MARIPOSA COUNTY SHERIFF
In Cooperation With:

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

WILDLAND FIRE PRE-EVACUTION PREPAREDNESS

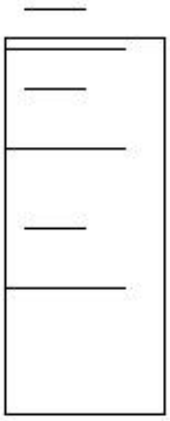
Long before fire threatens your home and family you should have a home "pre-evacuation" plan. The information listed below will help you and your loved ones be ready to evacuate from the threat of fire.
When preparing a home evacuation plan you should include all family members, as you may not be home when the threat of fire occurs. Include your children and other key family members to increase the success of your pre-planning. Start off by sitting down with the family and comprising a list your most important items to be taken in case you are asked to evacuate:

1. Medications
2. Eyeglasses
3. Important Documents (centrally located)
   A. Social Security Cards
   B. Drivers licenses
   C. Marriage License
   D. Birth Certificates
   E. Insurance Policies
   F. Credit Cards
   G. Deeds to Property/Home
4. Valuable Jewelry/Cash (always keep a little cash on hand)
5. Home Videos/Photographs
6. Sentimental items, wedding dress, baby keepsakes etc…
7. Pets, have a plan to remove early if large animals and keep enough room in your vehicle for transporting smaller animals. Don't forget your list should identify carrying pet food and pet I.D. tags.

Remember to keep your pre-evacuation list handy and remind your family members of its location. It is your personal list; include anything of importance that you can remove in a short period of time. Keep some sturdy boxes on hand so items can be quickly collected.

EMERGENCY SUPPLY KIT:

We cannot help you,
if we cannot find you!



3"

At least 3-inch reflective address numbers **against a** contrasting background **is what emergency service personnel require. Post your address number at the end of your driveway, and at any fork in the driveway. Make sure the address is** clearly visible **from 100-feet in both directions of travel from the roadway. The sign should be installed approximately 4-feet in height off the ground, and no higher than 6-feet.**

Help us help you!

Signs may be purchased at:

True Value Hardware	**209.966.2692**
Coast Hardware	**209.966.2527**
S.C.O.P.E.	**800.774-8314**

DID YOU KNOW…?

That the average well water storage tank holds the same amount of water as 5 Fire Engines?

With the right connections YOUR Well Water Storage Tank can become another source of water for a Fire Engine. This can be important due to the great distances between Fire Stations. By contacting your local Well System Company for installation of the correct connections, an Engine Crew can hook Fire Hose to your Water Storage Tank and pull water to assist in putting out a fire, either on your property or on your neighbor's!

A general estimated cost, depending on your tank needs, is between $200-$500 Something important to think about doing.

Thank you!

The Fire History of Our Community

The Role of Fire and the Ecosystem

To understand the threat of wildfire to our communities, we must first understand wildfire itself and the role it plays in our ecosystem. In ecological terms, wildfire is far from the devastating demon of common perception, ravaging the forest and its inhabitants. Only since the intrusion of present civilization and its altering of the natural cycle have wildfire's undesirable characteristics surfaced.

Fire, as a result of lightning and geological activity, is a natural occurrence in our ecosystem. Charcoal deposits, found in Sierra lakebed sediment samples, indicate that fire has long been an important component of the Sierra Nevada environment, predating the current vegetation types now associated with our landscape. The greatest charcoal concentrations found at one local site appear during the warm period following the end of the Pleistocene period about 10,000 years ago.[i] This same interval is the one in which the Sierra's vegetation types at the middle and lower elevations evolved from the subalpine species of that period to the mixed conifer forests of today. From that point on, charcoal continues to be routinely present in sediment core samples.

The Sierra's fire history of the last several thousand years can be traced through existing vegetation. Growth ring samples taken from the giant sequoias show the period between natural fires, referred to as fire return intervals (FRI), were never longer than 30 years for a period of more than two thousand years. Only during the last 100 years has this pattern been broken and fire excluded from the growth process in many of the groves.[ii] The frequency of fire indicated by these tree ring scars appears to be a product of both the sample's elevation and variations of temperature and moisture. Low precipitation years and lower elevation yielded the highest fire occurrence.

