Earth. (n.d.) Retrieved from <http://earth.google.com>

V.3.3 Make a Plan to Be Better Prepared Next Time

Living through a wildfire can be a life-altering experience. There is no other “wake-up call” quite like a wildfire. You will likely learn many new things about where you live and probably about who you are.

When replacing structures and/or landscaping after wildfire, use hardened home and defensible-space concepts like those outlined earlier in this document to help you design a more fire-safe home. If you lost 50% or more of your home, you will be required to meet the latest building codes when you rebuild, as described in “Hardened Homes” in Section V.1.1 above.

If you have to start from scratch, think about where to site a new structure. Where are those places on your property that burned less or not at all? What about putting your house there now? Look at the places on your property or in your neighborhood that survived and try to understand why. Talk to your neighbors about how their places survived and what they learned. Mimic those features that lead to survivability when working on other places on your property that did not fare so well. If you improve your understanding of your local landscape and how it reacts to fire, you can improve the survivability of your home and your ability to plan for future fires.

Finally, a few closing words from Dr. David Horne, who has been active with the Greater Laguna Fire Safe Council and a board member of the California Fire Safe Council since he lost his home to wildfire:

“Though it may be difficult, try to avoid spending energy on blaming someone or group or agency or fate that ‘caused’ the wildfire to happen. Distance yourself from the doom-and-gloom personalities that will emerge to spread their message of sorrow. You only have so much personal strength and you will need it for the recovery phase in a post-incident situation. Think positively, talk positively, and act positively about the future. Concentrate on regeneration prospects and rebuilding your homes, neighborhoods, and community to be even better than before. Be a positive example of the incredible resiliency of the human spirit that will inspire your loved ones and others to pitch in to move forward with confidence and assurance. You can do it!”⁶⁷

⁶⁷ Home, D., (Director, California Fire Safe Council), personal communication, March 15, 2007.

V.4. Legal Requirements

V.4.1 Fire-Safety Regulation Compliance

As stated throughout this CWPP, defensible space not only makes sense, it's the law. Many activities that will reduce your vulnerability to damage or loss from wildfire are mandated by local or state policies and regulations. The section below describes some of the most relevant policies and regulations related to homeowner wildfire safety in Humboldt County and in the State of California.

Humboldt County Code Title III, Div 11: Fire-Safe Regulations

Humboldt County applies standards to proposed development within the SRA⁶⁸ to reduce the risk of fire. These standards are a locally adopted equivalent to the state's SRA Fire Safe Regulations as authorized by PRC Section 4290. They have been approved by CAL FIRE as meeting or exceeding state regulations. New development in the SRA is subject to the County Fire Safe Regulations. The appropriate clearance of vegetation around new developments is inspected by County Building Division Staff with other improvements at the time of construction. The Humboldt County Building and Planning Department, in collaboration with CAL FIRE, work to ensure that these standards are met through the development permitting process. Requests for exemption from these standards may be submitted to the Planning Director and must be accompanied by detailed information about the area, and reasons for which the exemption is requested. Exemption requests are reviewed by CAL FIRE. Any person in violation of these regulations shall be guilty of a misdemeanor and subject to the penalties provided for in Section 112-5 of the Humboldt County Code.

The County's Fire Safe Regulations ordinance includes specifications regarding:

- **Road and Driveway Access:** Public and private roadways must provide safe access for emergency wildland fire equipment and civilian evacuation, concurrently. Standards for ensuring this safety pertain to road width, roadway surfaces, grades, and radius, as well as the availability of *turn-arounds* and *turn-outs*. There are also regulation standards applied to clearance and weight-bearing capacity of roadway structures, as well as driveways and gate entrances.
- **Street and Address Signs:** Standards ensure clear visibility and legibility of street and addresses signs to assist fire safety and emergency response.
- **Emergency Water:** Standards ensure the immediate availability of water for wildfire protection in appropriate quantities (2,500 gallons) and locations. These regulations are intended to facilitate rapid and effective firefighting response and apply to hydrant and fire valves as well as the signing of water sources.
- **Setbacks and Greenbelts:** Having a *point of attack* and defensible space for fighting wildfire is extremely important to the safety of firefighters and their equipment, as well as for civilians and structures on properties adjacent to greenbelts. For these reasons, standards expect strategic placement of greenbelts as separations between wildland fuels and structures; they require buildings to be setback a specific distance from property lines and roadways. Regulations also apply regarding the disposal or removal of flammable vegetation or fuel caused by development and construction.

