

# ALPINE COUNTY COMMUNITY FIRE PLAN



Alpine Fire Safe Council  
PO Box 67  
Markleeville CA 96120

Cover photo of a Walt Monroe painting courtesy of the Alpine County Museum

# Alpine County Community Fire Plan

*Compiled by:*

**Alpine Fire Safe Council**  
through grants from the  
**United States Forest Service, Region 4**  
**Alpine County Resource Advisory Council**  
**Alpine County Board of Supervisors**  
**Community-Based Wildfire Prevention Grant**  
**California BLM**  
**Sacramento Regional Foundation**  
**and California Fire Safe Council**

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*Disclaimer:*

This Community Fire Plan has been compiled from existing information available from local, state, and federal government resources. It is intended to be a compilation of available known datasets with the intent to identify areas in need of update. Some data may be out of date or inaccurate due to the scale at which the data was collected.



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# 1. Executive Summary

Alpine County has always lived with the threat of wildfire. The most destructive fire on the Sierra Front occurred in Alpine County in 1987 when 26 homes were lost in the Acorn Fire. With increasing population in the county, this threat continues to grow. The Alpine Fire Safe Council seeks to reduce this threat by developing a coordinated planning effort to address the hazards in our communities.

All communities in Alpine County are threatened by wildfire to some degree. For the purposes of this plan the communities have been divided into the following planning areas:

- Woodfords
- Markleeville
- Bear Valley
- Kirkwood

The Bear Valley section is currently under development. The Kirkwood Planning Area section will be included in a future revision.

Hazards and risks were assessed for communities in each of the planning areas. These hazards and risks were rated low, medium, or high. A number of different elements were evaluated in the hazard assessment. The results of the community hazard assessments are shown in the table below:

## Woodfords Planning Area Ratings

<b>Community</b>	<b>Rating</b>
1. Woodfords / Alpine Village	Medium
2. Crystal Springs	Medium
3. Mesa Vista	High
4. River Ranch	Medium
5. Upper Diamond Valley / Manzanita Lane	High
6. Woodfords Indian Colony	Medium

## Markleeville Planning Area Ratings

<b>Community</b>	<b>Rating</b>
1. Downtown Markleeville	Medium
2. Markleevillage/Thornburg Subdivision	High
3. Shay Creek Subdivision	High
4. Carson Ridge Subdivision	Medium (when built)

The homeowner is the first line of defense in protecting a structure from wildfire. Creating effective defensible space and using appropriate building materials is crucial to structural survivability. In general, defensible space needs to be improved in our communities.

Adequate county fire suppression resources are another important line of defense against wildfire. The volunteer fire departments receive appropriate training for wildland firefighting, but staffing enough volunteers is a challenge. Equipment is serviceable, but structure engines are old and scheduled for replacement. The Woodfords Planning Area lacks adequate water storage and distribution systems.

Modifying the fuel loadings around the communities reduces the risk of a fire spreading into, or out of, a community. The United States Forest Service (USFS) and Bureau of Land Management (BLM) have initiated several fuels reduction projects around these communities to address these fuel loadings. A more aggressive approach to fuels treatment and reduction should be implemented.

To address these issues, this plan outlines a number of recommendations and projects to mitigate the fire threat. They include:

- Continue the public education campaign regarding wildfire. Increase public awareness of wildfire hazards around homes and the need for effective defensible space. Continue the Courtesy Fire Safe Review program to provide homeowners specifics on creating defensible space.
- Continue and expand the community burn pile / biomass disposal solutions. The program has been successful and provides the most cost effective way to dispose of material. Increase the time it is open, develop a consistent removal option, and find an alternative location to the Turtle Rock Park community burn pile/biomass disposal site.
- Seek community participation in the Eastern Alpine County Fire Services Planning process. As fire suppression needs are significantly increasing, the community must approve a solution proposed by the Eastern Alpine County Fire Services Plan and support its implementation to ensure fire services can meet those needs,
- Review and modify, if necessary, existing county codes and ordinances designed to address fire safe issues in community design and building construction.
- Implement on-the-ground fuels reduction projects and water system improvements.
- Seek consistent enforcement of defensible space regulations through the creation of a County Fire Marshal position.

A list of *specific projects* has been developed as follows:

**Woodfords Planning Area Mitigation Projects**

<i>Priority</i>	<i>Name</i>	<i>Acreage</i>	<i>Estimated Cost</i>
1	Upper Diamond/Manzanita Fuels Treatment	141	\$282,000
2	School Age Wildfire Education Program	n/a	\$2,550
3	Residential Lot Treatment	50	\$25,000

**Markleeville Planning Area Mitigation Projects**

<i>Priority</i>	<i>Name</i>	<i>Acreage</i>	<i>Estimated Cost</i>
1	Roadway and Utility Access Treatment	31	\$96,000
2	Develop and implement an Evacuation Plan for the Hot Springs Road Corridor	n/a	\$15,000
3	Private Land Fire and Forest Health Co-op	392	\$804,000
4	Residential Lot Treatment	50	\$65,000
5	Create Alternative Evacuation routes and Community Safety Zones	n/a	\$5,000

A list of *specific responsibilities* has also been developed:

For the Woodfords Planning Area:

Homeowners:

For the entire Woodfords Planning Area:

1. Replace flammable roofing materials with fire-resistant materials.
2. Provide a minimum 100' defensible space around all structures.
3. Support the Woodfords Volunteer Fire Department in the actions listed below.

For Upper Diamond Valley / Manzanita Lane neighborhood:

1. Pursue the creation of a secondary evacuation route from the Manzanita Lane subdivision.
2. Thin overstory and clear brush as soon as possible and plan for retreatment at four to five year intervals.
3. Widen roads and provide turnouts and turnarounds for fire apparatus.

For the Mesa Vista Community

1. Actively support efforts to install a community hydrant system.
2. Masticate brush for defensible space and plan for retreatment at four to five year intervals.

Woodfords Volunteer Fire Department:

1. Actively coordinate training with the Markleeville Volunteer Fire Department.
2. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.
3. Pursue dedicated access to key draft sites located on public and private lands.
4. Pursue a long term solution to fire suppression services with the Markleeville Volunteer Fire Department and the Eastern Alpine County Fire Services Plan.
5. Increase the number of trained volunteers.
6. Continue to purchase wildland firefighting equipment and train volunteers to National Wildfire Coordinating Group (NWCG) 310-1 certification levels.

For the Markleeville Planning Area:

Homeowners:

For the entire Markleeville Planning Area:

1. Replace flammable roofing materials with fire-resistant materials.
2. Provide a minimum 100' defensible space around all structures.
3. Support the Markleeville Volunteer Fire department in pursuit of recommended actions below.

For Markleevillage/Thornburg Subdivisions:

1. Pursue the creation of a secondary evacuation route from the subdivision.
2. Thin overstory and clear brush.

For Shay Creek Subdivision:

1. Widen roads and provide turnouts and turnarounds for fire apparatus.
2. USFS must develop an aggressive Defensible Fuel Profile Zone (DFPZ) as soon as possible for adjacent forest lands.

Markleeville Volunteer Fire Department:

1. Actively coordinate training with the Woodfords Volunteer Fire Department.
2. Assist in developing a community evacuation plan for the Hot Springs Corridor.
3. Participate in an annual pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources

4. Pursue dedicated access to key draft sites located on public and private lands.
5. Pursue a long term solution to fire suppression services with the Woodfords Volunteer Fire Department and the Eastern Alpine County Fire Services Plan.
6. Continue to purchase wildland firefighting equipment and train volunteers to NWCG 310-1 certification levels.

For All of the Planning Areas:

Alpine County Sheriff's Office:

1. Establish community safety zones for use when evacuation routes are compromised. Develop a shelter-in-place plan.
2. Assist in developing community evacuation plans for high risk neighborhoods with limited access.
3. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.

Alpine County Board of Supervisors:

1. Ensure the emergency services agencies are addressing the public safety issues outlined in this plan.
2. Support use of county-owned chipper in local fuel reduction projects.
3. Pursue and enforce legislation, ordinances, or other codes to eliminate wildland fuel hazards within the communities.
4. Lobby federal agencies to implement fuels reduction projects on public lands surrounding communities.
5. Explore Biomass Utilization Opportunities  
Long term biomass disposal solutions should include developing alternatives other than the community burn pile. Cost effective biomass disposal solutions, such as commercial processing in the Carson Valley or utilization by government and school buildings, should be explored. The background information necessary to pursue biomass opportunities can be found in Appendix 1.
6. Support community efforts to increase water supply and distribution.
7. Expand Solutions for Community Fuels Disposal  
The Community Burn Pile, coordinated by the Alpine County Public Works Department, is a success. Every fall and spring, tons of biomass material is cleared from lots in the community and burned. This results in a reduction of fuels in our neighborhoods. This opportunity should be continued. Solutions for fuels reduction within the community during times other than when the burn pile is available should be explored in concert with the Alpine Fire Safe Council.
8. Enforce existing defensible space ordinances by creating and filling a County Fire Marshal position.

#### Alpine Fire Safe Council

1. Establish system for monitoring and maintaining fuel reduction projects.
2. Continue to provide public education information on defensible space at County buildings, through mailings, and through Courtesy Fire Safe Reviews.
3. Explore and facilitate community fuels reduction projects. Assist the Alpine County Board of Supervisors as requested with development of fuels reduction solutions.
4. Actively support the efforts of the local fire departments and other emergency services in mitigating wildfire risk.

#### Utilities (power and water)

1. Encourage Sierra Pacific Power to provide a local power shut-off including necessary training for the VFD and Alpine County Sheriff.
2. Remove or chip fuels from underneath power lines and power poles.
3. Update existing water utilities and increase storage capacity. Replace water system with year round, larger lined system. Maintain clearly- marked potable and non-potable water sources.

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## **2. Introduction**

### **2.1 The Alpine Fire Safe Council**

The Alpine Fire Safe Council (AFSC) was established in 2003 through a cooperative effort of the Alpine County Board of Supervisors and the Alpine County Resource Advisory Committee. The Council seeks to reduce the risk from devastating wildfires, which have occurred in our communities in the past. Accomplishments include:

- Creation of educational fire safe kiosks at key county government locations: The Alpine Fire Safe Council Educational Committee compiled a set of key fire safe brochures and handouts relevant to our community. These kiosks were placed at the County Administration building, Library, and Building Department. The Building department also agreed to disseminate these materials to those who apply for building permits.
- Courtesy Fire Safe Reviews for the community: The Alpine Fire Safe Council developed a checklist to review with homeowners about wildfire hazards around their property. A community mailing was sent and a community meeting held to inform residents about the reviews. Reviews were conducted for those citizens who requested them. Markleevillage was completely reviewed with approximately 50% of the homeowners participating. The Mesa Vista community was partially reviewed in 2004.
- Manzanita Lane Fuels Reduction: In 2004, the Alpine Fire Safe Council received a grant through the Sacramento Regional Foundation to conduct mastication and hand crew fuels treatments on the private parcels near Manzanita Lane. The project was completed in October of 2004.
- Facilitation of the Fire Services Plan Ad-Hoc Committee: The Alpine Fire Safe Council sponsored a collaborative effort to address the future of fire suppression resources involving the Board of Supervisors, the Washoe Tribe, Fire Departments, EMS, local concerned citizens and a paid consultant. Their work resulted in the Eastern Alpine County Fire Services Plan (2005).
- Secured grant funds to underwrite the Mesa Vista/River Ranch Scoping Study for Fire Fighting Water Supply.
- Provided administrative and logistical support to the Mesa Vista community in their successful effort to find funding for a new 50,000 gallon water tank at the Woodfords Fire House, and a new hydrant on Foothill Road at the Gansberg residence.
- Encouraged the County to update the Safety Element of the General Plan regarding Fire Goals and Objectives.
- Encouraged the County to update Fire Ordinances and Road and Driveway Standards. (In progress.)
- Prepared a Final Revision of this Plan for adoption. (In progress.)

### **2.2 Mission of the Alpine Fire Safe Council**

The mission of the Alpine Fire Safe Council is to reduce the risk to life and property in Alpine County from catastrophic wildfires.

### **2.3 Current Policies and Local Planning**

Alpine County created an implementation plan of fire elements in 1991 as the culmination of a citizen review of the 1987 Acorn Fire. The Alpine Fire Safe Council revisited that plan as the basis for recommendations in this plan.

Alpine County incorporated the 1991 fire implementation plan into the Alpine County General Plan. The General Plan (currently under revision), also contains other safety elements pertinent to this document. Where appropriate, those General Plan elements have been referenced

Alpine County has also developed a County Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000. Wildfire is a critical element of this plan. The Alpine County Planning Department and the Alpine Fire Safe Council are coordinating their planning efforts.

#### **2.3.1 Federal Policies and Planning**

A number of federal agencies have planning efforts at both the national and local levels that affect Alpine County wildfire mitigation projects. These planning efforts encourage federal land management and emergency service agencies to dovetail their mitigation efforts with local projects and action groups. Alpine County and the Alpine Fire Safe Council are already addressing these efforts.

The USFS and BLM, who administer large tracts of wildland fuels in Alpine County, have planned fuels reduction projects on public lands adjacent to communities and recreation sites. Projects are planned for each year for the next 5-10 years. These projects will help reduce the chances of wildfire moving into or out of communities.

At the national level, grant funding is available through the National Fire Plan to provide fuels reduction assistance to private landowners. The Alpine Fire Safe Council has already participated in this program with the Manzanita Lane Fuels Reduction Project. Other planning funds, such as Economic Development Grants, are available from the USFS to address wildland fire issues.

#### **2.3.2 State Planning**

The Amador-El Dorado Unit of the California Department of Forestry and Fire Protection (CAL FIRE) has recently completed its unit fire plan. This plan will be forwarded to that agency for inclusion in their unit plan.

### **2.4 Planning Area Boundaries**

Figure 1 illustrates the planning area boundaries for this plan. These boundaries correspond to watersheds and more importantly to the local fire protection jurisdictions. Alpine County has been delineated into the following Planning Areas:

- **A. Woodfords** – Communities north of Turtle Rock Park and east of Sierra Crest. There is a long history of wildfire in this area with the Woodfords community, with four major wildfires occurring since 1981. In 1984, the Indian Creek Fire burned approximately 6,000 acres near Indian Creek, only to be followed by a

2,000 acre fire near Fredericksburg in 1986 and then the Acorn Fire in 1987, which burned nearly 6,000 acres and twenty-six homes. Woodfords is listed on the Federal Register as a community threatened by wildfire. Woodfords Volunteer Fire Department and the USFS provide wildland fire protection

- **B. Markleeville** – Communities south of Turtle Rock Park to Sierra Crest. Only a few large wildfires have burned in this area, but fuel loadings are high. Markleeville is listed on the Federal Register as a community threatened by wildfire. Markleeville Volunteer Fire Department and the USFS provide wildland fire protection.
- **C. Bear Valley** – West of the Sierra crest. This area has little wildland interface issues given its elevation and relatively wet climate. However Bear Valley is listed on the Federal Register as a community at risk for wildfire. The community is geographically isolated from the rest of the county much of the year. Bear Valley provides its own fire protection.
- **D. Kirkwood** - West of the Sierra crest. This area has little wildland interface issues given its elevation and relatively wet climate.

## **2.5 CAL FIRE State Responsibility Areas (SRA)**

Figure 1 also shows wildland urban interface (WUI) boundaries. The WUI zones fall within CAL FIRE State Responsibility Areas (SRA.) In Alpine County, CAL FIRE does not maintain a physical presence (fire station or engine), instead they delegate their responsibilities to the federal agencies by virtue of a Cooperative Fire Agreement. This agreement allows CAL FIRE to trade wildfire responsibility in some private areas of California, like Alpine County, for protection of federal lands elsewhere. The goal is to efficiently allocate fire suppression resources, with areas of predominately federal land protected by federal resources, predominately private land protected by state resources.

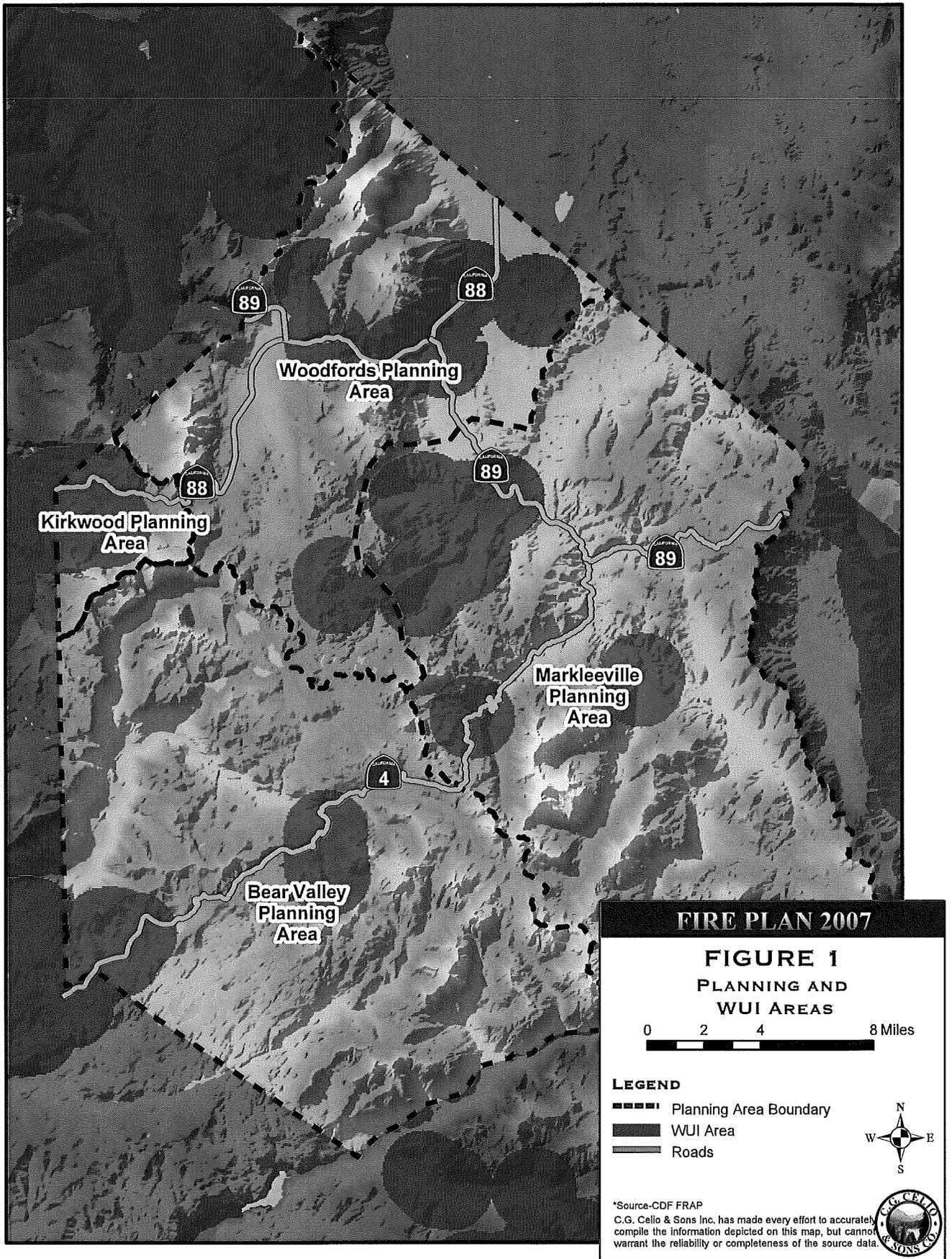
Figure 2 displays general land ownership by federal, state, and private entities in Alpine County. Alpine County is approximately 95% public land.