Only two studies are available that reflect fire frequency in the blue oak-gray pine woodlands of the lower elevations. Scott Mensing of the University of California, Berkeley after studying fire scars on blue oaks in the Tehachapi Mountains, found an average FRI of 9.6 to 13.6 years.[iii] In the foothills east of Marysville, McClaren and Bartolome found FRIs from 8 to 49 years for the years prior to 1848.[iv] The reason for this relatively long interval in the latter study is unexplained, especially in light of studies conducted on the nearby black oak-ponderosa pine forests, which generally have a FRI of two to three years[v]. Perhaps the light fuel (grass) coupled with low fire intensities was insufficient to leave detectable scars on the study samples.

The fire return intervals of chaparral, such as the chamise found in the Merced River Canyon of northern Mariposa County, appear to be highly dependent on individual circumstance. Elevation, drought, and slope aspect are among the factors influencing the frequency of fire in this vegetation type. The primary component to determine fire return intervals in chamise, however, seems to be fuel dynamics. This relates to the amount of total fuel available in a stand, the product of the stand's age (dead to live component) and environment. Generally FRIs have been estimated to be from twenty to a hundred years. Large, severe fires tend to occur in brush stands over thirty years old. The longest fire return intervals, 50 to 100 years, occurred in chaparral stands at elevations above 4000 feet.[vi]

Vegetation Type	Pre-1860 FRI	20th Century FRI
Foothill Hardwood and Grassland	**10**	**78**
Ponderosa Pine	**4**	**192**
Foothill Chaparral	30	**0**

The Historic Use of Fire

It is now generally recognized that Native Californians considerably influenced the fire frequency of California's mountains, especially in the foothills. Native Americans inhabited the Sierra Nevada for at least the last 9,000 years.[vii] By the 1600s, the drainages of the Chowchilla, Fresno, and Merced Rivers had a combined population of 22,500 natives representing at least three tribes. These Indians utilized fire

to open up lands for hunting and to promote the regrowth of plants used in various facets of daily life. An October 1774 entry in the diary of Captain Fernando Rivera y Moncada confirms this: "[The Indians] are wont to cause these fires because they have the bad habit, once having harvested their seeds, and not having animals to look after except their stomachs, they set fire to the brush so that new weeds may grow to produce more seeds, and also catch rabbits that get confused and overcome by smoke".[viii] The first fire prevention law in what was to become California was a result of this burning. Issued by Governor Jose Joaquin de Arrillaga in 1793, it read in part:

"With attention to the widespread damage which results from the burning of fields, customary up to now among Christian and Gentile Indians in this country, whose childishness has been duly tolerated, and as a consequence of various complaints that I have had of such abuse, I see myself required to have the foresight to prohibit burning for the future (availing myself, if it is necessary, of the rigors of the law) all kinds of burning, not only in the vicinity of the towns but even in the most remote and distances, which might cause some detriment, whether it be by Christian Indians or by Gentiles who have some relationship or communication with our missions"viii.

It is doubtful that this edict had much of an impact on the natives of the Sierra Nevada foothills. Locally, a Culture Element Distribution Survey conducted in 1936 by the University of California found that all three of the tribes (Chuckchansi, Mono and Southern Miwok) in the Madera and Mariposa County foothills used fire as a tool for hunting and improving crops of native plants.[ix] Jack Rhoan, a local Native American (Chuckchansi and Southern Miwok) recalled in a 1948 interview that when he was a boy in the 1870s, the Indians throughout the region (eastern Madera and Mariposa counties) set fire to the brush after the seeds had been gathered (approximately July). "The men started the fires and the women watched to see that it did not approach the homes. When it did, it was beaten out. It burned the hills, all over, clean through to the next one." The trees, which were green did not ignite easily, however "dead trees and logs were all cleaned up that way." [x]

Despite the apparent widespread use of fire by the Indians, any references to problems with uncontrolled fires are conspicuously absent. In researching the volumes of information available on the native people of California, no mention of fire being considered a threat was found. From this, one can only deduce that while wildfires did occur with relative frequency, they were not of an intensity to cause the widespread destruction we now associate with them.