The full text of the Humboldt County Fire-Safe Regulations can be viewed at the online Planning Library (http://www.co.humboldt.ca.us/planning/planning_library/fire_regs/firesafe.pdf) and at the Building Inspection webpage (www.co.humboldt.ca.us/planning/building/#forms) under "Forms and Handouts." Also available on the Building Inspection webpage are a Fire Safe Regulations Checklist, Exemption Request Forms, and a SRA Domestic Emergency Water Supply Systems manual that contain useful diagrams for helping individuals comply with regulation standards.

⁶⁸ For more information on SRA, see Chapter II.3. Wildfire Protection Capabilities.

Public Resources Code 4290 and 14 CCR 1270 et seq.: Fire Safety Standards⁶⁹

Public Resources Code (PRC) 4290 and regulations in 14 CCR 1270 cover the basics of roads, driveway width, clearance, turn-outs, turn-arounds, signing, and water regulations related to fire safety. 4290 is usually enacted by local ordinances at the county level that are certified by the Board of Forestry (BOF). Counties are allowed to develop their own code as long as it meets or exceeds PRC standards. Humboldt County did adopt its own code—the County Fire-Safe Regulations—which is described in more detail above. The Humboldt County Regulations is the local functional equivalent to PRC 4191 and residents should look to it for compliance guidance.

Public Resources Code 4291/14 CCR 1299: Defensible Vegetation Clearing Around Structures

The State of California enforces basic fire-prevention principles through PRC 4291. “4291,” as it’s called, regulates the amount of fuel you can have around your property. It is a good summary of the basics of vegetation reduction for fire safety and defensible space. This is the law that required a minimum of 30 feet of defensible space. This was updated in 2004 to expand some of the 30-foot defensible requirements to 100 feet, as is the case for all of Humboldt County. It was again updated in 2008 (through SB 1595) to expand this to the property line, or further. The BOF adopted regulations in 2006 to provide greater specifications for the vegetation removal requirements for the area located 30 to 70 feet from a structure.

The law requires the owner or person in control of a qualified property to significantly reduce the risk of ignition of a habitable structure by maintaining defensible space, as prescribed, within a certain number of feet from the above-described dwellings, buildings, or structures... Because this bill would change the definition of a crime, it would impose a state-mandated local program.⁷⁰

The revised 4291 states:

(1) Maintain defensible space no greater than 100 feet from each side of the structure, but not beyond the property line unless allowed by state law, local ordinance, or regulation and as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion.

(2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.

(3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the director, provides findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance

⁶⁹Full text for these Public Resource Codes available at: CAL FIRE. (2012). *Fire Safe Regulations*. Wildland Hazard and Building Codes. Retrieved from http://calfire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php

⁷⁰ Senate Bill 1595, Chapter 366 (2008). (p. 1.) Available at www.californiachaparral.com/images/sb_1595_bill_20080927_chaptered.pdf.

may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.⁷¹

CAL FIRE is the statewide agency that enforces PRC 4290 and PRC 4291 (*see below*). For many reasons, it is to your advantage to meet these minimum standards. As discussed earlier in this plan, it is the condition of this 100-foot area, which could make the difference between losing your home and saving it. *For the full text of PRC 4291, see Appendix K.*

Public Resources Code 4102, 4125-4229 and 14 CCR 1220: State Responsibility Area (SRA)

These statutes and regulations established the locations where CAL FIRE has the financial responsibility for preventing and suppressing fires. Not only are these designations important to local communities for defining the financial arrangements for fire protection services, they establish the locations where fire safe and defensible space laws or regulations apply.

Public Resources Code 4251-4255 and 14 CCR 1200: Hazardous Fire Areas

These laws and regulations allow petitioners to the Board Forestry and Fire Protection or CAL FIRE to establish hazardous fire areas (HFA). The designation provides for area closures and other restrictions for fire prevention within the HFA.