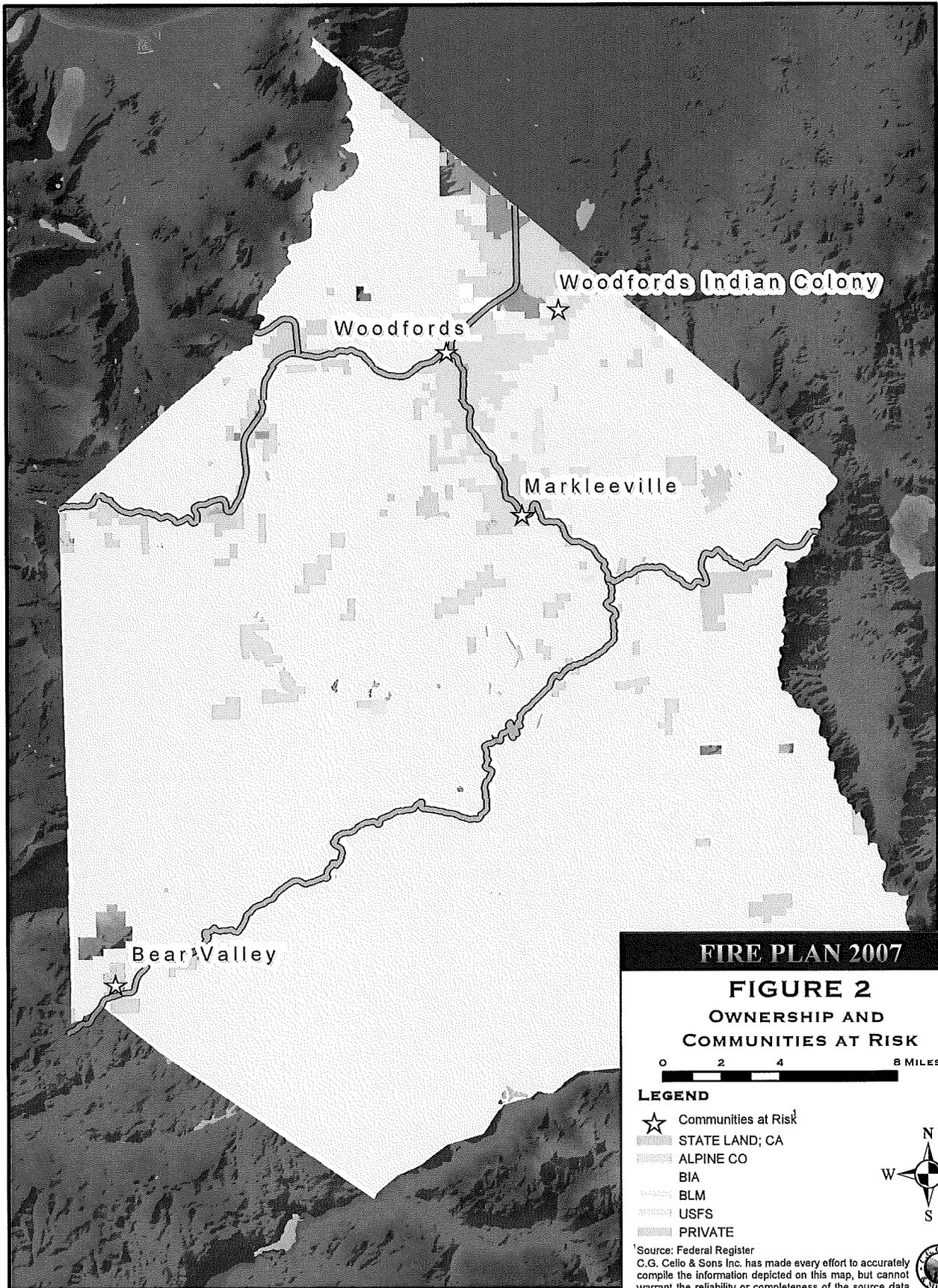
The Planning Area boundaries in Figure 1 correspond to the local fire protection boundaries. There are four fire departments within Alpine County which function as three separate response units. Bear Valley is geographically separate, including dispatching. Kirkwood provides their own protection, calling on the Woodfords and Markleeville departments for mutual aid only if necessary. Woodfords and Markleeville operate more closely, each responding on the first call to incidents in either area. Mutual aid comes from Douglas County or Lake Tahoe.

## **2.6 Non-Governmental Organizations**

- Other Fire Safe Councils- Bear Valley is a member of the Calaveras-Foothill Fire Safe Council. The Alpine Fire Safe Council provides support as requested. Kirkwood is served by both the Amador and Alpine Fire Safe Councils, though since it is not defined as a community at risk it has not been a priority area for either Council. The Alpine Fire Safe Council has provided the Kirkwood VFD educational materials as requested.

- Alpine Watershed Group- The Alpine Watershed Group, formed in 1999, is active in the planning areas. An Upper Carson Watershed geomorphic assessment was completed in the spring of 2004.
- Alpine Resource Conservation District- The Alpine Resource Conservation District covers the eastern slope of the planning area. Resource Conservation Districts from the western side of the Sierras cover Kirkwood and Bear Valley.
- Home Owners Associations- Only the Shay Creek homeowners association near Grover's Hot Springs is active in the Markleeville Planning Area. Other associations in the Woodfords area include the River Ranch and Trail Dust Homeowners association. The Bear Valley Homeowners Association has been active in its community and in its participation in fire safe efforts. Other associations may exist.





## **2.7 Regulatory Compliance and Administrative Issues**

With the large amount of public land in Alpine County, much of the fuel treatment will have to be completed on public lands. This will invoke NEPA environmental documentation and compliance. Private land treatments will require CEQA environmental documentation and compliance. Some of these projects will require review by the the Lahontan Region of the California Water Quality Control Board. Commercial projects involving native timber species on private lands will require a multidisciplinary review by Lahontan Water Quality, California Department of Fish and Game, Alpine County, Tribal Representatives and CAL FIRE (the lead agency.)

In addition to land management issues, finding contractors who can work in residential areas is problematic. Many insurance carriers will no longer insure work in and around houses. This conflicts with increased awareness by the homeowners and a willingness to have the work done.

### **2.7.1 Legal Mandates**

Alpine County adopted ordinances in the mid 1990s to address the wildfire hazard issues in Alpine County (15.12.010, 15.12.020.) These ordinances were based on California Public Resource Code 4290. This code addresses pre-development fire protection issues such as driveway standards, road width, emergency access, road standards, signage, and emergency water supply for fire protection. The ordinances are attached as Appendix 5. The Alpine County Ordinance includes requirements for a 2,500 gallon water supply or \$2,500 payment in lieu of water for new construction.

The Alpine Fire Safe Council conducted an informal review of tanks, ponds, and road design in the spring of 2004. Tanks were not inspected to be sure that they were filled with water. A number of ponds were not filled, and in one instance the pond was removed. The subdivisions reviewed did not meet the county specifications, and in one case the turnaround was built to less than 60% of standard.

The Alpine County Building Inspector is charged with code enforcement in the absence of a County Fire Marshal.

### **2.7.2 Zoning Regulations**

The Alpine County General Plan-Safety Element provides for fire and public safety. It is available in this document as Appendix 4

### **2.7.3 Fire and Building Codes**

The Alpine County Building inspector uses the state building codes and contracts out inspection duties. Appendix 5 is a copy of the adopted county fire safe regulations.

### **2.7.4 Fire Protection Infrastructure**

Given the geographic expanse of Alpine County, there are multiple fire stations within the County. The planning area boundaries correspond to the fire station response areas

(Markleeville, Kirkwood, Bear Valley, and Woodfords). Kirkwood and Bear Valley stations are funded through assessment fees. Markleeville and Woodfords are not districts and are funded directly by the county general fund.

In each section of the report, a detailed description of the fire infrastructure is discussed. Markleeville and Kirkwood have hydrant systems. Woodfords has a few limited use hydrants off the South Tahoe Public Utility District (STPUD) sewer effluent line that transports secondary effluent. Due to health and legal reasons this effluent cannot be used for structure protection without changing existing state law and incurring substantial costs to the fire departments and the volunteers.

The Alpine Fire Safe Council is facilitating the fire service planning process for the Alpine County Board of Supervisors to address the growing fire infrastructure needs. The Eastern Alpine County Fire Services Plan is intended to identify the fire protection needs for Alpine County and the method by which projects will be funded to address those needs.

#### **2.7.5 Insurance and Fire Protection Grading and Rating System**

ISO ratings are high in the Woodfords Planning Area due to lack of sufficient water supply for fire-fighting purposes. Woodfords has no hydrant system and the Markleeville system is not built to the Insurance Standards Organization (ISO) standard for firefighting. In recent months, some homeowners in Woodfords and Markleeville have had a difficult time in obtaining homeowners insurance for this reason.

#### **2.7.6 Liability**

The liability issues surrounding wildfire risk and suppression are complex. Many agencies prefer to sidestep wildfire hazard issues for fear that even if a mitigation measure is completed, if someone gets injured or killed, they will be libel. However, with insurance companies considering lawsuits in Southern California (2003) over whether the fire department did enough, it is becoming clear that it's a double edged sword. No longer will ignoring the hazards of wildfire absolve agencies of liability when wildfires occur.

Regarding projects, the Alpine Fire Safe Council, Alpine County, and contractors are required to have insurance for work completed on private land or in the county right of way. If insurance is available, this is not a problem, however insurance is becoming tougher to get. This slows progress, and in some cases causes projects to wait another fire season to be completed.

#### **2.7.7 Agency Gridlock**

Many agencies are still coming to grips with the issues of wildfire hazards and mitigation. With a county that is 95% public land, this has serious implications.

The USFS is still attempting to treat its lands around communities. Hampered by wilderness boundaries (some are within ¼ mile of communities), environmental compliance, and funding issues, the USFS has been unable to complete a number of

projects. The Alpine Resource Advisory Council, a Title II funding group, allocated some portion of funding for 2005, 2006 and 2007 to help the USFS complete some key fuels treatments around Alpine County neighborhoods.

### **2.8 Strategic Goals**

There are a number of strategic goals the Alpine Fire Safe Council hopes to achieve to reduce the wildfire risk in Alpine County communities. They are:

- Reduce fuel loadings in and around communities on private land through on-the-ground projects. Where possible, the Alpine Fire Safe Council will assist landowners with expertise, educational materials, and grant funding to accomplish projects.
- Improve fire department readiness and fire suppression infrastructure. Secure new water supplies and distribution systems for communities. Work with utility companies, Alpine County, and the Fire Departments towards this goal.
- Increase public awareness through distribution of educational materials, public meetings, and homeowner reviews about the hazards of wildfire.
- Update County Ordinances to reflect the new understanding of the risks to life and property from catastrophic wildfires.
- Develop and implement evacuation plans for high risk, limited access neighborhoods.

### **2.9 Acknowledgements**

Many agencies and individuals contributed to this document, their efforts are appreciated.

- Alpine EMS for acting as the fiscal agent in obtaining the initial grant funds to pay for this plan.
- The USFS, Region 4, for providing the grant funding for this document.
- The Carson Ranger District of the USFS for providing their fire planning documents.
- The Carson City BLM office for providing their fire planning documents.
- Alpine County for providing historic information on fire planning activities, such as the General Plan and the 1991 fire implementation plan.
- Woodfords and Markleeville Volunteer Fire Departments for providing background information necessary to develop projects and delineate neighborhoods.
- Alpine County Resource Advisory Committee (RAC) for funding to implement priority projects and retain a coordinator for the Fire Safe Council.
- CAL FIRE for their map resources (FRAP) and organizational input.
- Steve Harcourt RPF for review and ground truthing of fuels prescriptions.

### **3. Fire Safety and Preparedness**

#### **3.1 Defensible Space**

The Alpine Fire Safe Council provides educational material and courtesy fire safe reviews to the public to assist in creating defensible space. Handouts are provided at all public meetings and have been mailed to residents and landowners. The material includes information on creating defensible space, material disposal, and the use of non-flammable building materials.

Courtesy fire safe reviews have been conducted with various private homeowners. Anyone interested in having a review done can contact the Alpine Fire Safe Council to schedule a time. As time allows, the Alpine Fire Safe Council and the local fire departments conduct reviews across an entire neighborhood.

A coordinated effort is required to continue this program. Limited surveys of the communities indicate that many local landowners need to improve their defensible space. This includes removing brush and pine needles away from structures, removing single trees or limbs, and disposing of the material off-site. A number of contractors can provide this type of service for the individual homeowner, and many are listed in the Yellow Pages. A list of current contractors is attached as Appendix 2.

The community burn pile at Turtle Rock Park is a successful program for improving defensible space. The Alpine Fire Safe Council provides funding to keep the burn pile open to the public longer, resulting in a two-fold increase in material collected. The courtesy fire safe review program needs to reassess previously visited neighborhoods to determine if the increase in the burn pile material is directly related to an increase in defensible space within the communities. The community burn pile is a very effective community biomass disposal solution and should be continued. It is very cost effective when compared to other fuel treatment alternatives.

#### **3.2 Neighborhood Emergency Response Teams**

The Alpine County Sheriff Office has received grant funds to form a Community Emergency Response Team (CERT) to deal with a variety of disasters in Alpine County. Alpine County Search and Rescue serves as the CERT team.

There is no coordinated neighborhood effort for emergency response except for the local fire departments.

#### **3.3 Training, Certifications, and Qualifications**

As part of the 1991 ad-hoc committee recommendations, the local fire department volunteers are certified for wildland firefighting under the National Wildfire Coordinating Group (NWCG) 310-1 requirements. The USFS, with jurisdiction for all local wildland fire response, is requiring this certification be kept current. All volunteer firefighters are required to complete annual refresher training in wildland fire fighting.

### **3.4 Emergency Communication**

The fire department has pagers and handheld radios for communication. Evacuation orders would be communicated by Sheriff Deputies during a fire event. Currently, sirens are not installed within the communities, but two are available for use. The County Office of Emergency Services has a portable AM radio transmitter for community notification during a disaster.

### **3.5 Agency Fire Response Plan**

There is no coordinated interagency (including Alpine County, BLM, USFS) pre-attack plan for the area. The local fire departments have run book maps, as part of the Field Operations Guide.

### **3.6 Evacuation and Incident Drills**

To date there have been no incident drills or evacuation drills. A community evacuation meeting was held August 14, 2004 for residents of the Markleeville Planning Area. An evacuation handout has been created by the Sheriff's Office and Fire Safe Council and is attached as Appendix 3. Additionally, the Alpine County Disaster Council has completed a set of evacuation maps for use with the Emergency Field Operations Guide. Those maps were used herein as the base for the neighborhood maps.

### **3.7 Shelter in Place Plan**

There is no shelter in place plan. The Alpine Fire Safe Council has distributed some information that includes a discussion of sheltering in place, however this is not currently a recommended action by the local emergency service agencies.

## **4. Planning Process**

### **4.1 Stakeholders**

Local stakeholders are the key to the success of the community fire plan. They include:

- Alpine Fire Safe Council
- Markleeville VFD
- Woodfords VFD
- Alpine County Disaster Council
- Alpine County Board of Supervisors
- Alpine Watershed Group
- Homeowners associations
- Woodfords Indian Colony
- Bear Valley/Kirkwood
- General public

With the large amount of public land in Alpine County, outside stakeholders are also important:

- USFS, Carson Ranger District
- BLM, Carson City Field Office
- CAL FIRE (CAL FIRE), Amador/El Dorado Unit and Tuolumne/Calaveras Unit
- California State Parks
- South Tahoe Public Utilities District (STPUD)
- California Fish & Game
- Bureau of Indian Affairs (BIA)
- Lahontan Water Quality Control Board
- Sierra Pacific Power Company

### **4.2 Current Process and Plan Development**

The Alpine Fire Safe Council completed the background research information for initial plan development. Public meetings have been conducted to inform the public about the wildfire issues, including the community fire plan. More public meetings are scheduled to inform the public of the plan and solicit input on its further development. Appendix 6 is set aside to record public plan development meetings.

### **4.3 Review of Existing Plans and Reports**

Existing information from local, state, and federal resources are the foundation of this plan. Base Geographic Information System (GIS) data was provided by Alpine County Planning Department. Fire Hazard GIS data was compiled from CAL FIRE and from the Sierra Front Wildfire Cooperators.

Alpine County provided a 1991 report from the ad-hoc fire committee, outlining recommendation for the fire agencies in improving fire suppression.

BLM, USFS, and BIA provided their fire management plans for inclusion in this plan. The Alpine Fire Safe Council is still working on incorporating this data.

**4.4 Local Jurisdictional Involvement, Approval, Adoption**

Upon final review of the document by stakeholders and local jurisdictions, the document will be presented to all jurisdictions that were involved in the process for formal adoption. This plan will be subject to revision every two years.

Sections 5-9 of this report are organized by Planning Areas, as defined. Sections are intended to be stand alone documents for communities to use in their neighborhood wildfire planning.