The Euro-American settlement in the 1850s began an alteration of the long established wildfire occurrence cycle. The influx of miners as a result of the gold rush brought an increase in fire ignitions. J. Goldborough Bruff, an early miner in California, reported in an October 1849 diary entry that the "woods [are] alight with many crackling fires" and "Fallen pines afire near us, we passed numerous fires of this kind, and the hills are light with them. Prospectors and Indians caused them".[xi] This account is substantiated by scars in the growth rings of the Blue Oaks near Fort Tejon in Kern County, which indicate that fire frequency there peaked in the 1850s.iii

The vegetation of California's mountains was changed in other ways as well. The miners also had an insatiable demand for wood. Heating and cooking fires, buildings, mine timbers, and fuel for steam engines all relied on the local vegetation as a wood supply. East of Coulterville, the Red Cloud Mine alone was using 4 ½ cords of wood per day in 1888 to power its stamp mill.[xii] With dozens of similar mines operating in Mariposa and Madera counties, the changes in the natural vegetation must have been dramatic. Little regard was given to the residual material left after cutting, and this accumulation of limbwood and other unusable material lent itself to more severe wildfire intensity.[xiii] Interestingly, contemporary newspaper accounts give only passing mention to these uncontrolled fires, usually incidental to smoke conditions or the occasional loss of an isolated structure.[xiv] Wildfires seem to have been an accepted and common nuisance during this period, with attention only given to them when they threatened a community or other resource.

The Shift to Fire Suppression

Sheep and cattle grazing after the 1870s also became a major factor influencing fire frequency and intensity. While it is well documented that literally millions of sheep grazed in the upper Sierra meadows from the 1860s to 1900, little information is available regarding impacts on the lower, foothill environments. These areas, considered desirable as rangeland, were often fenced and used for cattle grazing. Mennsing's study of blue oak tree rings in the Tehachapi Mountains found a period of 60 years, from the 1860s to the 1920s with no fire scars.iii This period coincided with the introduction of grazing in the area. It is likely that the establishment of these herds at the lower elevations placed a value on forage, which in turn led to the first local attempts at fire suppression. The grazing also removed dry grasses that allowed the spread of fire.

The first state laws concerning wildfire prevention were written in 1872. They made the burning of state or federal land (excluding private land) a misdemeanor punishable by a fine of $1000 or a year in jail, or both. The new laws also deemed that "every person who willfully or negligently sets on fire, or causes or procures to be set on fire any woods, prairies, grasses, or grain on *any* lands is guilty of a misdemeanor."viii Conspicuously, this latter law, which applied to private lands, contained no punishment for the offense. Both laws predated the establishment of National Forests and the majority of unowned land in California was in state government's hands. It was not until the 1905 passage of the Forest Protection Act that burning of private lands during the summer season became truly prohibited.
On the federal level, the end of 1800s saw the establishment of "Forest Reserves" which eventually evolved into our present national forest system. Laws to protect these lands from fires were first written in 1897 and amended in 1900. True fire protection on the forests however, began just after the turn of the century with the appointment of Fire Guards to patrol the reserves for fires and fire hazards.viii In the event of a fire, private citizens, most often loggers and ranchers, would be pressed into service to extinguish the blaze.
The California Forest Protection Act of March 18, 1905 created a similar protection system for lands outside of the federal reserves. This law allowed the appointment of a State Forester and the creation of *fire districts* encompassing from one to four counties. Each district was to have its own volunteer fire warden appointed by the State Forester. Counties desiring additional protection could fund paid fire wardens. The fire warden was charged with preventing and suppressing all fires in the "woods, brush, prairies, grass, grain, or stubble" lands of the state.viii To carry out this task the warden was given all the powers of a peace officer to arrest perpetrators. As with their federal counterparts, they had the right to impress citizens into fire suppression work In fact, many of the federal fire guards were enlisted as county wardens as well, thus gaining them law enforcement power not provided by federal policy.viii

Why the shift to fire exclusion after so many centuries of naturally occurring fire? The primary reason was the increased value of standing timber now that a market for lumber was available. It was perceived that fire scarred mature trees and destroyed seedling and young growth.xiii A certain amount of truth existed in this belief. By 1900 the residue from earlier logging operations was creating hotter, more destructive fires than the earlier, natural fires. Any regrowth of timber occurring in these harvested areas was likely to be destroyed and scarring of mature trees probably occurred as well. In the lower foothill region, grasslands were becoming increasingly valuable for cattle grazing. In fact a loosely organized group of citizens, The Stockmen's Protective Association was organized in 1904 to "promote the stock and range interest of its members, especially for protection against fire."viii This group funded the first state operated lookout station on Mount Oso, west of Patterson in Stanislaus County. That same year, 1904, 800,000 acres of California burned in wildfires adding further impetus to the perceived need for fire protection.