California Residential Code, Chapter 3, Section R313: Sprinkler Systems

As of January 1, 2011, all new dwellings, dwelling units, and one and two family townhomes are required to be equipped with an automatic fire sprinkler system. This ordinance states that sprinklers must be installed to protect all areas within a dwelling unit, whether via a stand-alone or multi-purpose wet-pipe sprinkler system. However, such a system shall not be required when additions or alterations are made to existing townhouses or one- and two-family dwellings that do not already have automatic sprinkler systems in place; such additions or alterations are exempt. Other exemptions where sprinklers are not required include attics, crawl spaces, clothes and linens closets, bathrooms less than 55 square feet in size, and detached garages or carports without habitable spaces.

Sprinkler systems are valuable safety precautions in protecting people and residences against fire danger. All new permitted residential construction, as specified above, will require this sprinkler system. If you live in an older or unpermitted home, installing sprinklers as a retrofit is also possible. There are local contractors who are knowledgeable about these installations.

The full text on Automatic Fire Sprinkler Systems can be viewed online at the Building Inspection webpage under “Sprinkler Systems.”⁷² This webpage also provides links for additional information regarding fire sprinklers, including a “Water Supplies for Home Fire Sprinkler Systems Fact Sheet” and a link to the “International Residential Code Fire Sprinkler Coalition” website.

Public Resources Code 4292-4296 and 14 CCR 1256: Fire Prevention for Electrical Utilities

These statutes and regulations address the vegetation clearance standards for electrical utilities. They include the standards for clearing around energy lines and conductors such as power-line hardware and power poles. These laws and regulations are critical to wildfire safety because of the substantial area of power lines in wildlands, the historic source of fire ignitions associated with power lines, and the extensive damage that results from power-line fires in severe wind conditions.

Government Code 51175: Very High Fire Hazard Severity Zones

This Code defines Very High Fire Hazard Severity Zones and discusses its implementation. This Code came about following the 1991 Oakland Hills fire and the resultant “Bates Bill” (AB 337).

⁷¹ Senate Bill 1595, Chapter 366 (2008). (p. 6.)

⁷² County of Humboldt, Planning and Building Department (n.d.). *Sprinkler Systems*.

The purpose of this chapter is to classify lands in the state in accordance with whether a very high fire hazard is present so that public officials are able to identify measures that will retard the rate of spread, and reduce the potential intensity, of uncontrolled fires that threaten to destroy resources, life, or property, and to require that those measures be taken.⁷³

CAL FIRE's Fire and Resource Assessment Program (FRAP) uses this information to:

...provide updated map zones, based on new data, science, and technology that will create more accurate zone designations such that mitigation strategies are implemented in areas where hazards warrant these investments. The zones will provide specific designation for application of defensible space and building standards consistent with known mechanisms of fire risk to people, property, and natural resources.⁷⁴

Knowing that your property is rated high or very high *fire hazard severity* can motivate you to take action to mitigate the risk of wildfire losses. There are also certain standards that apply to different severity zones that residents should be aware of; such as required ratings for roofing materials. Most of the eastern region of Humboldt County is classified as Very High Fire Hazard Severity Zone. *See Chapter II.1 Wildfire Environment for more information on fire hazard severity zones.*

Government Code 51189: WUI Building Standards

This Code is a result of AB 1216 (Vargas) and directs the Office of the State Fire Marshal to create building standards for wildfire resistance. This was updated in 2008 through SB 1595, and again in 2010. This is the legal basis for the WUI Building Standards referred to in section V.1.1 in this document.

The Legislature finds and declares that space and structure defensibility is essential to effective fire prevention. This defensibility extends beyond the vegetation management practices required by this chapter, and includes but is not limited to, measures that increase the likelihood of a structure to withstand intrusion by fire, such as building design and construction requirements that use fire-resistant building materials, and provide protection of structure projections, including, but not limited to, porches, decks, balconies and eaves, and structure openings, including, but not limited to, attic and eave vents and windows.⁷⁵

As of 2011, the WUI standards relevant to fire-safe construction for all new structures in the SRA are the California Building Code, Chapter 7A (applied to commercial construction) and the California Residential Code, Chapter 3, Section R327 (applied to residential construction).⁷⁶

Government Code 65302.5: General Plan Fire Safety Element Review

This statute requires the State BOF and Fire Protection to provide recommendations to a local jurisdiction's General Plan Safety Element at the time that the General Plan is being amended. While not a direct and binding fire prevention requirement for individuals, General Plans that adopt the BOF's recommendations include goals and policies that provide for contemporary fire prevention standards for the jurisdiction. The programs and standards typically recommended by the BOF are related to local agency development of fire plans, adoption of Fire Hazard Severity Zone maps, adoption of ignition-resistant building codes, reduction of hazards to structures and neighborhoods that do not meet contemporary fire-safe standards, planning for emergency access in open-space areas associated with the jurisdiction, providing adequate levels of emergency services, and addressing post-wildfire safety and recovery programs.