## 5. Communities-Woodfords

### 5.1 General Environmental Conditions

The Woodfords neighborhoods are in the rain shadow of the Sierras. Relatively dry, much of the area surrounding neighborhoods is covered by brush. Where trees are present, there is usually a well developed brush understory. Wildland fuels are present where no urban development exists.

There are six neighborhoods in the Woodfords Planning Area. They are:

- Woodfords / Alpine Village
- Crystal Springs
- Mesa Vista
- River Ranch
- Woodfords Indian Colony
- Diamond Valley / Manzanita Lane

#### 5.1.1 Elevation

Figure 3 shows the terrain within the Woodfords Planning Area. The terrain at the southern end of the planning area is typically very steep as the crest of the Sierra Nevada's run though Alpine County. The northern portion of the planning area encompasses the southern tip of the Carson Valley, which is comparatively flat.

#### 5.1.2 Meteorology, Climate, Precipitation

The climate is relatively dry with most of the precipitation falling in the winter months as rain or snow. Afternoon thunderstorms in the summer present variable winds, lightning strikes and sometimes heavy precipitation in small areas. Its not uncommon for little to no rain to fall during lightning events.

#### 5.1.3 Hydrology

The county is the headwaters for five different watersheds draining both sides of the Sierra Nevada's. The Woodfords Planning Area is entirely in the Carson Watershed, encompassing the West Fork of the Carson River and portions of the East Fork watershed.

#### 5.1.4 Threatened and Endangered Habitat Type

There are a number of ecologically sensitive areas and wildlife habitat. After considering the threat to life and property, projects should be considered in how they address these areas. California Department of Fish and Game and the U.S. Fish and Wildlife Service have information on Threatened and Endangered Species in the Woodfords Planning Area. Bald eagles and mountain yellow-legged frogs are some of the threatened or

endangered species that inhabit the forest and lakes within the Planning Area. The BLM and USFS have found no threatened or endangered species within their projects. Surveys or mitigation measures for threatened or endangered species should be implemented prior to project initiation.

### **5.2 Population and Demographics**

The year round population in the Woodfords Planning Area is fairly small, typically around 1000 people. Tourism attracts a significantly higher number of people throughout the year. During the summer months, high numbers of visitors use the campgrounds and trails in the area. During the winter, vehicular traffic is extremely high with visitors passing through the area for winter recreation.

### **5.3 Infrastructure**

As a rural, sparsely populated area, Woodfords has relatively little infrastructure at risk from wildfire. But the loss of only a few key facilities can have a big impact.

Woodfords power and phone services originate in Nevada and reach the Planning Area through a single, fire-prone corridor. Any interruption of this line knocks out service to Markleeville as well as Woodfords and Markleeville Fire Stations.

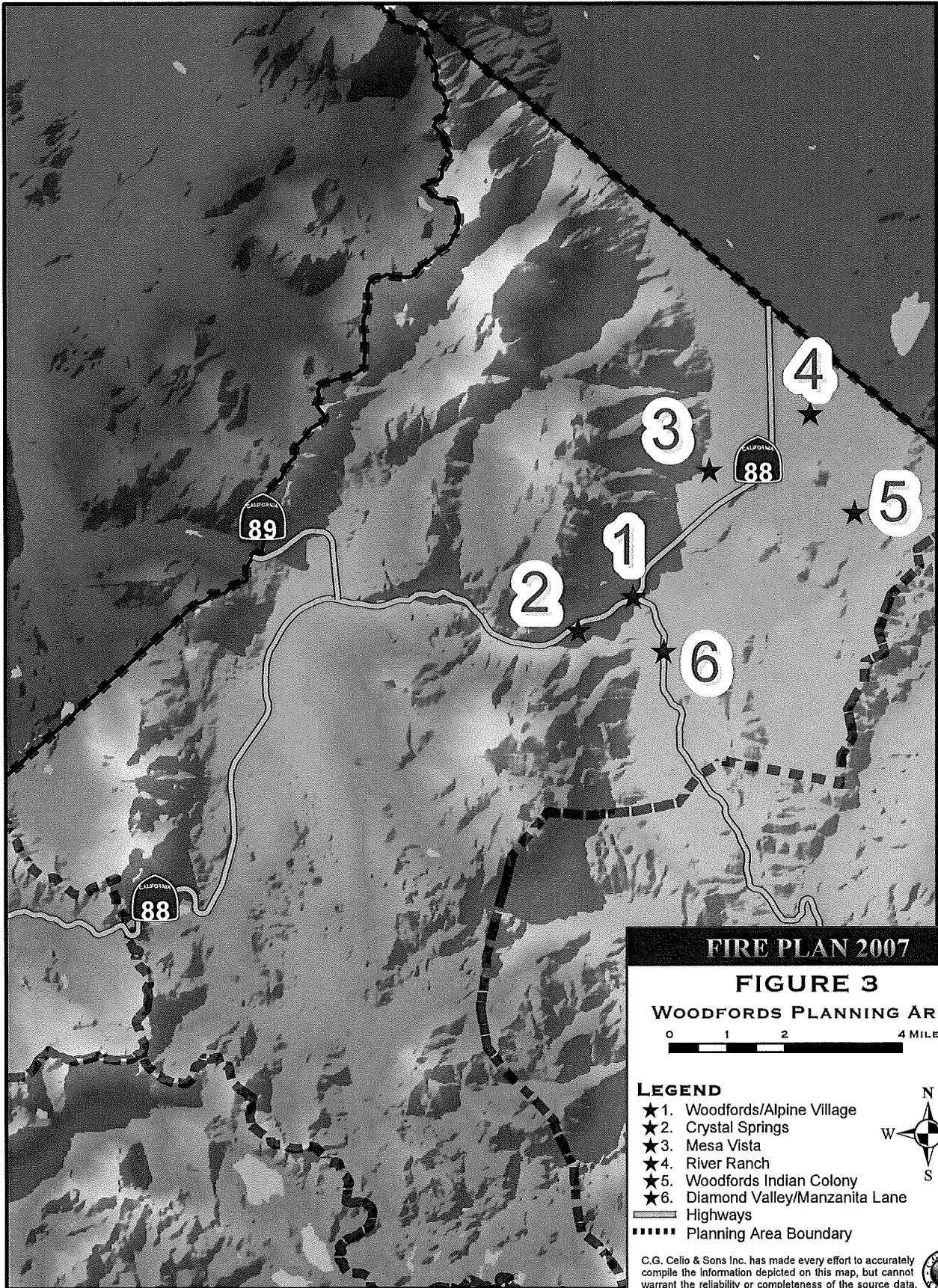
Key county facilities exist in the Woodfords area. The Public Works Department and County Yard, threatened in the 1987 Acorn Fire, are surrounded by wildland fuels. The Woodfords Volunteer Fire Department and the Alpine County Health and Social Services Buildings are also near the County Yard. All of these facilities will be critical to an effective county response to a wildfire incident.

Diamond Valley School is also in the Woodfords Planning Area. The school is a critical facility for two reasons; it is likely the best possible staging area for resources responding to a wildland fire incident, but also an evacuation problem should school be in session during a wildfire event.

(These key facilities are shown on the individual neighborhood maps.)

Woodfords has no hydrants. A few hydrants exist along the STPUD effluent export line, but since the effluent is secondary treated, its use is limited for firefighting due to public health concerns

Development has significantly increased in recent years. In a county with only a few new buildings a year, a single subdivision can be a significant impact. Recent land purchases by development interests ensure this trend will continue at an even faster pace. There are a number of large private parcels near existing development that could potentially be developed, expanding residential development into hazard areas. A number of new subdivisions have been approved and constructed in the Woodfords Planning Area.



### **5.3.1 Business**

The tourism industry dominates the economy of the Woodfords Planning Area. A store in Woodfords provides a year round restaurant, camping supplies and sundry items to visitors. Sierra Pines, open only in the summer, also provides a restaurant and store. Lodging is available at a bed and breakfast or at the Woodfords Inn.

Ranching is also a significant business in the Woodfords Planning Area. Approximately 1,000 acres of land is used for growing hay or grazing at the northern end of the area. Many of these ranches have survived previous wildfires.

### **5.3.2 Recreation**

Recreation creates a number of concerns for wildfire planning. Areas of dispersed camping, with campfires and barbeques are likely sources of ignitions for wildfires. A wildfire in heavily used recreation areas poses problems for evacuations. Wildfire that destroys key recreation resources would have a significant impact on the tourist industry in Alpine County.

Camping: The Woodfords Planning Area hosts a popular BLM campground at Indian Creek and numerous developed and undeveloped USFS and BLM campgrounds and campsites.

Fishing: The West and East Fork of the Carson River with its many tributaries provides highly-valued opportunities to fish for native and planted trout species.

Other popular recreational opportunities:

Hunting, bicycling, backpacking, hiking, horse pack trips, cross country skiing, snowmobiling.

### **5.3.3 Cultural Resources**

Prehistoric and historic cultural resources exist within the project areas. The area was used by Native Americans, and sites have been found within the planning area.

### **5.4 Emergency Services**

Fire suppression for wildland fire incidents are provided by the federal agencies and the local volunteer fire departments. The USFS guard station in Markleeville staffs two engines in the summer to provide wildland fire response. BLM engines respond from the Carson City District. The USFS has command and control responsibility on private lands as part of a Cooperative Fire Agreement (see the above sections on jurisdictional information).

Response distances are commonly within 5 miles from either a federal or volunteer fire station.

**5.5 Insurance Ratings**

Most of Woodfords Planning Area is rated at an ISO 8. Some portions of River Ranch and along Foothill Road are at a 9 due to distance from fire station. Water source and distance from the volunteer fire department are the limitations.

**5.6 Land Use Development Trends**

Development has significantly increased in recent years. In a county with only a few new buildings a year, a single subdivision can be a significant impact. Recent land purchases by development interests indicate this trend will continue at an even faster pace. There are a number of large private parcels that could potentially be developed, expanding residential development further into extreme hazard areas. A number of new subdivisions have been approved and constructed in the Woodfords Planning Area. Current water storage solutions are based on SRA Fire Safe Regulations adopted as county code for pond or tank water storage near a home.

## **6A. Current Fire Environment- Woodfords**

### **6.1 Wildland Fire History**

Devastating wildfires have occurred in Alpine County communities in the past. The largest was the Acorn Fire in 1987 destroying 26 homes. This fire occurred in the Woodfords Planning Area.

### **6.2 Local Fire Ecology and Forest Health**

Effective management of the wildland fire risks on the landscape today must include an understanding of forest health issues and fire ecology. Without understanding the processes in a forest ecosystem we will continue to attempt to control it, rather than live within it. Deteriorating forest health increases the wildland fire hazards around our communities. Improving forest health results in forests less susceptible to catastrophic fire, reducing the fire risk to our communities.

The science of fire ecology is concerned with understanding how fires determine a forest's structure and species composition, and describing fire's role in changing that structure and composition. A fire regime is defined as the frequency and severity of fire occurrence in a given forest type.

Some plant communities depend upon stand-replacing, high intensity fires. Lodgepole pine and fir forests evolved with the occurrence of infrequent, high-intensity, "stand destroying" wildfires that eliminated the existing forest stand. Few trees within the fire perimeter survived, and the low frequency of fires in these plant communities allow long periods of time for the accumulation of fuels and the reestablishment of vertical continuity ("ladder fuels") and horizontal continuity (closed canopies) in the fuel strata. This was conducive to the simultaneous combustion of all fuels during a single fire event.

Other plant communities have evolved to burn frequently with low intensity; for example mature Jeffrey pine forests. Under a historic fire regime, low-intensity surface fires reduced fuel loading from grasses and shrubs, suppressing regeneration of shade-tolerant white fir seedlings, and leaving the adult trees, protected by thick, fire-resistant bark, unaffected. Forests with frequent fire occurrence had an open, "park-like" appearance with an understory of grass or low shrubs. Though shaded by large, mature trees, spacing between trees was sufficient to allow sunlight to reach the forest floor and encouraged regeneration of shade-intolerant species like Jeffrey pine. Pockets of heavy fuels existed under these conditions, but their discontinuous nature reduced the likelihood that a fire would burn with enough intensity to affect mature trees. Frequent surface fires also remove accumulated dead-and-down woody fuels and the green "ladder fuels" that would otherwise carry flames into the coniferous overstory, potentially provoking a catastrophic, stand-destroying crown fire.

The forest that regenerates with an infrequent, high-intensity crown fire regime is generally very dense and of a single age structure. This density often results in the exclusion of sunlight to the forest floor and subsequent recruitment of shade-tolerant species such as white fir, which contributes to extremely high fuel loadings in the

understory. This arrangement of fuels, or fuel structure, creates an ideal mixture of oxygen and fuel for high intensity fire.

Both forest types exist in Alpine County, historically and today. They are separated by elevation, at roughly the 7,000-foot contour. Above 7,000 feet, temperatures are low enough and moisture high enough to infrequently allow ignitions to grow into large fires. Below 7,000 feet, in warmer, drier areas, frequent ignitions resulted in consumption of the fuels. This constant consumption of fine fuels kept fuel loadings and fire intensity low.

With the clearing of forested lands by logging in the Comstock era and the development of fire suppression policies, natural fire regimes have been modified. Areas that formerly burned with high frequency but low intensity (fires more amenable to control and intervention) have large accumulations of unburned fuels, which once ignited, will burn at higher intensities. The regeneration of altered plant communities under suppressed fire regimes (for example, the abundance of white fir regeneration into the fire-suppressed forests that regenerated in Alpine County after the Comstock era) have also contributed greatly to the alteration of historic fire regimes.

The fire regime in the Woodfords Planning Area can be characterized by high frequency, low intensity fires. Bitterbrush, sagebrush, manzanita, and Jeffrey pine are plant species that favor frequent fires. Low intensity fire does not kill any of these plants, rather it removes dead material from mature plants and increases plant vigor. Jeffrey pine and incense cedar have thick bark to protect the tree from low intensity fire.

Some lower elevations of the Woodfords Planning area contain forest stands with highly altered fire regimes. The loggers of the 1860's that worked in the region to satisfy the timber demands of the Comstock mines uniformly cut the native forests, originally characterized by uneven tree ages, wide spacing between trees in mature stands, and small openings created by other mortality. The forest that regenerated after this period of intensive logging activity developed into a much denser stand. The increasing effectiveness of fire suppression activities during the 20<sup>th</sup> century and the eventual elimination of mechanical harvesting in the Alpine County have further inhibited variability in this forest's age classes and crown structure.



Typical fuels in the Manzanita Lane area.

The best local illustration of this phenomenon can be found near Manzanita Lane. The fire safe council recently completed a fuels reduction project in this area. The Manzanita Lane neighborhood escaped the 1987 Acorn Fire, therefore the brush has not burned for at least 50 years, likely longer. Manzanita and bitterbrush are tall and overly mature, with a significant amount of dead material within each plant. Mistletoe is prevalent in the

trees, reaching epidemic levels at the upper end of the subdivision. Overall forest health is very poor and deteriorating. The lack of fire in this area has increased competition among the trees, reducing vigor and allowing disease to spread. The amount of dead material in the brush layer has increased fuel loadings to extremely high levels.

The northern edge of the treatment area lies within acreage burned by the Acorn Fire. The manzanita is moderately tall, five feet in some places. There is little to no dead component within the brush. A number of Jeffrey pine seedlings have established and show no signs of mistletoe. Forest health is good and fuel loadings are relatively low.

George Gruell's book *Fire in Sierra Nevada Forests, A photographic interpretation of the ecological change since 1849*, pairs historic photos with recent ones taken from the same vantage point, and effectively illustrates this phenomenon across various locations in the Sierra Nevada, including Alpine County.

Most commercial and residential development in Alpine County—those areas most needing protection from infrequent, catastrophic wildfires—is concentrated in areas well below the 7,000-foot elevation prescription for frequent, low-intensity, light-fuel clearing ground fires. Our objective must be to model the natural fire regime as much as possible in our communities. This requires diligence on our part to reduce the fuel loadings to manageable levels that protect our communities and the forest environment from the extraordinary effects of catastrophic fire.

### **6.2.1 Fire Frequency**

The Mesa Vista and Woodfords / Alpine Village neighborhoods have had frequent fires in the last 20 years. Since 1980, at least three fires have burned in the area, some over the same ground multiple times. Fuels are flashy, making fires difficult to contain on initial attack, but loadings are not near the level of other communities. Homes and structures have been lost in these fires. Wildfire has also burned frequently in the Indian Creek drainage and around the Woodfords Indian Colony.

CAL FIRE developed fire rotation or frequency measures for the entire state. Data is stratified into 3 classes of frequency. These classes represent the amount of time necessary for fires to have burned an entire area, based on historic fires. For example, in an area classified as < 100 years, the entire area would have burned over at least once in < 100 years. This could be by a single fire, though is more commonly the culmination of many fires in that area.

### **6.3 Fire Weather**

Lightning causes most wildland fire ignitions in the Woodfords Planning Area. Summer thunderstorms bring erratic winds and lightning to the area. Fire behavior is most extreme after long periods of hot, dry weather with no precipitation. It is common to have a southwesterly wind coming over the Sierra's in the afternoons during the summer. Most catastrophic fires have occurred during these conditions along the Sierra Front.