There was, however, local dissension regarding burning restrictions. This came from both ranchers who burned their summer pastures in the forest to prevent the encroachment of brush and timber upon the meadows, and from timbermen, who burned logging slash to eliminate hazards and allow new timber growth. The State Forester's office was not to be swayed however. In his 1912 Biennial Report, Forester G.M. Holmes readily dismissed "light burning". "The forest floor, so necessary for the retention of water is destroyed; seedlings and small trees are killed and the ground is unsuited for the germination of seeds. The cost is prohibitive. It would cost about $9,000,000 to burn over our forest area once. Such a practice should be prohibited law." viii
The exclusion of fire from California's wildland continued, at least on paper, until 1945. Despite the best efforts of the fire wardens and fire guards, uncontrolled fires continued to occur. The Sierra National Forest has maintained a map of these fires since 1908 (Figure 1). Though few of the fires occurring in the lower foothills were mapped, one can get an idea of the scope of the burning that took place. Though it appears fires were widespread, the fire return interval for the region had increased considerably from the eight to nine year intervals, common prior to Euro-American civilization.

Government Involvement with Burning
Throughout the 1930s and early 1940s the California Division of Forestry had been heavily lobbied by the cattle industry to conduct range improvement burns for the purpose of converting brush lands into grazing forage. When these lobbying efforts failed ranchers often took it upon themselves to burn outside of the law. To appease the situation, several tests on the effectiveness of brush burning as a land clearing tool were conducted at various locations in California. One of these areas was located in eastern Madera County near Ahwahnee. Burning, chemicals, and goats as brush removal agents were all tested. Based on the results of these experiments, the restrictions on large scale controlled burning were gradually

loosened. By 1950 range improvement burning was common in the foothills of both Madera and Mariposa counties.
The formal Range Improvement Program was carried out by the cooperative groups of ranchers organized into “Brush Burning” associations. These associations, which met regularly, planned out burns months ahead of time. Through cooperative efforts, control lines were constructed, crews were assembled and logistical needs met. A local rancher was appointed “fire boss” and coordinated the operation. The association to ensure its safety reviewed each proposed burn. The local CAL FIRE representative would also participate in this review, and when everything
was in order, a permit was issued. The local ranchers completed nearly all the work with CAL FIRE’s involvement generally limited to providing standby crews in case of an escape.

Burns were done each summer throughout the 1950s and 60s. Individual burns ranged from 40 acres to over 12,000 acres. Altogether, over 137,000 acres in Madera county and 224,000 acres in Mariposa county were burned under the Range Improvement Program (Figure 6). No records are available for burns occurring on the west side of Merced county. Increasing threat of liability coupled with more stringent air pollution control laws eventually led to the programs demise. The last local burn was conducted in 1975 on Schaubach Ranch near Highway 41 and County Road 406. To circumvent the legal problems that terminated the Range Improvement program, CAL FIRE developed the Chaparral Management Program in the 1970s. This program, which became the present day Vegetation Management Program (VMP) placed the responsibility on CAL FIRE to prepare environmental review of each burn, assume liability, and perform most of the work associated for the burn. This program has been responsible for burning 17,970 acres in Madera and Mariposa counties (Figure 8). Since the 1930s, fire suppression capabilities have been increasing as well. Effectiveness of these efforts was limited during the first few decades of the century. The Great Depression however, created an available pool of labor, which was soon harnessed for the task of fighting wildfires. Work camps were established locally by CAL FIRE at Coarsegold, Grub Gulch, Mariposa and Coulterville. Civilian Conservation Corp (CCC) camps under the auspices of the U.S. Forest Service were also strategically located throughout the Sierra National Forest. These crews provided the areas first professional organized forces. While World War II brought about the demise of the public work crews, it saw, under the auspice of Civil Defense, the creation of a year round, professional wildland fire fighting force of a sufficient size to accomplish the task. This organization has continued to evolve into our present day wildland fire agencies. We have eliminated wildfire, as the pre Euro-American ecosystem knew it. The placement of our assets in its path, and the values we have tied to resources, such as timber and aesthetics, have made it too great a risk to live with. Ironically, its exclusion has only served to increase the risk to the values we are trying to protect. Like a dam without an outlet, the flammable vegetation in our environment continues to build up. Eventually a point will be reached at which the intensity of a wildfire will be beyond the ability of our suppression resources to handle. When this dam breaks the loss of assets and resources is inevitable.

[1] Smith, Susan J. and R. Scott Anderson. 1991 Late Wisconsin Paleocologic Record from swamp Lake, Yosemite National Park, Califorinia. *Quaternary Research* 37, 000-000

[1] Swetnam, Thomas P. 1992. Tree-Ring Reconstruction of Giant Sequoia Fire Regimes. Unpublished final report to Sequoia, Kings Canyon and Yosemite National Parks, Cooperative Agreement DOI 8018-1-1002; Tuscon: University of Arizona, Laboratory of Tree Ring Research.