⁷³ California Government Code 51176 (2010). Available at <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=51001-52000&file=51175-51189>

⁷⁴ CAL FIRE. (2007). *Fire Hazard Severity Zone Re-Mapping Project*. Retrieved from <http://frap.fire.ca.gov/projects/hazard/fhz.html>

⁷⁵ California Government Code 51189, section a (2009). Available at [http://legix.info/us-ca/codes;gov/doc\(sec51189\).html](http://legix.info/us-ca/codes;gov/doc(sec51189).html)

⁷⁶ The most up-to-date versions of these codes are stored on the Humboldt County Building Inspection Division webpage at: County of Humboldt, Planning and Building Department. (n.d.). *Building Codes*. Building Inspection Division. Retrieved from www.co.humboldt.ca.us/planning/building/#codes.

The regulations summarized above may seem daunting at first; don't let them intimidate you from getting started now on creating your defensible space around your hardened home. When in doubt, and for assistance, contact your local CAL FIRE office, or the Humboldt County Planning and Building Department, at (707) 445-7541

V.4.2 Environmental Protection Compliance

Reducing hazardous fuels on your property can significantly decrease your vulnerability to losses due to wildfire and can often enhance the ecological quality of the landscape; however, these actions also cause alterations within the physical environment and therefore have the potential to negatively impact wildlife species and their habitat. When planning wildfire mitigation projects that may alter the physical landscape, you should first make sure that you are in compliance with laws designed to help protect the environment. Some of the most relevant policies and regulations related to environmental compliance are described below.

Humboldt County Zoning Ordinance, Section 314-61.1: Streamside Management Area Ordinance

Humboldt County applies standards to the use of and proposed development within or affecting *Streamside Management Areas* (SMAs) and other wet areas such as: natural ponds, springs, vernal pools, marshes, and wet meadows (exhibiting standing water year-long or riparian vegetation).⁷⁷ The provisions of this ordinance pertain to all Land Use and Development permits issued by the County related to Planning, Subdivision Regulations, Building Regulations, and Protection and Control of County Roads and Permits. A site evaluation shall be made where necessary to determine if a project/activity (such as hazardous fuel reduction) meets the exemption standards of these regulations or if the proposed development requires a special permit.

Permissible development within SMAs is limited but may include activities such as noncommercial cutting of firewood and removal of vegetation for public safety purposes. Development within SMAs requires certain specific mitigation measures, including retaining live trees with visible evidence of use as nesting sites, and erosion control measures. All development activities related to SMAs are prohibited from discharging or placing quantities of soil, vegetation, or other organic or inorganic materials into any SMAs in quantities that could be deleterious to fish, wildlife, or other beneficial uses.

If you are unsure of the law, or unclear about whether your proposed development or activity applies to an SMA, contact the County Planning and Building Department for guidance prior to moving forward. They can be reached by calling (707) 445-7541, or by visiting their website at: www.co.humboldt.ca.us/planning/. If you are interested in determining where SMAs may be located on your property, you can do so through the Humboldt County Web GIS Portal (<http://gis.co.humboldt.ca.us/>). A menu on the right hand side of the webpage allows you to select "SMAs," then zoom in on your location. If you know your parcel number, it will be simpler to locate your property and decipher any nearby SMAs.

Air Quality Regulations

The North Coast Unified Air Quality Management District (NCUAQMD) is the regional environmental regulatory agency, which has jurisdiction over the air quality in Humboldt, Del Norte, and Trinity Counties. The NCUAQMD applies rules and regulations that maintain and protect health-based state and federal Ambient Air Quality Standards to prevent the deterioration of air quality levels that may jeopardize human health and safety.