#### 6.4 Fuels Map

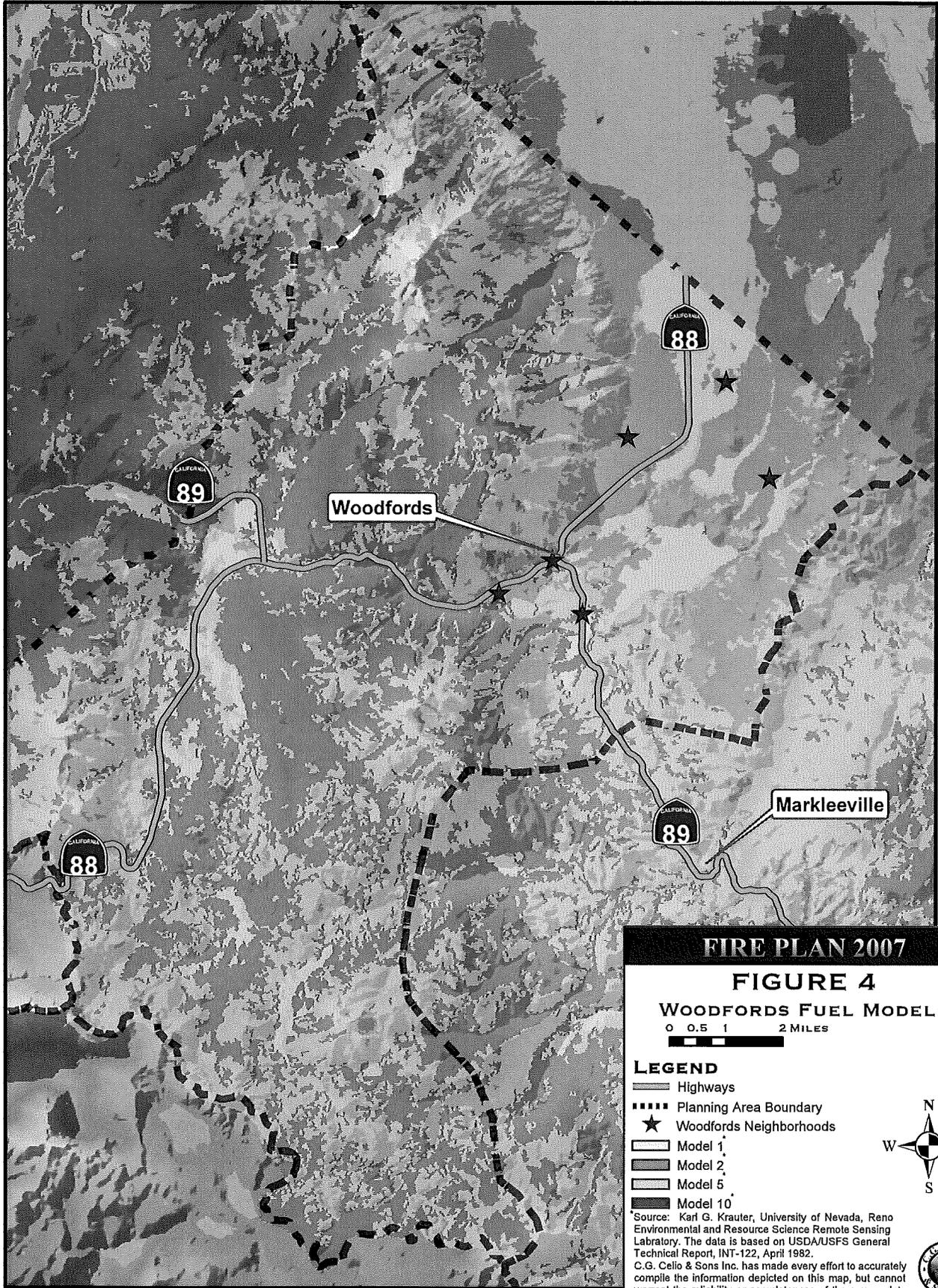
Fire fuels have been mapped by both CAL FIRE and the Sierra Front Wildfire Cooperators (Sierra Front). The CAL FIRE data covers the entire county but is less detailed. The Sierra Front data is more detailed but only covers the eastern slope of Alpine County.

Both data identify fuels based on the 13 standard fuel models developed by Rothermel. Though the absolute model numbers differ, they are consistent across the general fuel model categories; grass, brush, and timber. For example, the CAL FIRE classes may indicate fuel model 9, but Sierra Front data indicates fuel model 10. However, they are both of the timber fuel model category.

Assignment of fuel models and hazards were based on vegetation data collected from satellite imagery. For the data from the Sierra Front, the satellite data was from the early 1990's, so some the data is out of date, particularly where fires have occurred. This data is intended for use on a regional basis, it should be updated around communities as planning becomes more specific.

Figure 4 shows the fuel models in the Woodfords Planning Area from the Sierra Front data. The table below briefly describes the models. The CAL FIRE data does not cover the Woodfords Planning Area.

<i>Fuel Model</i>	<i>Fuel Model Category</i>	<i>Description</i>
1	Low Grass Fuel Model	Low Intensity, Slow Rate of Spread
2	Grass Fuel Model	Low Intensity, Fast Rate of Spread, Suppression can be effective but fire typically spreads too fast.
5	Brush Fuel Model	Moderate to High Intensity,
10	Timber Fuel Model	High Intensity, typically a crown fire, direct suppression ineffective



#### **6.4.1 Hazard Maps**

Combining the wildfire fuels data with other information that would affect fire behavior, such as slope, fire agencies compile wildfire hazard maps. These maps show areas that, given the specific fuel and slope conditions, would have extreme to moderate fire behavior. These hazard maps can help prioritize wildfire mitigation projects. Hazards have been developed by both CAL FIRE and the Sierra Front Cooperators.

Figure 5 is a more detailed look at the hazards in neighborhoods in the Woodfords Planning Area. The data is again from the Sierra Front as the CAL FIRE data does not cover the Woodfords Planning Area.

#### **6.4.2 Condition Class**

Both the National Fire Plan and Healthy Forest Act dictate that the federal agencies use Condition Class as criteria for planning projects. As defined previously in the fire ecology section, the Condition Class represents a relative measure of how far an area is from its historical fire regime. As dictated by the National Fire Plan, areas of Condition Class 3 have a higher priority for treatment than those of lower condition class. CAL FIRE has calculated condition class across the state. Figure 6 shows condition class for Woodfords Planning Area.

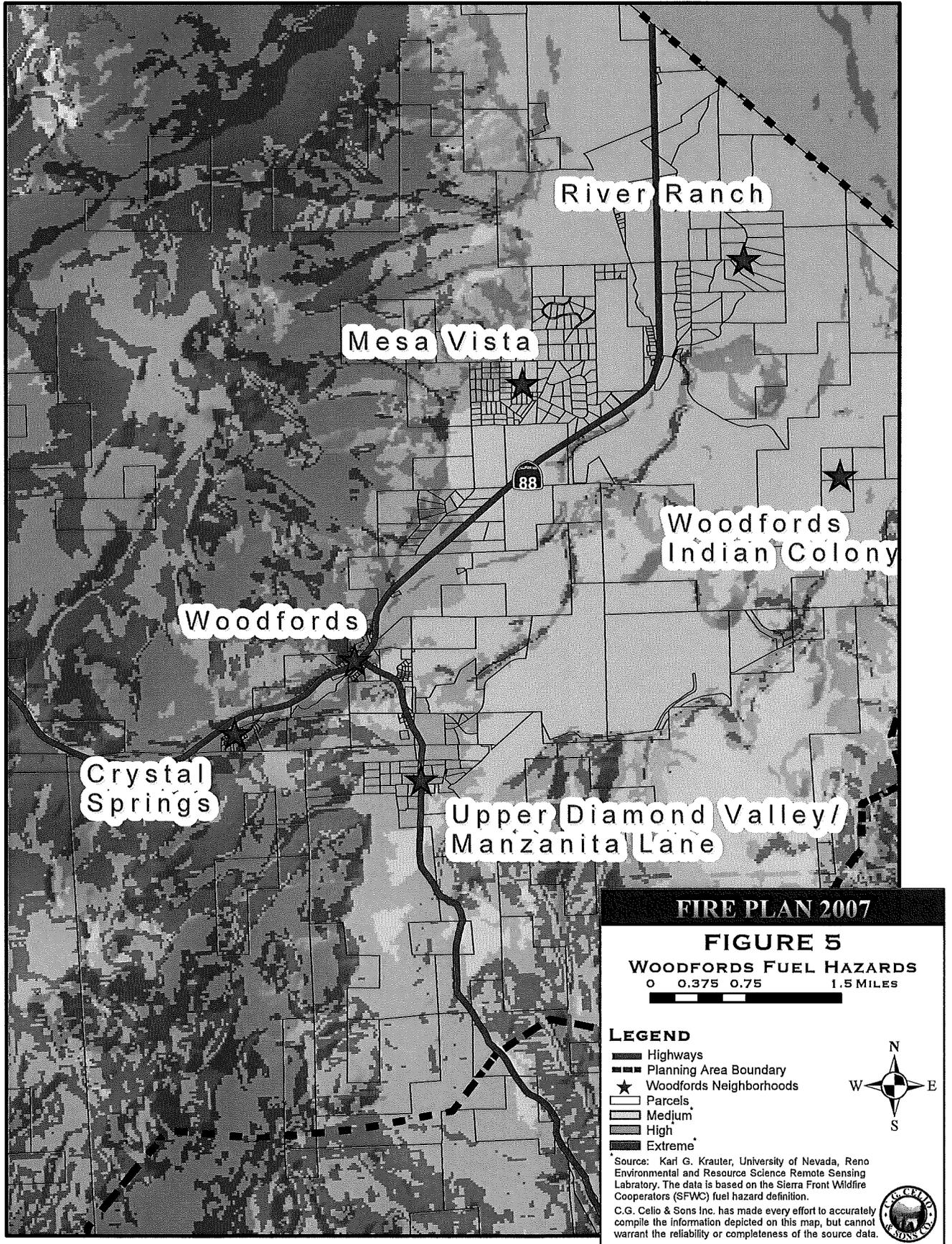
#### **6.4.3 Natural Fire Breaks**

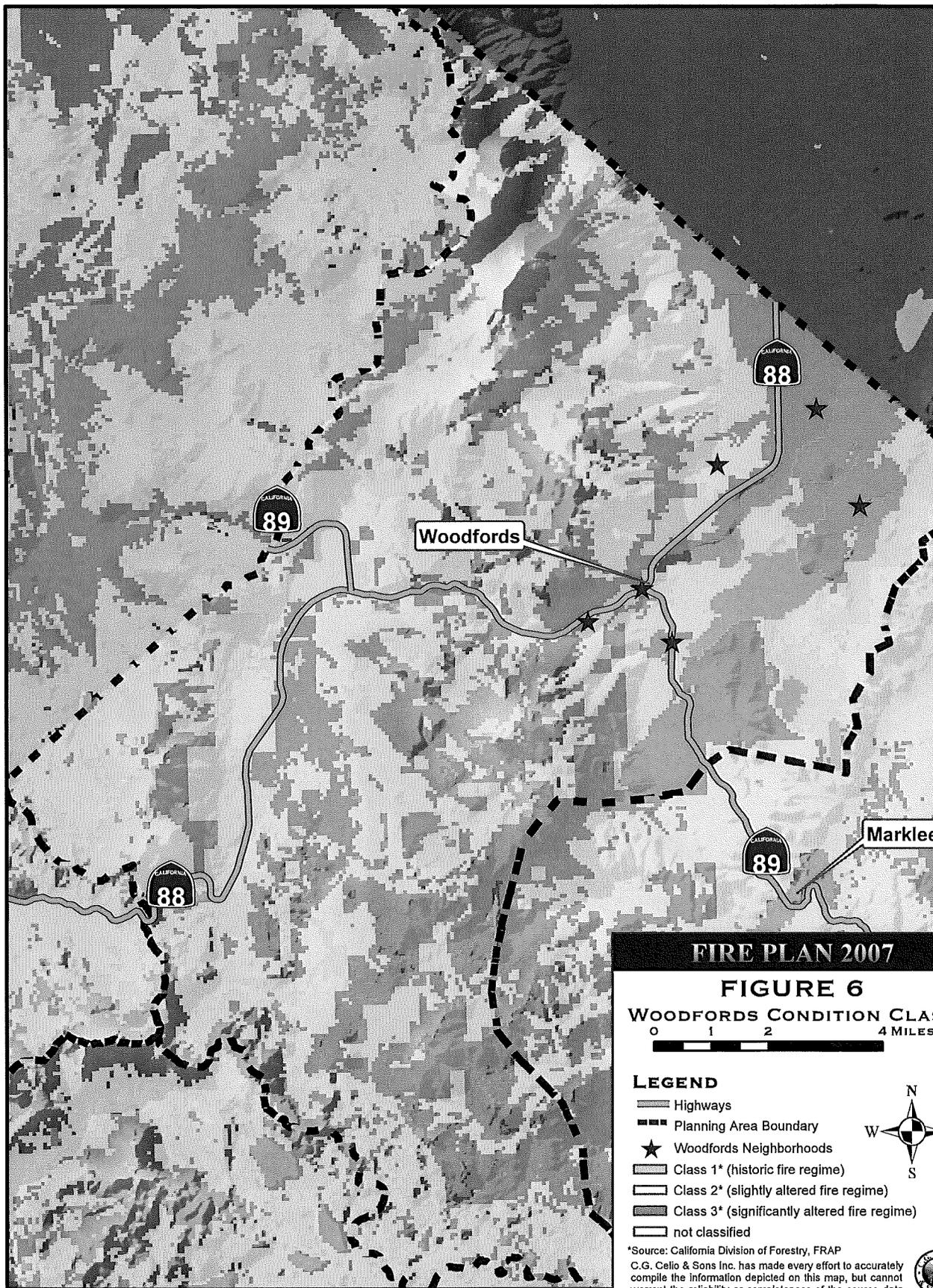
There are few natural fire breaks in the Woodfords Area. The Carson River near Crystal Springs was not effective as a fire break during the Acorn Fire. Except for the irrigated pastures and hay fields, wildland fuels cover the entire landscape. The large irrigated meadows can be effective natural fire breaks if the grass is wet and succulent during the summer months.

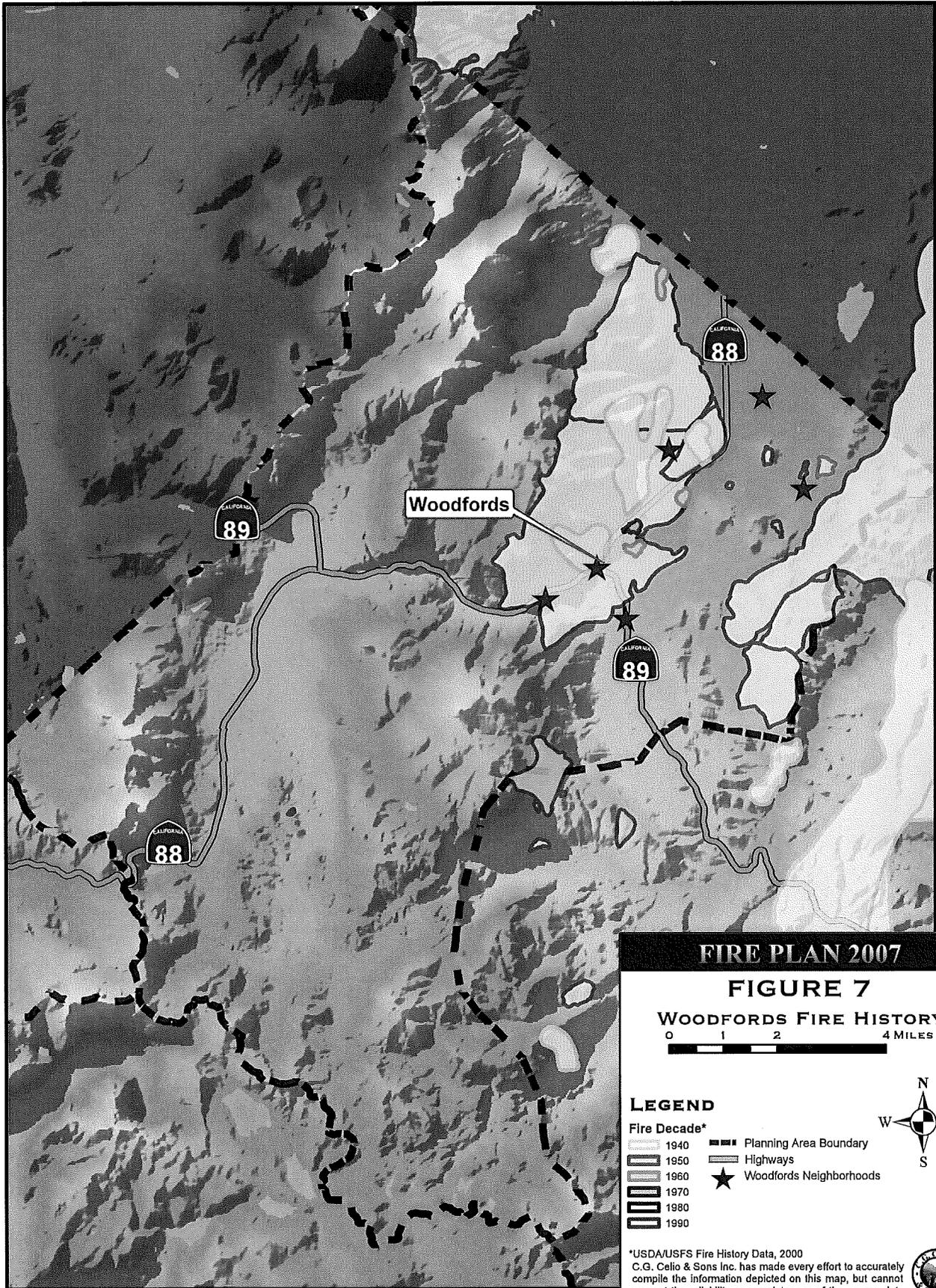
#### **6.5 Fire History**

Figure 7 describes the previous fires in the Woodfords Area. Wildfire is a frequent event in the Woodfords Planning Area. In 1984, a large fire burned from Indian Creek to the southern edge of Gardnerville. Though one of the largest acreage fires, it did not destroy any structures in Alpine County. In 1986, the Fredericksburg Fire burned a portion of the Mesa Vista area. It did not destroy any homes but did cause losses to the agricultural producers along Foothill Road. In 1987, the Acorn Fire swept through Woodfords and the Mesa Vista area. Large, uncontrollable wildfires not only occur within the Woodfords Planning Area, but occur frequently. This fact is especially important for residents living in areas where fire has not yet burned and fuel loadings are extremely high.

In addition to large wildfire, numerous smaller fires and ignitions occur in the area. A number of fires between 1 and 40 acres have occurred in the area in the last 25 years. Ignitions are frequently caused by lightning and humans. Vehicles have accounted for at least two ignitions in recent years. Escaped pile burns on private land have also spread into wildfires.







**FIRE PLAN 2007**

**FIGURE 7**

**WOODFORDS FIRE HISTORY**

0 1 2 4 MILES

**LEGEND**

Fire Decade\*

- 1940
- 1950
- 1960
- 1970
- 1980
- 1990

- Planning Area Boundary
- Highways
- ★ Woodfords Neighborhoods

\*USDA/USFS Fire History Data, 2000  
 C.G. Cello & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.