[1] Mensing, S.A. 1990. Blue Oak Regeneration in the Tehachapi Mountains. *Fremontia* 18:3:38-41

[1] McClaran, M. P. and J.W. Bartolome. 1989. Fire Related Recruitment in Stagnant *Quercus douglasii* Populations, *Canadian Journal of Forest Research* 19:580-85

[1] Biswell, Harold H. 1989. Prescribed Burning in California Wildlands Vegetation Management. Berkeley and Los Angeles: University of California Press

[1] Kilgore, Bruce M. 1987. The Role of Fire in Wilderness: A State of Knowledge Review. *Proceedings-National Wilderness Research Conference: Issues, State-of-Knowledge, Future Directions* U.S. Forest Service General Technical Report INT-220

[1] Anderson, Kat M. and Michael J. Moratto 1996. Status of the Sierra Nevada. Vol II. Davis. University of California

[1] Clar, Raymond C. 1959. California Government and Forestry. Sacramento. Department of Natural Resources, State of California

[1] B.W. Aginsky, 1943. Anthropological records 8:4: 395, 403, Berkeley. University of California Press

[1] Gayton, A.H. 1948. Anthropological records 10:2. :176 Berkeley. University of California Press

[1] Read, Georgia W. and Gaines, Ruth. 1949 The Journals, Drawings and Other Papers of J. Goldsbrough Bruff. New York. Columbia University Press

[1] State of California 1889 Report of the State Mineralogist, Vol. 8: 346 Sacramento. State of California

[1] Skinner, Carl N. and Chi-Ru Chang. 1996 Status of the Sierra Nevada. Vol II. Davis. University of California

[1] Mariposa Gazette, 1860-1880. Various articles. Mariposa

Madera Mariposa-Merced Unit Major Fires

Undoubtedly the most disastrous wildfire to strike the Madera and Mariposa Counties was the Harlow Fire of July 1961. The Harlow burned 43,329 acres in Madera and Mariposa counties, destroyed 104 structures, and claimed two lives. What was truly remarkable about this fire was how fast it spread. In two hours it burned 20,000 acres making it one of the fastest burning fires ever recorded in the United States.

Perhaps the largest, modern fire event in Mariposa County occurred in mid-July 1939. That year an unusually heavy grass crop had dried and then been subjected to a late spring rain. This had caused the dried grass to partially decompose, creating a fuel that “carried fire as if it were gasoline” according to one witness. In a ten day period 5 major fires burned through the county. One fire started on Bear Creek west of Bear Valley and burned over Mt. Bullion before being stopped on Whitlock Road. North of Catheys Valley, on Guadalupe Mountain, another fire swept southwest from Catheys Valley through the Bridgeport district to White Rock Road. In Bootjack yet another fire burned out the area surrounded by Triangle Road on the north and east, Highway 49 on the south, and Highway 140 on the west. Simultaneously, a fire in the Merced River Canyon burned 8,000 acres. All told, in those ten days, nearly 100,000 acres of Mariposa County burned.

Madera County was by no means spared from similar conflagrations. In 1906 a fire started on the Fresno River near the present intersection of Yosemite Springs Parkway and Road 400 and burned to the San Joaquin River near North Fork. A similar fire in 1916 started and burned from the present Hensley Lake to the San Joaquin River south of North Fork.

The conditions that created havoc in Mariposa County in 1939 were also shared with Madera County. A fire started by a construction blast near Picayune south of Coarsegold burned westward to the San Joaquin River, while another fire, the Point Source Fire, started northeast of North Fork near Chawanakee and burned to Kaiser Pass. This latter fire destroyed an estimated 61 million board feet of timber on over 20,000 acres of land.

When these fires occurred, our mountains had fewer residents or suppression resources. Since then, firefighting capabilities have increased tremendously but so have the number of homes in the wildland. Any of the aforementioned fires, or even a portion of one, would quite easily today claim the infamous title of our communities’ most destructive fire.

Fire Season 2008

The fire season of 2008 proved to be one of MMU’s most active and destructive. The year started off with the lightning event that passed through California on June 21, 2008. The fires that ensued stretched the state’s resources beyond critical levels. Many fires were left burning around the state because of a lack of firefighting resources. MMU was able to control all the fires within two days except one called the Oliver Fire. The Oliver Fire broke out in Sierra National Forest and threatened the community of Ponderosa

Basin. After a team was activated and a Unified Command was in place the fire was brought under control at 2789 acres.