A major emphasis within air quality management is the enforcement of regulations related to *open burning*. Open burning refers to the use of outdoor fires for disposing of natural vegetation⁷⁸ from single or two family homes. It is also the type of burning often associated with maintaining defensible space around your home and strategic fuelbreaks on your property and roadways. Natural vegetation may only be burned on the property from

⁷⁷ The full text of the Streamside Management Area ordinance is available at: County of Humboldt, Planning and Building Department. (n.d.). *Humboldt County Zoning Regulations*. Planning Library. Retrieved from http://www.co.humboldt.ca.us/planning/planning_library.asp

⁷⁸ In this context, "natural vegetation" means vegetation grown on the property.

which it originates.⁷⁹ In order to burn, the vegetation must be properly dried and be free from waste such as garbage, plastic, treated or painted wood, tires, tar paper, demolition debris, etc; burning of poison oak should be avoided.

Even non-toxic smoke released at ground level can negatively affect the health of people in close proximity to the burn. Furthermore, smoke travels easily through neighborhoods and may become a public nuisance. Smoldering fires can be avoided by 1) only burning vegetation free of dirt and moisture, 2) covering vegetation piles to prevent rain exposure, and 3) stacking burn materials loosely to allow air circulation. Trees and branches less than two inches in diameter, and plant trimmings, must be dried for at least 30 days before burning.

In order to use open burning for the disposal of natural vegetation, a valid District Burn Permit is required year-round. On the other hand, small recreational or ceremonial campfires do not require a District permit. Additional permits are required by CAL FIRE during declared fire season. Burn permit applications are available from several locations, including CAL FIRE stations, local fire protection agencies, and through the District's website;⁸⁰ this website also offers the convenient option of renewing burn permits online. Burn permits are only issued at the NCUAQMD office, 2300 Myrtle Avenue in Eureka. In 2012, a standard residential burn permit costs \$15.00 and authorizes an individual to burn one 4x4-foot pile of approved materials. Permits should be clearly posted when conducting an open burn.

Burn hours are from 6:00 am until 12:00 pm on permissive burn days only. Approved burn days can be determined by calling the "Burn Day Hotline" at (866) BURN-DAY, or (866) 287-6329. The NCUAQMD has separate requirements and guidelines pertaining to agricultural waste burns, development burns, forest improvement burns, prescribed burns, range improvement burns, and residential waste burns. Please contact the NCUAQMD's Burn Permit Program at (707) 443-3093 for information on these types of burning. The full text on Air Quality Management rules and regulations can be viewed at the NCUAQMD's website, accessible at: <http://www.ncuaqmd.org/>. To report illegal burning or someone known to be a continual problem burner, call the NCUAQMD's Compliant Hotline at (707) 444-2233.

Residential open burning can be minimized by alternatively composting vegetation or "green waste" in yards, which can then be used for mulch and natural fertilizer in gardens. Vegetation can also be brought to a nearby biomass utilization facility where it will be used to create energy or mulch. Recycling materials such as cardboard, magazines and newspaper, and junk mail can also reduce burning.⁸¹

National Environmental Protection Act (NEPA) & California Environmental Quality Act (CEQA)

The National Environmental Policy Act (NEPA) was enacted in 1969 in recognition of "the profound impact of man's activity on the interrelations of all components of the natural environment,"⁸² and it requires that federal agencies take certain environmental considerations into account prior to the implementation of projects, or "undertakings," that may adversely affect the environment, whether directly or indirectly. The California Environmental Quality Act (CEQA) is the California state equivalent of NEPA, which requires state and local agencies to "identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible."⁸³ These laws exist to help preserve the health of the environment and the ecological integrity of America's landscapes.

⁷⁹ North Coast United Air Quality Management District Regulation II, Open Burning Rule: 200-208. Available at <http://www.ncuaqmd.org/index.php?page=rules.regulations>

⁸⁰North Coast Unified Air Quality Management District. (n.d.) Retrieved from <http://www.ncuaqmd.org/>.

⁸¹ For more information about alternatives to burning vegetation, including biomass conversion to energy, visit: California Environmental Protection Agency (CEPA), Air Resources Board. (2011, August 8). *Biomass Burning Alternatives*. Retrieved from http://www.arb.ca.gov/smp/biomass/bio_map/altern_treat.htm

⁸² The NEPA Statute, 1969. Retrieved from http://ceq.hss.doe.gov/laws_and_executive_orders/the_nepa_statute.html

⁸³ California Natural Resources Agency. (2007). *Frequently Asked Questions about CEQA*. Retrieved from <http://ceres.ca.gov/ceqa/more/faq.html>

NEPA and CEQA require Environmental Assessments and Environmental Reviews, respectively, which determine the potential environmental effects a project may have. If there is potential for significant impacts to the environment, a more substantive review in the form of an Environmental Impact Statement or Environmental Impact Report becomes necessary to evaluate alternative options and ways of mitigating the potential impacts.