**6.6 Expected Fire Behavior**

Fire behavior is expected to be extreme and uncontrollable during the worst case conditions. Slopes are steep, wind commonly increases in the afternoon, and fuel loadings are high. While a wide range of fire behavior can be expected in the various fuel types and weather conditions, extreme fire behavior is likely during severe fire weather conditions.

**6.7 Range of Fire Conditions**

A wide range of fire conditions can be found in the Woodfords Planning Area. Conditions range from heavy fuels on steep slopes to flat grass meadows and low sage on rocky ridges.

## 7A. Risk Evaluation – Woodfords

### 7.1 Risk Evaluation

Many of the neighborhoods within the Woodfords Planning Area are at high risk for catastrophic wildfire. Fuels around the neighborhoods are dense brush and forest types. Slopes are moderate to steep and the wind blows downslope from the southwest during hot summer and early fall afternoons.

Natural and human ignitions are likely. The ignition risk is highest from the tourist and recreational user groups who are unfamiliar with the area and commonly use outside barbecues and campfires. The increased amount of tourist traffic on the road also increases the risk of ignition from vehicles.

Fire protection is provided by the Woodfords Volunteer Fire Department (all volunteer) for all the neighborhoods. There is a single structure engine, two wildland engines, a heavy rescue, and a single water tender at their firehouse. A few sewer effluent hydrants exist around the Alpine Village area, however their use in a wildfire event is limited. Tanks and ponds at local homes, if available and serviceable, are the best water source. The West Fork of the Carson River runs through the area but is difficult to access except in a few locations.

Alpine County recently completed its Field Operations Guide complete with evacuation maps for neighborhoods in Woodfords. Except for long driveways and neighborhood roads, egress from the communities is good. Once on a state highway or county road, the risk of entrapment is low. Many roads are looped and there are no designated safety zones since the risk of entrapment is low.

Neighborhoods are most at risk from a wind-driven fire through the forest and brush fuel types. Wind-driven flame fronts in these fuels will be difficult to stop, as has been proven by previous fires passing through the area. In all of the previous fires, the devastation occurred in a single afternoon.

### 7.2 Risk Evaluation Summary

<u>Asset</u>	<u>Rating</u>
<b>Structures</b>	
1. Woodfords / Alpine Village	Medium
2. Crystal Springs	Medium
3. Mesa Vista	High
4. River Ranch	Medium
5. Upper Diamond Valley / Manzanita Lane	High
6. Washoe Indian Colony	Medium

<b>Business</b>	
1. Woodfords / Alpine Village	Medium
<b>Infrastructure</b>	
1. Woodfords / Alpine Village	Medium
2. Upper Diamond Valley / Manzanita Lane	High
3. Washoe Indian Colony	Low
4. Power Lines	Medium
5. Evacuation Routes	Medium
<b>Recreation</b>	
1. Indian Creek BLM Campground	High
2. Crystal Springs Campground	Medium
3. USFS and BLM Campgrounds	Medium
<b>Fishing</b>	
1. West Fork Carson River	Medium
<b>Wildlife Habitat</b>	
	Medium
<b>Endangered Species</b>	
	Medium
<b>Watersheds</b>	
	Medium
<b>Historical Resources</b>	
	Medium
<b>Cultural Resources</b>	
	High

7.3 Fire Hazard Assessment by Location

1. Woodfords / Alpine Village

Rating: Medium

Fuels: Woodfords is surrounded by fuel models 2, 5 and 10 with fuel loadings of moderate to high density. Jeffrey pine, bitterbrush, and manzanita are the primary vegetation types. The Acorn Fire reduced fuel loadings in this neighborhood, however in the 19 years since the fire, the vegetation has grown back to moderately dense levels. In many areas, fuels are continuous and would easily carry another wildfire.

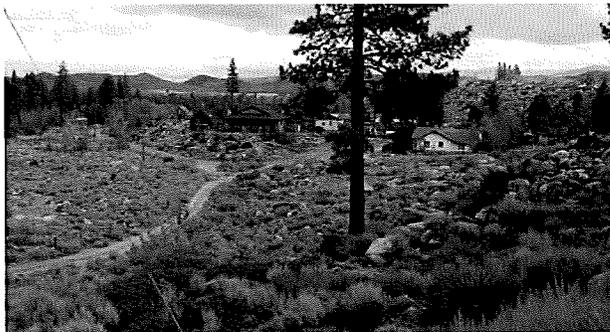


The wildland interface surrounding Alpine Village

Weather: The Acorn Fire demonstrated the dangerous fire weather conditions that occur in this neighborhood. Extreme summer temperatures dry fuels for many weeks. In the afternoon, high winds blow down the Woodfords Canyon. These winds pushed the Acorn Fire downslope and through the community. Lightning ignitions occur within the community.

Topography: Slopes are moderate to very steep in the neighborhood, which sits at the mouth of the Woodfords Canyon. Aspects vary with a few small hills and ridges throughout the community.

Human Sources of Ignition: A number of sources of human ignitions exist in the town of Woodfords. The majority of residences use wood heating, leading to chimney fires and burning embers. Structure fires can easily spread to the wildland if they occur during wildland season. Power is supplied through overhead lines adjacent to roads. Lines have been knocked down during storm events and traffic accidents. Fires in the Woodfords neighborhood have been started by downed powerlines and vehicle accidents.



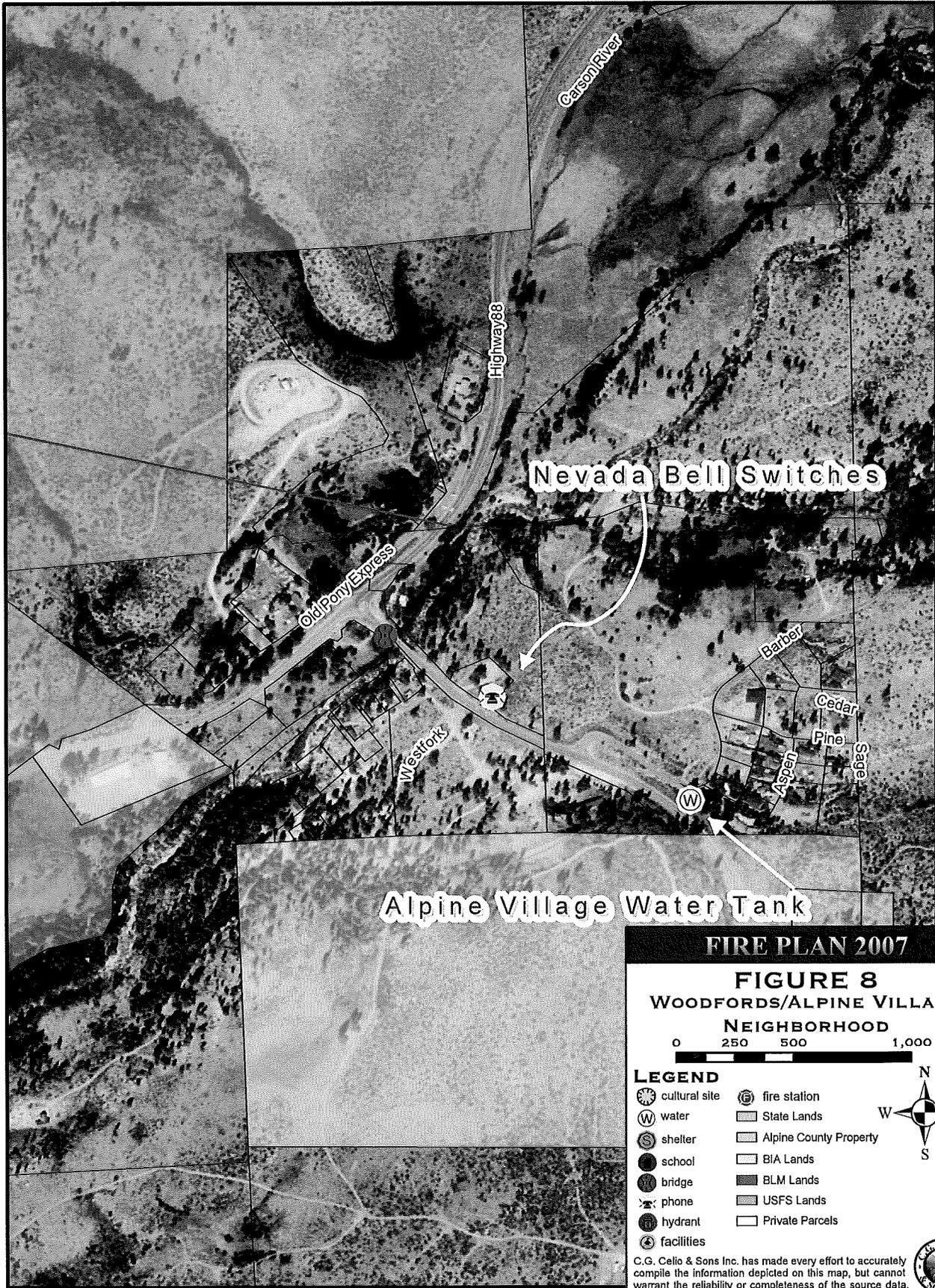
Alpine Village brush lands

The large influx of tourists during the summer, particularly on weekends, increases the number of potential ignition sources, from recreation fire use and from vehicle accidents.

Community Preparedness: Having survived one large fire, the neighborhood is moderately prepared for another. Building construction is improving, some residents are replacing shake roofs and using fire resistant decking. However, a significant number of

structures still use flammable siding and roofing material. Many structures have adequate defensible space, either from the hard work of the homeowners or from the Acorn Fire. Most of the homes are on well-paved, wide access roads or right on State Highway 88, making ingress and egress possible during a fire event. Fuels along these access ways are typically light. Entrapment was not an issue during the Acorn Fire event.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within ¼ mile from the neighborhood and can respond engines in less than ten minutes if volunteers are available. Alpine Village has a small municipal water tank, but there are no other fresh water sources within the neighborhood. No predefined draft sites are located within the neighborhood. The STPUD sewer effluent hydrants are in this neighborhood, but their use is limited.



## 2. Crystal Springs

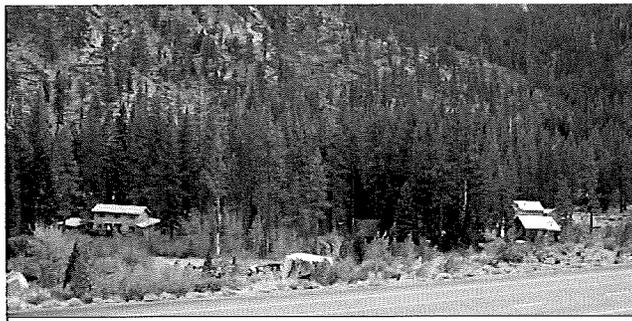
**Rating: Medium**

Fuels: Crystal Springs is surrounded by fuel models 5 and 10, with moderate fuel densities. Around the homes and campground, the fuel type is forested, with some brush understory. Buildings and landscaping break up wildland fuels, but tree density is high and ladder fuels are prevalent. Jeffrey pine is the dominant tree species with white fir in the understory. Manzanita, bitterbrush, and sagebrush compose the understory.

Weather: The Acorn Fire demonstrated the dangerous fire weather conditions that occur in this neighborhood. Extreme summer temperatures dry fuels for many weeks. In the afternoon, high winds blow down the Woodfords Canyon. These winds pushed the Acorn Fire down-canyon and through the community. Lightning ignitions occur around the community.

Topography: Slopes are moderate to very steep in the neighborhood, which sits at the mouth of the Woodfords Canyon. It is a primarily north-facing aspect at the bottom of the canyon.

Human Sources of Ignition: A number of sources of human ignitions exist in the neighborhood of Crystal Springs. The majority of residences are summer cabins and use wood heating, leading to chimney fires and burning embers. Structure fires can easily spread to the wildland if they occur during wildfire season. Much of the population is in the community during wildfire season. Power is supplied through overhead lines adjacent to roads. Lines have been knocked down during storm events and traffic accidents. The USFS Crystal Springs campground is on the up canyon side of the neighborhood and has open campfires. The large influx of tourists during the summer, particularly on weekends, increases the number of potential ignition sources, from recreation fire use and from vehicle accidents.



Crystal Springs subdivision lies in Woodfords Canyon

Community Preparedness: Having survived one large fire, the neighborhood is moderately prepared for another. Building materials are still flammable, with combustible siding and roofing material present throughout the community. Many structures have adequate defensible space, either from the hard work of the homeowners or from the Acorn Fire. Structure density and landscaping preclude most wildland fuels in the understory, but pine needles on the ground and tree density are constant hazards. Almost all of the homes are on Crystal Springs Road, which connects to State Highway 88 both above and below the community, providing two access points out of the neighborhood. Entrapment was not an issue during the Acorn Fire event, but some homes were lost.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within three miles of the neighborhood and can respond engines in less than 15 minutes if volunteers are available. No predefined draft sites are located within the neighborhood, however the West Fork of the Carson River forms the west edge of the community. No hydrants exist within the neighborhood.



**3. Mesa Vista**

**Rating: High**

Fuels: Mesa Vista is composed entirely of fuel model 5. The fuel bed is continuous across the neighborhood and fairly dense. The entire area burned during the Acorn and Fredericksburg Fires, and smaller portions have burned since. The sagebrush and bitterbrush has grown to a height of 3-6 feet.

Weather: The southwest wind blows across the mesa regularly in afternoons during the summer. Wind has driven all of the past fires across Mesa Vista, creating extreme fire behavior.

Topography: Slopes in the Mesa Vista neighborhood are moderate, with a

predominately southeast-facing aspect.



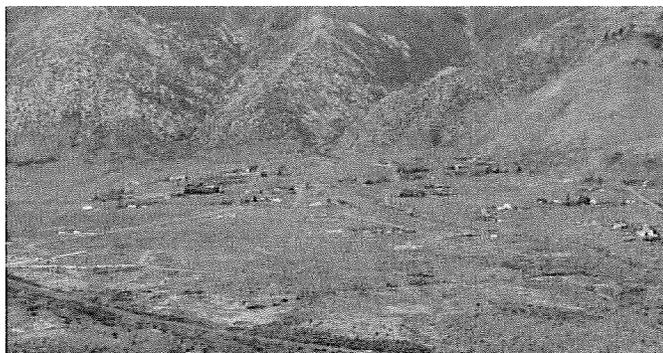
Emigrant Trail, a primary access road in the Mesa Vista area

Human Sources of Ignition: A number of sources of human ignitions exist in the neighborhood of Mesa Vista. Some residences use wood heating, leading to chimney fires and burning embers.

Structure fires can easily spread to the wildland if they occur during wildland season, which has happened before in Mesa Vista. Some power is supplied through overhead lines adjacent to roads. Lines have been knocked down during storm events and traffic accidents. The increased number of vehicles on State Highway 88 increases the likelihood of an ignition from a vehicle. Previous fires in the Mesa Vista have been started by vehicles and burning structures. Pile burns on private lots have also spread to the wildland.

Community Preparedness:

Having survived multiple fires, the neighborhood is moderately prepared for another. Building construction is improving, some residents are replacing shake roofs and using fire resistant decking. However, a significant number of structures still use flammable siding and roofing material. Many structures have adequate defensible space, either from the hard work of the homeowners or from the previous fires. Most of the homes are on well-paved, wide access roads or right on Emigrant Trail, making ingress and egress possible during a fire event. Most

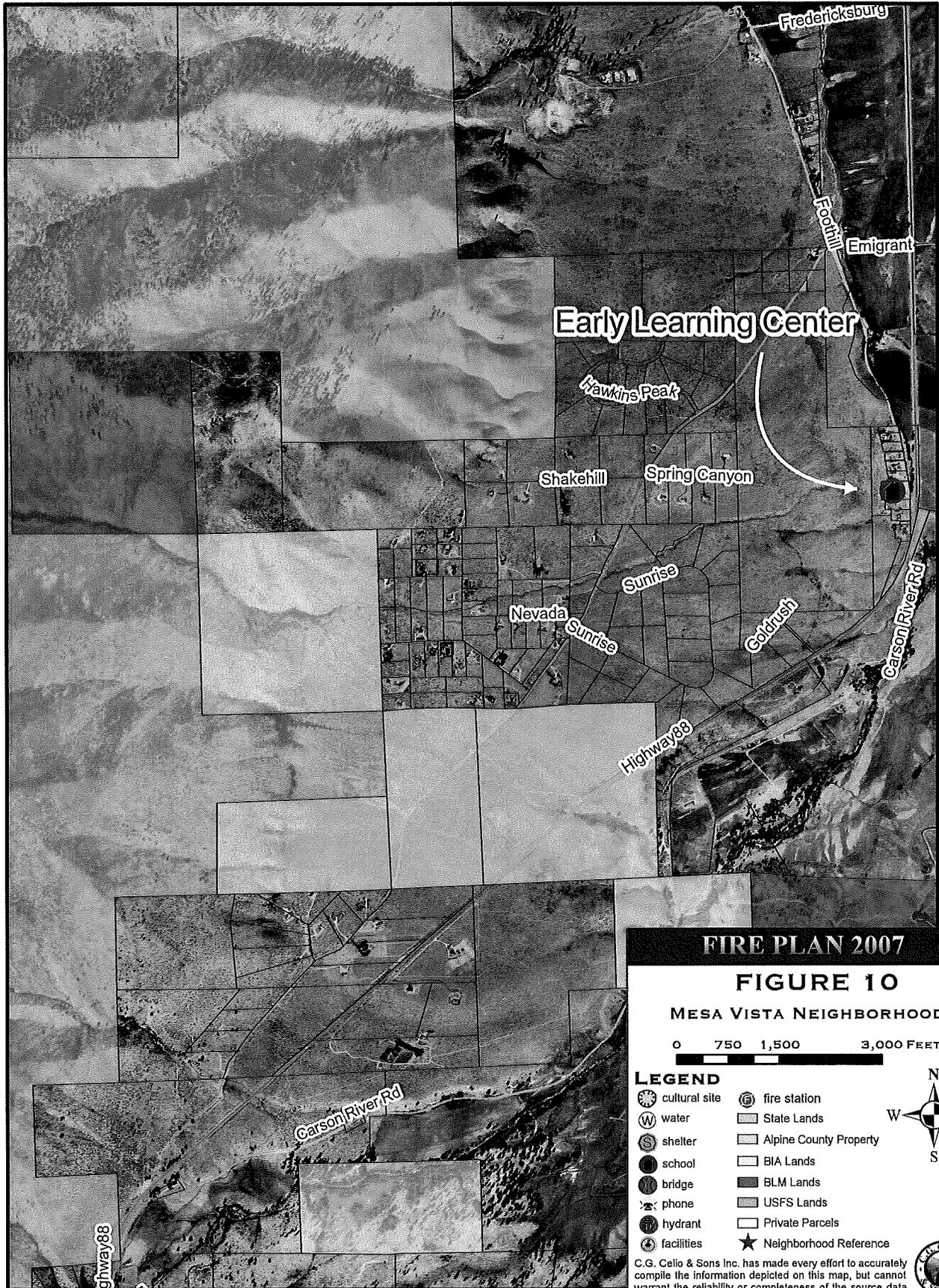


A panorama of Mesa Vista.

roads have two points of ingress and egress, with other dirt roads on undeveloped parcels. Fuels along the paved access ways are typically moderate. Entrapment was not an issue during the Acorn Fire event.