The largest fire of the year, and most destructive in recent unit history, was the Telegraph Fire. The Telegraph Fire started July 25, 2008, at approximately 1510 hours near the banks of the Merced River, two miles west of Telegraph Hill in Mariposa County. The fire was started in such a remote, inaccessible area that fire crews were unable to gain access to the fire. Burning in steep, rugged terrain in a remote part of the county, the fire consumed over 18,000 acres in the first day and a half alone. The Telegraph Fire was a 50-year fire event for Mariposa County. Not since the early 1960s were so many acres burned in such a short period of time. In addition to the topography, other significant environmental factors that influenced the extreme intensity and spread of this fire were low humidity, heavy fuel loads and historically low live and dead fuel moistures resulting from 2 consecutive years of record drought. One week later, the fire was contained at 34,091 acres. It was started by individual's target shooting along the Merced River at the end of Mosher Road. The final cost of the Telegraph is still being determined, but the number was between 35 and 40 million dollars.

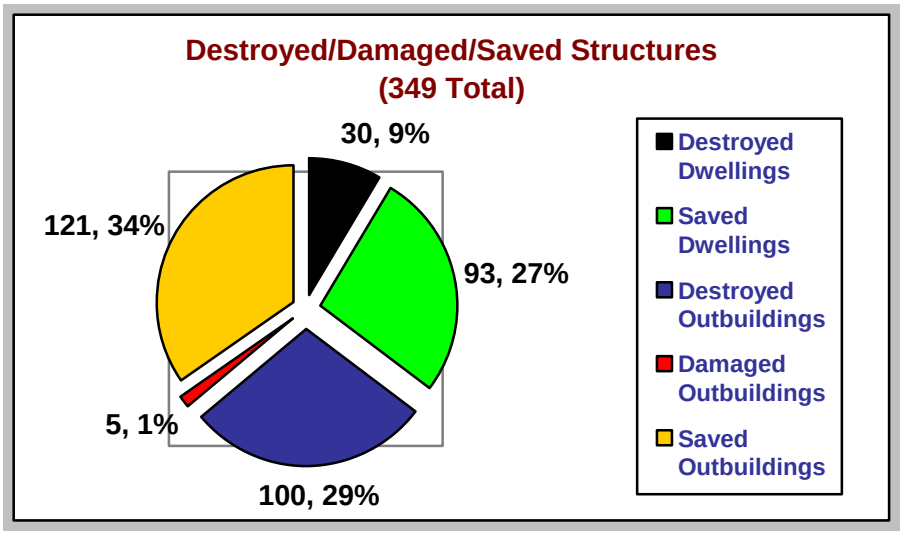
TELEGRAPH DAMAGE ASSESSMENT

Within the fire perimeter, 105 sites were located, inspected and documented for damage, structure construction type, defensible space, and driveway access. The Telegraph Fire directly threatened over 349 structures. Of these, 130 were destroyed, 5 received partial damage, and 214 were not damaged. (See figure below for number of structure types destroyed.)

DWELLING CONSTRUCTION (SIDING MATERIALS)					
	Wood (W)	Metal (Me)	Masonry (Ma)	Other (O)	Unknown (U)
DESTROYED (30)	**17** (57%)	**2** (7%)	**6** (20%)	**1** (3%)	**4** (13%)
SAVED (93)	**79** (85%)	**6** (6%)	**6 (6%)**	**2** (2%)	**0**

The data shows that within the area inspected 40% of dwellings (a total of 49) exposed to the fire had appropriate defensible space as required by PRC 4291. Defensible space was lacking on all but 1 of the 30 dwellings destroyed in the fire.

The remainder of the data presents property type and construction materials information in a tabular format, from which the reader can make comparisons.



PROPERTY TYPE	DESTROYED	DAMAGED	SAVED
Dwellings (123)	**30** (24%)	**0**	**93** (76%)
Outbuildings (226)	**100** (44%)	**5** (2%)	**121** (54%)
Vehicles (68)	**60** (88%)	**8** (12%)	N/A

DWELLING CONSTRUCTION (ROOFING MATERIALS)						
	Composition (C)	Metal (Me)	Wood (W)	Masonry (Ma)	Other (O)	Unknown (U)
DESTROYED (30)	**16** (53%)	**6** (20%)	**0**	**2** (7%)	**0**	**6** (20%)
SAVED (93)	**60** (65%)	**28** (30%)	**1** (1%)	**3** (3%)	**0**	**1** (1%)