Any project or activity that is funded, permitted, or implemented by a federal agency is subject to the statutes of NEPA. Projects and activities that are funded, permitted, or implemented by a public agency must comply with CEQA. Public agencies subject to CEQA include state agencies, counties, cities, California Universities, and special districts. Although Fire Safe Councils are not considered public agencies, they may be responsible for compliance with these regulations when facilitating or implementing community projects; particularly if the project is supported by public dollars. Wildfire mitigation projects, such as fuel treatments, that involve limbing and pruning, ground disturbance, and prescribed fire, among others, have the potential for disrupting the natural environment and therefore may be subject to the statutes of NEPA and/or CEQA. Many grants and funding sources for community protection projects demand assurance that environmental compliance will be completed through either NEPA or CEQA, or both.

The agency responsible for administering CEQA is the California Department of Fish and Game (DFG). CAL FIRE may also be a valuable resource in assessing the necessary environmental compliance requirements for wildfire mitigation activities. Regional contact information for these agencies is listed below:

<p>California Department of Fish & Game, Northern Region:</p>	<p>Main Office: 601 Locust Street Redding, CA 96001 Telephone: (530) 225-2300 Fax: (530) 225-2055</p> <p>Field Office: 619 Second Street Eureka, CA 95501 Telephone: (707) 445-6493 Fax: (707) 445-6664 Website: https://r1.dfg.ca.gov/portal/</p>
<p>CAL FIRE HUU (Humboldt-Del Norte Unit):</p>	<p>Fortuna Office: 118 S. Fortuna Blvd. Fortuna, CA 95540 Telephone: 707-726-1270 Website: http://www.fire.ca.gov/</p>

The agencies responsible for administering NEPA are the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service, (NMFS)—also known as the National Oceanic and Atmospheric Association (NOAA). Matters pertaining to terrestrial wildlife, plant species, and freshwater aquatic species fall under the jurisdiction of the USFWS, while marine and anadromous aquatic species (those that spawn and are born in fresh water but spend most of their lives in the sea), fall under the jurisdiction of the NMFS.

Regional contact information for these agencies is listed below:

<p>Arcata Fish and Wildlife Office (U.S. Fish & Wildlife Service)</p>	<p>Arcata Office: 1655 Heindon Road Arcata, CA 95521 Telephone: (707) 822-7201 Fax: (707) 822-8411 Website: http://www.fws.gov/arcata/</p>
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Bureau of Land Management (BLM), Arcata Field Office:	1695 Heindon Road Arcata, CA 95521 Telephone: (707) 825-2300 Fax: 707-825-2301 Website: http://www.blm.gov/ca/st/en/fo/arcata.html
National Marine Fisheries Service, Southwest Section	Southwest Regional Office 501 West Ocean Boulevard Long Beach, CA 90802 Telephone: (562) 980-4000 Website: http://swr.nmfs.noaa.gov/

For more information on NEPA, visit the Council on Environmental Quality’s NEPA website, accessible here: <http://ceq.hss.doe.gov/>. For more information on CEQA, visit the California Natural Resource Agency’s CEQA website, accessible here: <http://ceres.ca.gov/ceqa/>.

Federal Endangered Species Act (ESA)

The Federal Endangered Species Act (ESA) was enacted in 1973 to “protect and recover imperiled species and the ecosystems upon which they depend.”⁸⁴ The USFWS and NMFS are required to list imperiled species as either *threatened* or *endangered*, and to designate *critical habitat* for those listed species. This law makes it illegal for any person to take a federally listed animal without a permit. The ESA defines “take” as: “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” The term “harm” includes killing or injuring wildlife, directly or indirectly, such as by “impairing essential behavioral patterns, including breeding, feeding, or sheltering.”⁸⁵ In California, there are 128 federally listed animal species and 184 listed plant species.⁸⁶

To avoid any accidental takings and subsequent accountability, it is important to be conscientious of the possibility that federally listed species may be present on or near your property prior to conducting wildfire mitigation projects within the landscape. Whether your project is a private endeavor or federally funded, you may be required to consult with the USFWS to evaluate if there is a possibility that any threatened or endangered species or critical habitat will be negatively impacted as a result of the project.