Continued development without adequate fire safe techniques is the greatest risk to values in Mesa Vista. The fastest growing residential development in Alpine County is in this neighborhood, and many new residents are unfamiliar with the previous fire history. The neighborhood is an intermixed community, with lot sizes large enough for wildland fuels to be present throughout the neighborhood. Defensible space is more important than community fuel breaks in this situation.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within four miles from most of the neighborhood and can respond engines in less than 15 minutes if volunteers are available. Homeowner tanks and ponds are the only fire department sources of water in the neighborhood and these sources are not regularly inspected by the county to ensure serviceability. There is no hydrant system in the neighborhood. The nearest draft source, other than in the community, is the Carson River, at least a 15 minute turnaround time from the neighborhood.



**4. River Ranch****Rating: Medium**

Fuels: River Ranch is composed of fuel model 2 with patches of fuel model 5. The fuel bed is continuous across the neighborhood and fairly dense. This area has not burned in recent history. The sagebrush and bitterbrush have grown to a height of 5-8 feet.

Weather: The southwest wind blows across the River Ranch neighborhood regularly in afternoons during the summer.

Topography: The area is predominantly flat, located in the southern end of the Carson Valley.

Human Sources of Ignition: A number of sources of human ignitions exist in the neighborhood of River Ranch. Structure fires can easily spread to the wildland if they occur during wildfire season. Some power is supplied through overhead lines adjacent to roads, but most utilities are underground. The increased number of vehicles on State Highway 88 increases the likelihood of an ignition from a vehicle. Numerous accidents have occurred at the southwest end of the neighborhood near Paynesville. Pile burns on private lots have also started fires in River Ranch in the past.



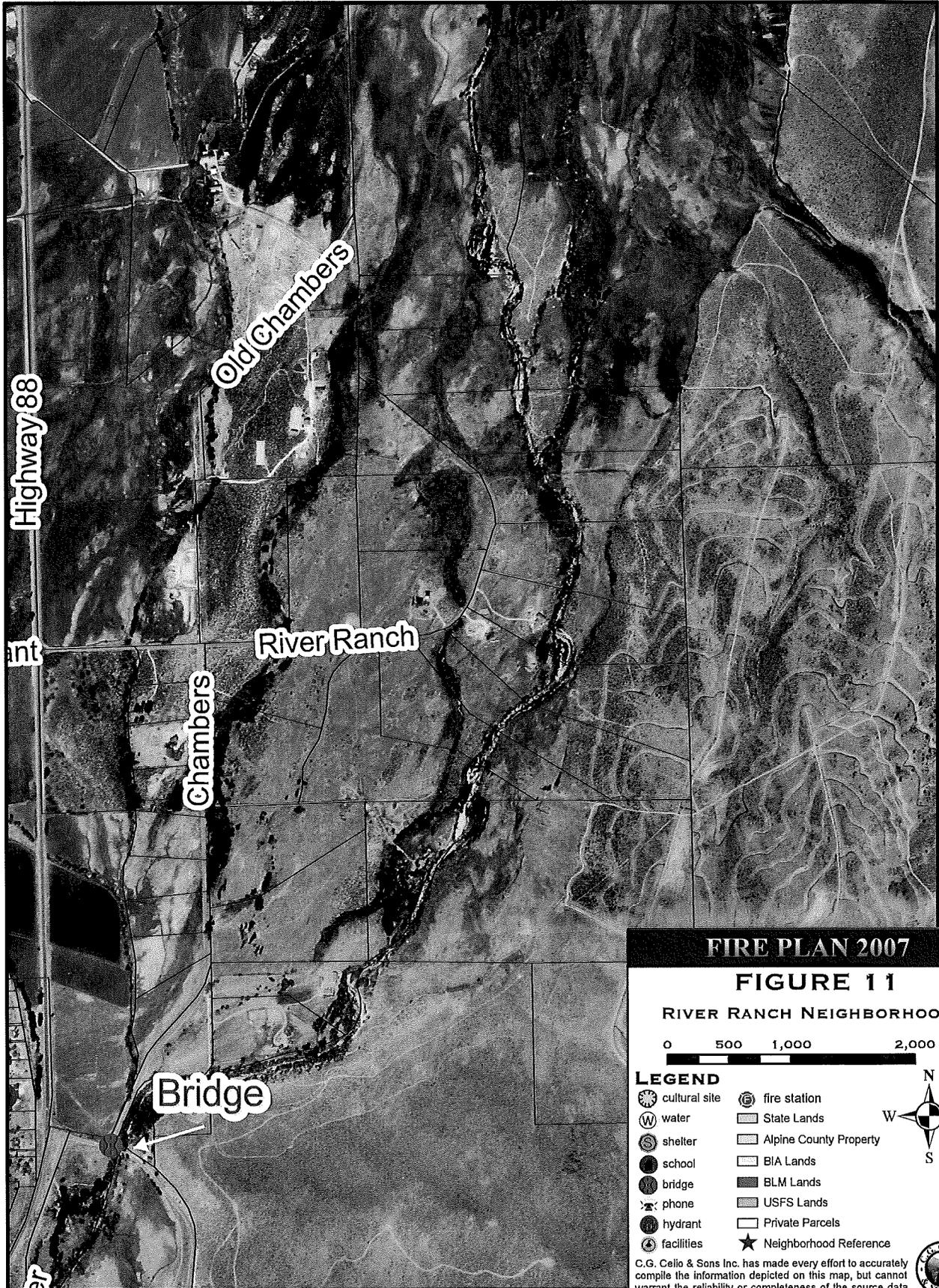
The River Ranch subdivision lies within the Carson Valley

Community Preparedness: Building construction is new using many flame-resistant building materials. The bare ground surrounding these newly constructed homes provides excellent defensible space, but homeowners need to maintain it. Most of the homes are on well-paved, wide access roads, making ingress and egress possible during a fire event. Chambers Lane exits each side of the community for good egress. River Ranch Road is a gated access with one way in and out, however it is wide enough to provide adequate access during a fire event. Fuels along the paved access ways are typically moderate.

Continued development without adequate fire safe techniques is the greatest risk to values in River Ranch. The neighborhood is an intermixed community, with lot sizes large enough for wildland fuels to be present throughout the neighborhood. Defensible space is more important than community fuel breaks in this situation.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within five to six miles from most of the neighborhood and can respond engines in less than 25 minutes if volunteers are available. Homeowners tanks and ponds provide the fire department sources of water in the neighborhood and these sources are not regularly

inspected by the county to ensure serviceability. There is no hydrant system in the neighborhood. The nearest draft source, other than in the neighborhood, is the Carson River, which comprises the eastern boundary of the community.



**5. Woodfords Indian Colony (WIC)**

**Rating: Low**

Fuels: WIC is surrounded by fuel model 2 and fuel model 5. Numerous small fires have burned around the neighborhood in recent years, creating a variety of grass and brush fuel types. Where it exists, the sage and bitterbrush have grown to a height of 2-4 feet.

Weather: The southwest wind blows across the WIC neighborhood regularly in afternoons during the summer.

Topography: The area is predominantly flat, above the floor of Dutch Valley.

Human Sources of Ignition: A number of sources of human ignitions exist around the neighborhood of WIC. Structure fires can easily spread to the wildland if they occur during wildfire season. Power is supplied through overhead lines with propane tanks throughout the community. Burning trash piles on lots also have the potential of starting fires and have started fires around WIC in the past.

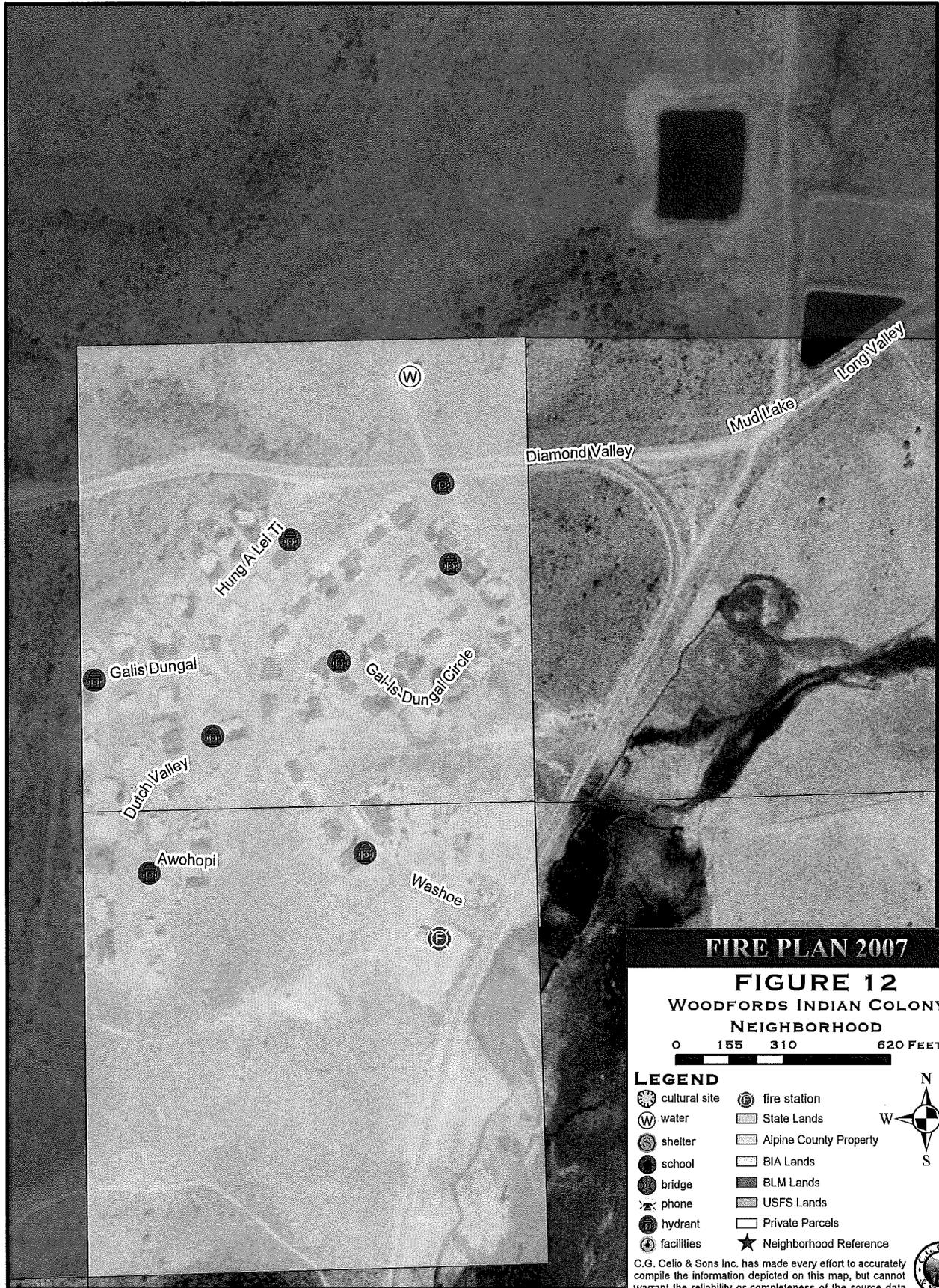
Community Preparedness: The community is a typical interface community, with wildland fuels to the neighborhood boundary, but no wildland fuels within the neighborhood. Building materials are adequate, but in poor condition and may have lost their flame resistance. Roadways are wide and paved with good access out of the community.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within five miles of the neighborhood and can respond engines in less than 20 minutes if volunteers are available. There is a fire house at WIC, but it does not have any engines or staffing, however the Washoe Tribe is considering developing their own fire department.



Woodfords Indian Colony

A hydrant system serves the neighborhood with tanks large enough to store an appropriate amount of water. A new well will help ensure that high tank levels can be maintained. The nearest draft source, other than in the community, is the Carson River which is approximately 20 minutes round trip.



**6. Upper Diamond Valley / Manzanita Lane****Rating: High**

Fuels: The neighborhood Upper Diamond Valley / Manzanita Lane is surrounded by fuel models 2, 5, and 10 with fuel loadings of moderate to high density. Jeffrey pine, bitterbrush, and manzanita are the primary vegetation types. The Acorn Fire reduced fuel loadings next to the neighborhood, however in the 19 years since the fire, the vegetation



Continuous fuels in the Manzanita Lane area

has grown back to moderately dense levels. In the unburned areas, vegetation is overly mature, with significant disease in the Jeffrey pines.

Weather: The Acorn Fire demonstrated the dangerous fire weather conditions that occur near this neighborhood. Extreme summer temperatures dry the fuels for many weeks. In the afternoon, high winds blow down through Woodfords Canyon. These winds can push around the ridge between this

community and Woodfords, creating unpredictable swirling winds in the neighborhood. Winds also come from the southwest, along the foot of Hawkins Peak, through the neighborhood. Lightning ignitions occur within the community.

Topography: Slopes are moderate to very steep in the neighborhood. Two ridges separate this neighborhood from the Woodfords neighborhood. These ridges provided natural fire breaks during the Acorn Fire. Aspect is predominantly west with a few small hills and ridges throughout the community.

Human Sources of Ignition: A number of sources of human ignitions exist in the neighborhood of Upper Diamond Valley / Manzanita Lane. The majority of residences use wood heating, leading to chimney fires and burning embers. Structure fires can easily spread to the wildland if they occur during wildfire season. Power is supplied through overhead lines adjacent to roads. Lines have been knocked down during storm events and traffic accidents. The large influx of tourists during the summer, particularly on weekends, increases the number of potential ignition sources, from recreation fire use and from vehicle accidents. Pile burning is also a potential source of ignition.



Summer time lightning fire above Manzanita Lane

Community Preparedness: The Acorn Fire did not burn into this

neighborhood, so fuel loadings are still extremely high. Use of appropriate building materials is limited, with most residents having flammable siding and unenclosed deck structures. In general, defensible space is poor with trees and brush in very close proximity to the homes. Except for Manzanita Lane and Hawkins Ranch, most homes are on the county roads or State Highway 89, allowing for easy egress and ingress. Manzanita Lane has the most difficult access, with a narrow single lane road as the sole entrance and exit to the neighborhood and no turnaround. The fuels reduction work completed by the Alpine Fire Safe Council reduced this threat, but must be maintained to be effective. Entrapment is likely in this neighborhood. Similarly, Hawkins Ranch has a single road entrance and an inadequate turnaround.

Fire Protection Resources: The Woodfords Volunteer Fire Department is located within the neighborhood and can respond engines in less than 10 minutes if volunteers are available. Homeowner's tanks and ponds provide the fire department sources of water in the neighborhood but these sources are not regularly inspected by the county to ensure serviceability. There is no hydrant system in the neighborhood. The nearest draft source, other than in the community, is the West Fork of the Carson River.



**FIRE PLAN 2007**

**FIGURE 13**  
**UPPER DIAMOND VALLEY/  
 MANZANITA LANE NEIGHBORHOOD**

0 380 760 1,520 FEET

**LEGEND**

- cultural site
- water
- shelter
- school
- bridge
- phone
- hydrant
- facilities
- fire station
- State Lands
- Alpine County Property
- BIA Lands
- BLM Lands
- USFS Lands
- Private Parcels
- Neighborhood Reference



C.G. Celio & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.



## 8A. Action Plan- Woodfords

### 8.1 Desired Future Conditions

1. Reduced threat to residents and their property from wildfires.
2. Increased community preparedness for wildfire.
3. Increased fire suppression capabilities.
4. Improved forest health with lower tree mortality.

### 8.2 Mitigation Goals and Responsibilities

Goals:

Initiate long term planning for vegetation: species types, density, and maximum height for the Woodfords Planning Area

Objectives:

Determine strategies for vegetation management, prescriptions, fuels reduction, and maintenance.

Responsibilities:

Homeowners:

For the entire Woodfords Planning Area:

1. Replace flammable roofing materials with fire-resistant materials.
2. Provide a minimum 100' defensible space around all structures.
3. Support the Woodfords Volunteer Fire Department in the actions listed below.

For Upper Diamond Valley / Manzanita Lane neighborhood:

1. Pursue the creation of a secondary evacuation route from the Manzanita Lane subdivision.
2. Thin overstory and clear brush as soon as possible and plan for retreatment at four to five year intervals.
3. Widen roads and provide turnouts and turnarounds for fire apparatus.

For the Mesa Vista Community

1. Actively support efforts to install a community hydrant system.
2. Masticate brush for defensible space and plan for retreatment at four to five year intervals.

Woodfords Volunteer Fire Department:

1. Actively coordinate training with the Markleeville Volunteer Fire Department.
2. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.
3. Pursue dedicated access to key draft sites located on public and private lands.

4. Pursue a long term solution to fire suppression services with the Markleeville Volunteer Fire Department and the Eastern Alpine County Fire Services Plan.
5. Increase the number of trained volunteers.
6. Continue to purchase wildland firefighting equipment and train volunteers to the NWCG 310-1 certification levels.

Alpine County Sheriff's Office

1. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.

Alpine County Board of Supervisors:

1. Ensure the emergency services agencies are addressing the public safety issues outlined in this plan.
2. Support use of county-owned chipper in local fuels reduction projects.
3. Pursue and enforce legislation, ordinances, or other codes to eliminate wildland fuel hazards within the communities.
4. Lobby federal agencies to implement fuels reduction projects on public lands surrounding communities.
5. Conduct fuels treatments on County-owned land within communities. Specifically, the land across State Highway 89 from the County Yard and the parcel in the River Ranch.
6. Support community efforts to increase water supply and distribution.
7. Explore Biomass Utilization Opportunities  
Long term biomass disposal solutions should include developing alternatives other than the community burn pile. Cost effective biomass disposal solutions, such as commercial processing in the Carson Valley or utilization by government and school buildings, should be explored. The background information necessary to pursue biomass opportunities can be found in Appendix 1.
8. Expand Solutions for Community Fuels Disposal  
The Community Burn Pile, coordinated by the Alpine County Public Works Department, is a success. Every fall and spring, tons of biomass material is cleared from lots in the community and burned. This results in a reduction of fuels in our neighborhoods. This opportunity should be continued. Solutions for fuels reduction within the community during times other than when the burn pile is available should be explored in concert with the Alpine Fire Safe Council
9. Enforce existing defensible space ordinances by creating and filling a County Fire Marshal position.

**Alpine County Public Works:**

1. Continue to provide defensible space around the County Yard and buildings. Increase the amount of defensible space around the pile of brush at the back of the County yard.
2. Continue brush removal along road right-of-ways to reduce the ignition risk and the make the road passable during a fire event.
3. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.

**Alpine Fire Safe Council:**

1. Establish system for monitoring and maintaining fuels reduction projects.
2. Continue to provide public education information on defensible space at County buildings, through mailings, and through Courtesy Fire Safe Reviews.
3. Explore and facilitate community fuels reduction projects. Assist the Alpine County Board of Supervisors as requested with development of fuels reduction solutions.
4. Actively support the efforts of the local fire departments and other emergency services in mitigating wildfire risk.

**Utilities (power and water):**

1. Encourage Sierra Pacific Power to provide a local power shut-off including necessary training for the Volunteer Fire Departments and Alpine County Sheriff.
2. Remove or chip fuels from underneath powerlines and powerpoles.
3. Update existing water utilities and increase storage capacity. Replace water system with year round, larger lined system. Maintain clearly-marked potable and non-potable water sources.

**8.3 Mitigation Projects**

Only a few mitigation projects have been completed in the Woodfords Planning Area. Figure 14 identifies project areas and status as completed or proposed. The BLM has continually worked on fuels treatment efforts on BLM land near Indian Creek Reservoir and Turtle Rock Park. These treatments have reduced the fire hazard along State Highway 89, Airport Road and near Indian Creek campground. Due to the distance of BLM lands to most private residences, the projects have not directly reduced the hazard to the communities.

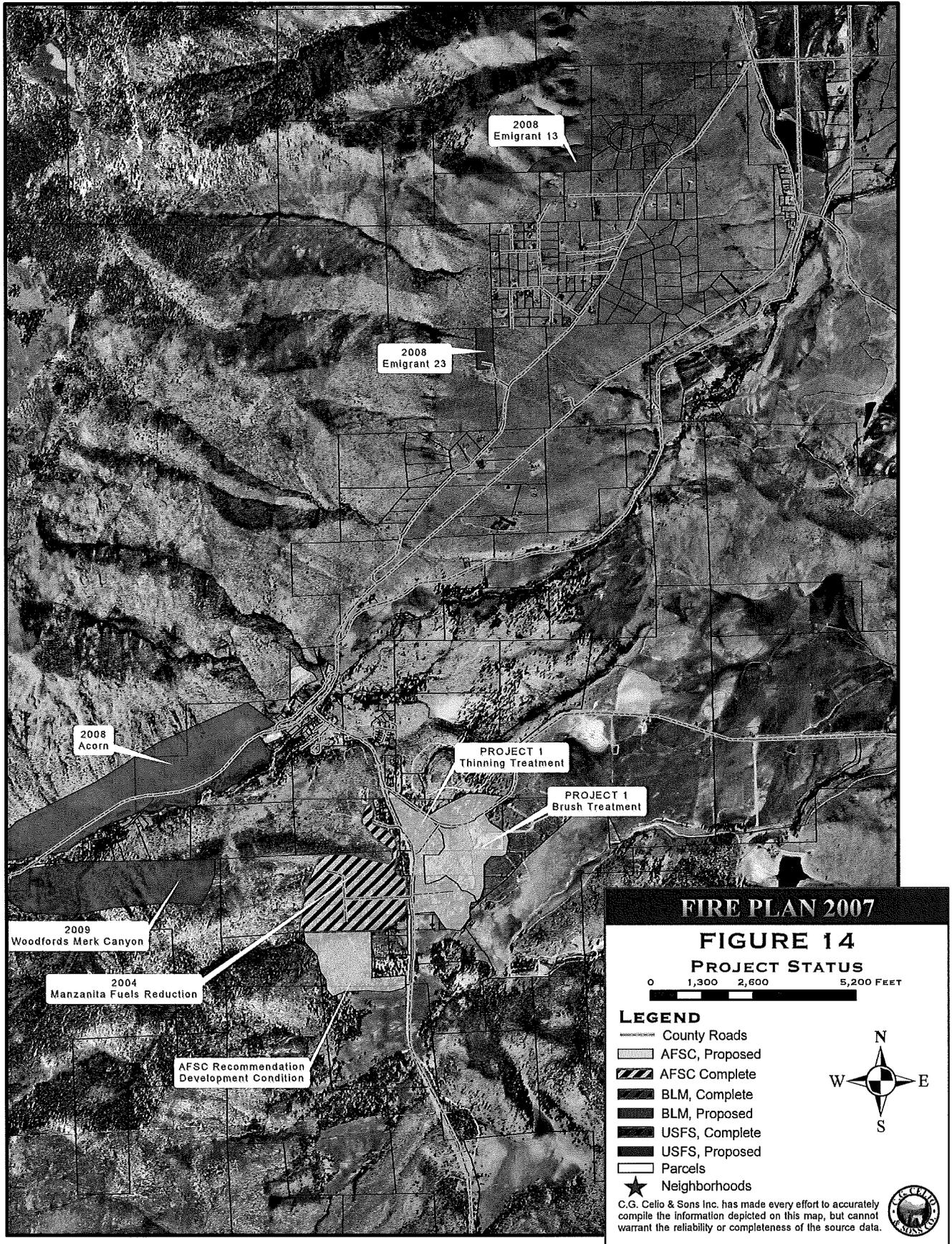
The Alpine Fire Safe Council completed the Manzanita Lane Fuel Reduction project in the fall of 2004. This project was entirely on private land in the Upper Manzanita Lane area. The AFSC secured a grant through the Sacramento Regional Foundation to construct a fuel break around the neighborhood and treat the fuels alongside the road leading into the neighborhood. A portion of the grant was also used to help construct

defensible space around individual homes. The project protects not only the homes in Upper Manzanita Lane, but also extended to the north, protecting the homes across from the County Yard. These homes were threatened during the Acorn Fire.

**8.4 Actions**

The following summary of projects has been developed for the Woodfords Planning area. The project worksheets are intended to provide the background information necessary for grant application development and funding. Where possible, they are identified on the project map, Figure 14.

<i>Priority</i>	<i>Name</i>	<i>Acreage</i>	<i>Estimated Cost</i>
1	Upper Diamond/Manzanita Fuels Treatment	141	\$282,000
2	School Age Wildfire Education Program	n/a	
3	Residential Lot Treatment	50	\$25,000



**PROJECT 1: Fuels Treatment in Upper Diamond Valley / Manzanita Lane**

**Goal:** Reduce the wildland fuels on large lots in the Upper Diamond Valley / Manzanita Lane community.

**Objective:** Reduce the wildland fire intensity and rate of fire spread by reducing or modifying the wildland fuel structure in this community. This will protect the structures and infrastructure from uncontrollable wildfire.

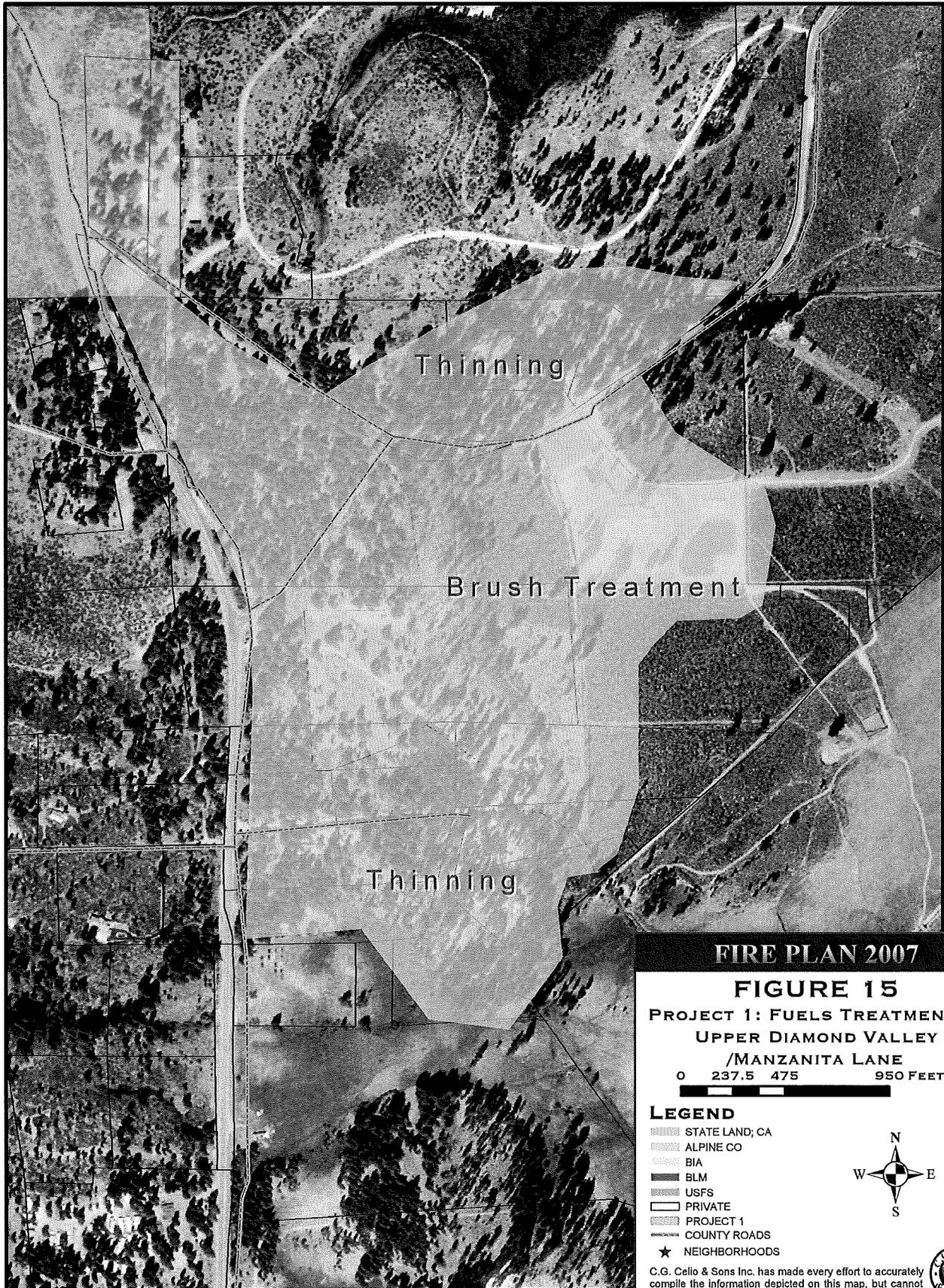
**Vegetative condition and topography:** Tree density within the project area is extremely high, with complete canopy closure and significant ladder fuels. In areas where tree spacing is more open, the bitterbrush and manzanita is very dense and tall. Slopes in the area are very flat, allowing the use of mechanical equipment for treatment. Much of the treatment area is in close proximity to State Highway 89 and Diamond Valley Road, allowing good access (see Figure 15)

**Prescription for treatment:** Throughout the project area, tree density and brush density needs to be reduced. The forest stand should be thinned from below to a basal area of approximately 100 square feet of basal area per acre. Residual trees (those that remain) should have a crown spacing of at least 10 feet. Trees under or impinging on the powerlines should be removed. Trees can be removed as firewood, with the slash and other material to be chipped. Brush must also be thinned. Acceptable methods of treatment would include cutting and chipping the material or using mechanical mastication where appropriate. Individual plants should be thinned to a spacing of 1½ times the height of the remaining plants (i.e. plants 3 feet tall should be 4 ½ feet apart). Powerpoles should be cleared for a radius of 30 feet around the poles, removing trees and brush. Near county facilities, such as the County Yard and Diamond Valley School, the treatment should be more aggressive, with spacing between plants two to three times the height of the plants. Treatment should include mastication and tree pruning to the edge of the county property and should be retreated at 2-3 year intervals.

**Estimated Cost:** \$2,000 per acre X 141 acres = **\$282,000**

**Estimated Time to Complete:** This project should be completed within a single field season. It will require both hand crews and a mastication contractor to be most efficient, so completing the bulk of the work with one treatment will be most cost effective. Environmental compliance will be necessary on both public and private land, with simple surveys conducted and mitigation measures in place during implementation. Environmental compliance could be completed in the fall with work on the ground commencing the following field season.

**Ownership and Partners:** A number of different landowners would be involved in this project. There are approximately 15 private land owners in the project area. In addition, public lands from Alpine County, Alpine County School District, South Tahoe Public Utility District, and the Washoe Tribe would also be involved. Where utility lines cross, public utilities could also be an important partner.



## **PROJECT 2: School Age Wildfire Education Program**

**Goal:** To raise community awareness and participation in wildfire preparedness.

**Community Situation:** Current wildfire education efforts focus on the adult residents of the Planning Areas. The Volunteer Fire Departments and the Alpine County Unified School District are currently unable to provide school programs to educate our future community leaders about wildfire preparedness.

**Proposed Solution:** The Alpine Fire Safe Council (AFSC) would take the lead in developing a student oriented wildfire education program. Initially, the AFSC could seek funding, provide logistical and administrative support, and deliver the presentation. The long range solution would see the program adopted and supported by a local organization (VFD, County, or the Fire Safe Council if necessary).

**Estimated Cost:** \$2,550

**Estimated Time to Complete:** Once funding is secured, the program should be packaged within six months.

**Other Partners:** Likely partners for this education program include: the Alpine County School District and the Volunteer Fire Departments. Community volunteers could also be utilized to help with the presentations.

## **PROJECT 3: Residential Lot Treatment – Woodfords Planning Area**

**Goal:** Develop a neighborhood centric fuels reduction program within the Woodfords Planning Area neighborhoods.

**Community Situation:** Community design in the Woodfords Planning Area emphasizes the need for effective defensible space. The community burn pile is growing in popularity, but its long-term sustainability is uncertain. An alternative is a curbside fuels reduction program, where materials would be picked at participating properties.

**Prescription for Treatment:** Establish a neighborhood fuels treatment program to help homeowners remove excess fuels and maintain areas with good fuels clearance. This program would have a number of elements to the various needs of the neighborhood.

**Curbside chipping program** – Hire a contractor or tree service to provide curbside chipper services in the neighborhood. Like similar programs, residents could either set material at the curb to be chipped and hauled away on certain days or could call to schedule an appointment for chipping. Material would be disposed of by the contractor. Residents would be responsible for hauling approved chipping material to the side of the road for disposal.

**Tree Removal** – Hire a tree service to remove trees near houses. The general prescription across the community would be to create defensible space around the homes and thin the forest stand from below, removing the smaller, suppressed trees. A professional tree service could remove trees without damaging homes and dispose of the slash material by chipping and hauling. Any firewood produced could be provided to the homeowners.

**Estimated Cost:** It is difficult to estimate the cost of these programs since they are dictated by the amount of public participating in the program. For the curbside chipping program, assuming that a contractor would charge approximately \$1000 per day to go to each of the neighborhoods and the service was available for 15 separate days throughout the summer season, the cost would be \$15,000. For tree removal, assuming that 10 homes participated and that on average a contractor charged \$1000 per lot, the total would be \$10,000. Given the number and size of trees to be potentially removed from each lot, an average of \$1000 appears appropriate. It would vary by lot, where larger trees right next to houses would drive the cost up.

**Total project cost:** \$15,000 + \$10,000 = **\$25,000.**

**Estimated Time to Complete:** This project should operate for at least two years. It will take time for the community to become comfortable with the prescription and treatment. At that time the programs effectiveness should be re-evaluated and, if appropriate, continued.

**Environmental Compliance:** Environmental compliance should be minimal with these treatment methods. The curbside chipping will require no compliance, as the homeowners will be doing the work. Tree removal from private lands is exempt from the Forest Practices Act if the material is not sold, bartered, exchanged or traded as per California Public Resource Code 4527. Otherwise, the appropriate tree harvesting document must be filed at no charge with CAL FIRE. Depending on the document required (i.e. Timber Harvesting Plan, or some form of harvesting exemption notice), the document must be prepared by a California Registered Professional Forester and the document also signed by and the material harvested by a Licensed Timber Operator. These requirements must be met even when removing trees from within 150 feet of any structures. These requirements are triggered any time native commercial tree species are planned for commercial harvest from non-federal lands anywhere in California.

**Other Partners:** A number of organizations or agencies could participate in this program. The Fire Safe Council has coordinated these types of projects in the past, however a county department, such as the fire department would also be an excellent choice for taking the lead on implementation. Regardless of who takes the lead, the fire safe council, CAL FIRE, fire departments, homeowners groups, and community groups will be instrumental in project implementation. A concerted community effort to educate the public about these programs and the need to create defensible space will increase participation.

## **5B. Communities - Markleeville**

### **5.1 General Environmental Conditions**

The Markleeville neighborhoods are in the rain shadow of the Sierras at a higher elevation than those in Woodfords. Much of the area surrounding neighborhoods is covered by a mix of dense timber and brush. Where trees are present, there is usually a well-developed brush understory. The following communities/subdivisions comprise the Markleeville Planning Area and are identified on Figure 16 as numbered:

1. Downtown Markleeville
2. Markleevillage/Thornburg Subdivision
3. Shay Creek Subdivision
4. Carson Ridge Subdivision

These four areas contain the majority of structures found in the Markleeville Planning Area.