Section 7 of the ESA, called “Interagency Cooperation,” applies to federal agencies, which “must consult with the U.S. Fish and Wildlife Service when any action the agency carries out, funds, or authorizes (such as through a permit) *may affect* a listed endangered or threatened species.”⁸⁷ This rule also applies if there is a possibility that critical habitat will be affected. Three types of permits may result from a Section 7 Consultation: 1) No Effect, Technical Assistance Letter; 2) May Affect, But Not Likely to Adversely Affect, Letter of Concurrence; and 3) Likely to Affect, Biological Opinion and Incidental Take Permit. The details and procedures pertaining to Section 7 are thoroughly outlined and explained in the “Endangered Species Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conferences,” which is available on the USFWS website, and is accessible through this link: http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf.

Section 10 of the ESA stipulates that private activities occurring on private land that are likely to result in an “incidental take” of a federally listed species must first obtain a permit to do so. If it is possible to obtain federal

⁸⁴ U.S. Fish and Wildlife Service. (2013). *Endangered Species Program*. Retrieved from <http://www.fws.gov/endangered/laws-policies/index.html>

⁸⁵ Endangered Species Act. (1973). Retrieved from <http://epw.senate.gov/esa73.pdf>

⁸⁶ U.S. Fish and Wildlife Service. (2013). Listings and occurrences for California. *Species Reports*. Retrieved from http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=CA

⁸⁷ U.S. Fish and Wildlife Service. (2013). *Section 7 Consultation: A Brief Explanation*. Retrieved from <http://www.fws.gov/midwest/endangered/section7/section7.html>

funding or approval, or to avoid impacting listed species, it is advisable to do so, as the Section 10 process can be lengthy and complicated. Before applying for an incidental take permit, Section 10 requires that the applicant work with the USFWS/NMFS to develop project descriptions and land use objectives, and determine baseline conditions of the proposed project site. Then the applicant must design a Habitat Conservation Plan (HCP) to ensure that effects of the incidental take will be adequately minimized or mitigated. Included in the development of the HCP, is the negotiation of a Safe Harbor Agreement between the applicant and the USFWS/NMFS, which includes “No Surprises” assurances that protects the applicant from having to produce further compensation for “unforeseen circumstances.” After the HCP is completed, the USFWS/NMFS will conduct their own internal Section 7 Consultation process and environmental assessment, followed by a public review period. Upon completion of all these steps, an incidental take permit may be obtained. The details and procedures pertaining to Section 10 are explained and outlined in the USFWS publication, “Habitat Conservation Plans: Section 10 of the Endangered Species Act,” which is available on their website, and is accessible through this link: http://www.fws.gov/endangered/esa-library/pdf/HCP_Incidental_Take.pdf.

To determine whether a project you are planning has the potential to adversely affect federally-listed species, consult the California Department of Fish and Game (DFG) or the nearest USFWS office. You can arrange to have a biologist from one of these agencies visit your property to help determine whether federally listed species may be present or not.

For regional contact information for these agencies, see them listed in the tables above.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act was enacted in 1918 to block the commercial trade of birds and their feathers. This law prohibits killing, possessing, or trading migratory birds, and it applies to whole birds, parts of birds, nests, and eggs. Protected birds include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows, and others. Although this law does not protect the habitat of migratory birds, it does prohibit the destruction of active bird nests without a permit from the USFWS.

“Activities related to fire management which are most likely to result in take of migratory birds include, but are not limited to, clearing or grubbing, tree pruning or limbing, prescribed burning, and vegetation removal in nesting habitat during nesting season when migratory bird eggs or young are likely to be present.”⁸⁸

Nest destruction and accidental taking of migratory birds can be best avoided by refraining from vegetation removal during the breeding/nesting season, which typically occurs on the coast between March 1 and August 31. If it is absolutely necessary to conduct work during this time period, hiring a biologist to survey for nesting birds and mark sites where they exist is recommended. It is also important to maintain a buffer of vegetation around these sites to avoid nest abandonment.

For more general information about the Migratory Bird Treaty Act, or to view a complete list of birds protected under this Act, visit the USFWS’s Migratory Bird Program website, accessible through this link: www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html.

National Historic Preservation Act (NHPA)

The National Historic Preservation Act (NHPA) of 1966 is similar to the ESA in that it requires federally funded, permitted, or implemented projects to undergo a review process prior to implementation; however, this law aims to preserve historic, archaeological, and cultural sites listed in the National Register of Historic Places—an inventory of historic resources that includes districts, sites, buildings, structures, objects, and archaeological resources. The National Register is maintained by the National Park Service; a link to the National Register of Historic Places is accessible here: <http://www.nps.gov/nr/research/>.

⁸⁸ ForEverGreen Forestry. (2010). A workshop for community wildfire protection plan projects: Compliance with federal environmental regulations. *Santa Monica Mountains CWPP, Appendix G*. Retrieved from <http://www.forevergreenforestry.com/documents/App.G-ComplianceEnvRegs.pdf>

Some fire management and mitigation activities have the potential to disrupt or damage historical or cultural sites, particularly those involving ground disturbance with mechanized equipment. If the project uses funds from a federal, state, or local agency, then it is most likely subject to Section 106 of the NHPA. Section 106 involves a review process that aims to minimize potential damage and harm to historic properties. This process requires the federal agency involved to consult with the Advisory Council on Historic Preservation (ACHP) as well as the State Office of Historic Preservation to resolve or mitigate any potential adverse effects. This process usually results in a Memorandum of Agreement, which outlines the measures (if any) that were agreed upon to minimize or mitigate adverse affects. A citizen’s guide to understanding Section 106 is available online through the ACHP website; this document is accessible through this link: <http://www.achp.gov/docs/CitizenGuide.pdf>

Private landowners conducting fuel treatments should be mindful of the possibility that cultural resources exist on their property, regardless of whether or not they are receiving federal funding. This is particularly true in Humboldt County, which has a rich and diverse local Native American history. “Landowners who have cultural resources on their property are stewards of California’s past. The guardianship of these sites provides future generations with the opportunity to learn from and experience our history.”⁸⁹ Often, these sites exist without landowner knowledge, and may only be identifiable by to those trained to spot and recognize them.

If you suspect you have found a possible archaeological or cultural site or artifact, contact the California State Historic Preservation Office to report your finding:

California Office of Historic Preservation:	1725 23rd Street, Suite 100 Sacramento, CA 95816 Telephone: (916) 445-7000 Fax: (916) 445-7053 Email: calshpo@parks.ca.gov
California State Historic Preservation Officer:	Carol Roland-Nawi, PhD Telephone: (916) 445-7050

If you encounter any human remains on your property, do not disturb them! State Health and Safety Code Section 7050.5 prohibits any person from wantonly disturbing or willingly removing such remains without authority of law. If human remains are found, contact the Humboldt County coroner to report your finding.

Humboldt County Coroner’s Office:	3012 I Street Eureka, CA 95501 Telephone: (707) 445-7242
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Further information about the NHPA and the ACHP’s efforts to protect historical and cultural resources, is available on the ACHP’s National Historic Preservation Program website, accessible here: <http://www.achp.gov/nhpp.html>.

Additional Resources for Complying with Environmental Regulations:

For more thorough guidance and detailed information on complying with environmental regulations, protecting cultural resources, and using best management practices within fire management activities, please see the following publications available online through the ForEverGreen Forestry website⁹⁰:

⁸⁹ U.S. Fish and Wildlife Service. (2010). *Best Management Practices for Protecting Cultural Resources*. Sand Diego County Community Wildfire Protection Plan. Retrieved from http://www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

⁹⁰ www.forevergreenforestry.com

- [A Workshop for Community Wildfire Protection Plan Projects: Compliance with Federal Environmental Regulations](http://www.forevergreenforestry.com/documents/App.G-ComplianceEnvRegs.pdf), accessible through this link: <http://www.forevergreenforestry.com/documents/App.G-ComplianceEnvRegs.pdf>
- [Best Management Practices for Cultural Resources](http://www.forevergreenforestry.com/documents/App.G-CulturalResourcesGuide.pdf), accessible through this link: <http://www.forevergreenforestry.com/documents/App.G-CulturalResourcesGuide.pdf>

These documents are contained within the Santa Monica Mountains CWPP, Appendix G: Environmental Compliance Information. The entire Santa Monica Mountains CWPP can be accessed here: http://www.forevergreenforestry.com/smmcwpp_pub.html.