#### **5.1.1 Elevation**

Figure 16 shows the terrain within the Markleeville Planning Area. The terrain is typically very steep as the crest of the Sierra Nevada runs through Alpine County.

#### **5.1.2 Meteorology, Climate, Precipitation**

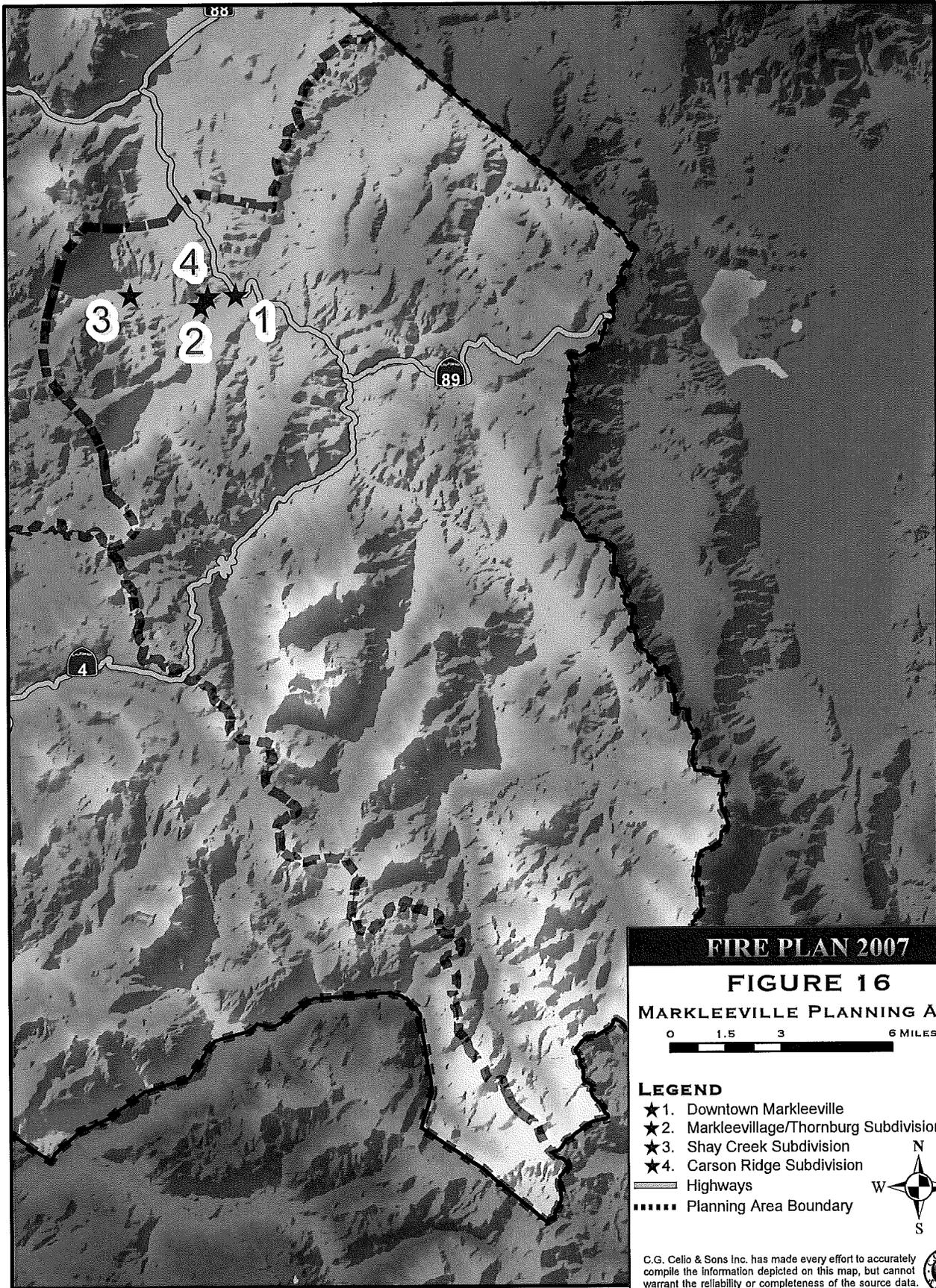
The climate is relatively dry with most of the precipitation falling in the winter months as rain or snow. Summer thunderstorms are common and have produced flash floods on occasion. Lightning is common with these storms, sometimes with little precipitation.

#### **5.1.3 Hydrology**

The county is the headwaters for five different watersheds draining both sides of the Sierra Nevada. The Markleeville Planning Area is entirely in the East Fork Carson Watershed.

#### **5.1.4 Threatened and Endangered Habitat Types**

There are a number of ecologically sensitive areas and wildlife habitat. After considering the threat to life and property, projects should be considered in how they address these areas. California Department of Fish and Game and the U.S. Fish and Wildlife Service have information on Threatened and Endangered Species in the Markleeville Planning Area. Bald eagles, Lahonton cutthroat trout, and Paiute cutthroat trout are some of the threatened or endangered species that inhabit the forest, lakes, and streams within the Planning Area. The BLM and USFS have found no threatened or endangered species within their projects. Surveys or mitigation measures for threatened or endangered species should be implemented prior to project initiation.



**FIRE PLAN 2007**

**FIGURE 16**

**MARKLEEVILLE PLANNING AREA**

0 1.5 3 6 MILES

**LEGEND**

- ★1. Downtown Markleeville
- ★2. Markleevillage/Thornburg Subdivision
- ★3. Shay Creek Subdivision
- ★4. Carson Ridge Subdivision
- Highways
- Planning Area Boundary



C.G. Celio & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.



**5.2 Population**

The local year-round population of the Markleeville neighborhoods is fairly small, less than 500 people. However, the tourism industry brings a significant number of people into the community, particularly during the summer months. The tourist population at the Grover's Hot Springs State Park and along the dispersed recreation sites can add hundreds of people to the community. Vehicular traffic significantly increases during summer months.

**5.3 Infrastructure**

As a rural, sparsely populated area, Markleeville has relatively little infrastructure at risk from wildfire. But the loss of only a few key facilities can have a big impact.

Markleeville's power and phone services originate in Nevada and reaches the Planning Area through a single, fire-prone corridor. Any interruption of this line knocks out service to Markleeville, and subsequently the Markleeville Fire Station.

Key county facilities exist in the Markleeville area. The seat of county government is in Markleeville at the county administration building. The primary dispatch center is in the Sheriff's Office in the Courthouse. The Markleeville Volunteer Fire Department is at the intersection of Hot Springs Road and Pleasant Valley Road. Other key facilities include:

- Turtle Rock Park Community Center (a multi-use building vital to any county disaster response as a shelter, staging area, command post etc.)
- Markleeville Water Co. Treatment Plant and Pump Station
- Markleeville PUD Sewage Treatment Facilities
- Bridges-(two on Hot Springs Rd., one on Hwy. 89 in Downtown Markleeville, one on Laramie by Library) unlikely to burn but vital to evacuation routes.

All of these facilities will be critical to an effective county response to a wildland incident and are shown on the neighborhood maps.

Standard hydrant systems exist in Downtown Markleeville, Markleevillage/Thornburg Subdivision, and in the Carson Ridge Subdivision. Two 40,000 gallon water tanks are located on Hot Springs Road and one 238,000 gallon tank is located at the top of the Markleevillage subdivision on Pleasant Valley Road. One 60,000 gallon tank serves the Carson Ridge Subdivision as a dedicated fire suppression supply. Water lines range from aging 2", found in some cul de sacs in Markleevillage, to newer 8" diameter pipes found along Montgomery Street in Markleeville.. Seasonal 1 1/2" hydrants supply Shay Creek Subdivision, Turtle Rock Park, and Grover Hot Springs State Park.

**5.3.1 Business**

Tourism-based business dominates the economy of the Markleeville Planning Area. Downtown Markleeville and Carson River Resort provide lodging, restaurants, gas, camping supplies and sundry items to the estimated 70,000 annual visitors. Ranching continues as a historically significant business with cattle grazing in several larger agricultural parcels.

### **5.3.2 Recreation**

Recreation creates a number of concerns for wildfire planning. Areas of dispersed camping, with campfires and barbecues are likely sources of ignitions for wildfires. A wildfire in heavily used recreation areas poses problems for evacuations. Wildfire that destroys key recreation resources would have a significant impact on the tourist industry in Alpine County.

Camping: The Planning Area hosts a popular California State Park (Grover's Hot Springs), a county-owned campground at Turtle Rock Park, as well as numerous developed and undeveloped USFS and BLM campgrounds and campsites.

Fishing: The East Fork of the Carson River with its many tributaries provides highly-valued opportunities to fish for native and planted trout species.

Other popular recreational opportunities:

Hunting, bicycling, backpacking, hiking, horse pack trips, rafting, and cross-country skiing

### **5.3.3 Cultural Resources**

Prehistoric and historic cultural resources likely exist within the project areas. The area was used by Native Americans and sites have been found within the Planning Area. Historic mining resources are scattered throughout the area as well, with significant use in the late 1800's to 1981. Surveys by the USFS and BLM have located resources in the planning area.

Specific resources are found around the Markleeville area. The Wolf Creek Tavern in Downtown Markleeville is listed as a State Historical Landmark. The Alpine County Courthouse and Markleeville Schoolhouse are registered National Historic Buildings. The Alpine County Museum houses a large collection of county artifacts. The Alpine County Library houses the archives for the county.

### **5.4 Emergency Services**

Fire services for wildland fire incidents are provided by the federal agencies and the volunteer fire departments. The USFS guard station in Markleeville staffs two engines (subject to availability of crews) in the summer to provide wildland fire response. USFS has command and control responsibility as part of a Cooperative Fire Agreement (see the above sections on jurisdictional information).

Response distances are commonly within five miles from either a volunteer or USFS fire station.

### **5.5 Insurance Ratings**

The Markleeville Planning Area has a combination 6-8 rating. Where the hydrant system exists, ISO ratings are a 6. Areas without hydrants but within five miles of the Markleeville Fire Station are rated an 8.

**5.6 Land Use Development Trends**

Development has significantly increased in recent years. In a county with only a few new buildings a year, a single subdivision can be a significant impact. Recent land purchases by development interests ensure this trend will continue at an even faster pace. There are a number of large private parcels near existing development that could potentially be developed, expanding residential development into hazard areas. At least one new subdivision is under construction in the Markleeville Planning Area near Markleevillage and a development application has been submitted for Downtown Markleeville. Current water storage solutions are based on SRA Fire Safe Regulations adopted as county code for pond or tank water storage near a home.

## **6B. Current Fire Environment – Markleeville**

### **6.1 Wildland Fire History**

Devastating wildfires have occurred in Alpine County communities in the past. The most destructive wildfire was the Acorn Fire in 1987 destroying 26 homes. This fire occurred in the Woodfords Planning Area.

### **6.2 Local Fire Ecology and Forest Health**

Effective management of the wildland fire risks on the landscape today must include an understanding of forest health issues and fire ecology. Without understanding the processes in a forest ecosystem we will continue to attempt to control it, rather than live within it. Deteriorating forest health increases the wildland fire hazards around our communities. Improving forest health results in forests less susceptible to catastrophic fire, reducing the fire risk to our communities.

The science of fire ecology is concerned with understanding how fires determine a forest's structure and species composition, and describing fire's role in changing that structure and composition. A fire regime is defined as the frequency and severity of fire occurrence in a given forest type.

Some plant communities depend upon stand-replacing, high intensity fires. Lodgepole pine and fir forests evolved with the occurrence of infrequent, high-intensity, "stand destroying" wildfires that completely eliminated the existing forest stand. Few trees within the fire perimeter survived, and the low frequency of fires in these plant communities allow long periods of time for the accumulation of fuels and the reestablishment of vertical continuity ("ladder fuels") and horizontal continuity (closed canopies) in the fuel strata. This was conducive to the simultaneous combustion of all fuels during a single fire event.

Other plant communities have evolved to burn frequently with low intensity; for example mature Jeffrey pine forests. Under a historic fire regime, low-intensity surface fires reduced fuel loading from grasses and shrubs, suppressing regeneration of shade-tolerant white fir seedlings, and leaving the adult trees protected by thick, fire-resistant bark unaffected. Forests with frequent fire occurrence had an open, "park-like" appearance with an understory of grass or low shrubs. Though shaded by large, mature trees, spacing between trees was sufficient to allow sunlight to reach the forest floor and encouraged regeneration of shade-intolerant species like Jeffrey pine. Pockets of heavy fuels existed under these conditions, but their discontinuous nature reduced the likelihood that a fire would burn with enough intensity to affect mature trees. Frequent surface fires also remove accumulated dead-and-down woody fuels and the green "ladder fuels" that would otherwise carry flames into the coniferous overstory, potentially provoking a catastrophic, stand-destroying crown fire.

The forest that regenerates with an infrequent, high-intensity crown fire regime is generally very dense and of a single age structure. This density often results in the exclusion of sunlight to the forest floor and subsequent recruitment of shade-tolerant

species such as white fir, which contributes to extremely high fuel loadings in the understory. This arrangement of fuels, or fuel structure, creates an ideal mixture of oxygen and fuel for high intensity fire.

Both forest types exist in Alpine County, historically and today. They are separated by elevation, at roughly the 7,000-foot contour. Above 7,000 feet, temperatures are low enough and moisture high enough to infrequently allow ignitions to grow into large fires. Below 7,000 feet, in warmer, drier areas, frequent ignitions resulted in consumption of the fuels. This constant consumption of fine fuels kept fuel loadings and fire intensity low.

With the clearing of forested lands by logging in the Comstock era and the development of fire suppression policies, natural fire regimes have been modified. Areas that formerly burned with high frequency but low intensity (fires more amenable to control and intervention) have large accumulations of unburned fuels, which once ignited, will burn at higher intensities. The regeneration of altered plant communities under suppressed fire regimes (for example, the abundance of white fir regeneration into the fire-suppressed forests that regenerated in Alpine County after the Comstock era) have also contributed greatly to the alteration of historic fire regimes.

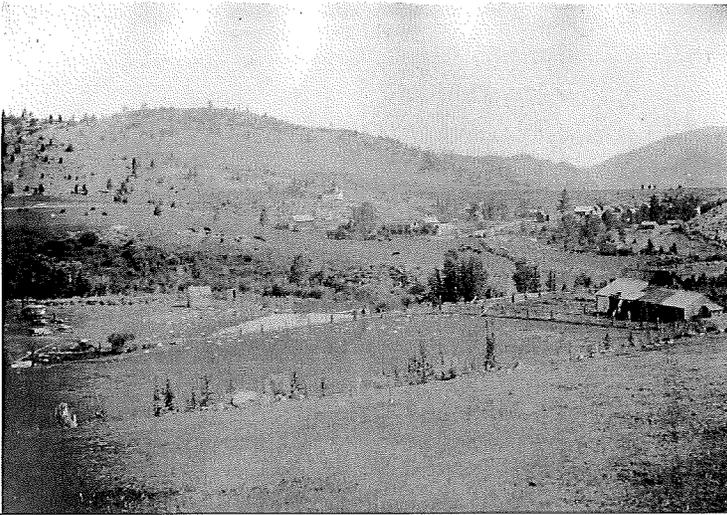
The fire regime in the Markleeville Planning Area can be characterized by high frequency, low intensity fires. Bitterbrush, sage brush, manzanita, and Jeffrey pine are plant species that favor frequent fires. Low intensity fire does not kill any of these plants, rather it removes dead material from mature plants and increases plant vigor. Jeffrey pine and incense cedar have thick bark to protect the tree from low intensity fire.

The lower elevations of the Markleeville Planning Area contain forest stands with highly altered fire regimes. The loggers of the 1870's who worked in the region to satisfy the timber demands of the Comstock mines uniformly cut the native forests, originally characterized by uneven tree ages, wide spacing between trees in mature stands, and small openings created by other mortality. The forest that regenerated after this period of intensive logging activity



Markleeville, circa 1866

developed into a much denser stand. The increasing effectiveness of fire suppression activities during the 20<sup>th</sup> century and the eventual elimination of mechanical harvesting in the Alpine County have further inhibited variability in this forest's age classes and crown structure.



Markleeville, circa 1916

These historic photos demonstrate the change in forest structure and fire regime around Markleeville. The oldest photo is from approximately 1866. You can see the forests in the background have been completely removed from the logging for mining. However, also notice the prevalence of undisturbed sagebrush around the town of Markleeville and lack of stumps. This suggests that the forest did not extend to the town of Markleeville

proper, rather the town was constructed within reach of the forest but on upland sage ground that was later converted to agricultural. The next picture shows some of this transition about 1916. Still note the lack of trees on the hillsides.

The last photo in the series demonstrates what the town appears like today. Except for the areas that have been continually irrigated, the trees have encroached on the entire town. The forest stand is very even and contiguous, facilitating the spread of a high intensity fire.



Markleeville, circa 2004

George Gruell's book *Fire in Sierra Nevada Forests, A photographic interpretation of the ecological change since 1849*, pairs historic photos with

recent ones taken from the same vantage point, and effectively illustrates this phenomenon across various locations in the Sierra Nevada, including Alpine County.

The change in forest structure to a denser, more competitive stand has had an effect on forest health. In 1992, the Alpine County Forest Lands Advisory Committee reported on the increased mortality in fir and pine species. While no specific cause was researched, the drought and closed canopy competition between trees were likely the culprits. The committee pointed out the effect increased mortality would likely have on wildland fire fuels. Today, instead of the brown trees seen in the photo, the trees are contributing

to fuel loadings as either standing dead snags or as dead and down material on the forest floor. This has only increased the likelihood of a high intensity wildfire around our communities.



Tree mortality above Markleeville.

Most commercial and residential development in Alpine County, (those areas most needing protection from infrequent, catastrophic wildfires), is concentrated in areas well below the 7,000-foot elevation prescription for frequent, low-intensity, light-fuel clearing ground fires. Our objective must be to model the natural fire regime as much as possible in our communities. This requires diligence on our part to reduce the fuel loadings to manageable levels that protect our communities and the forest environment from the extraordinary effects of catastrophic fire.

### 6.2.1 Fire Frequency

CAL FIRE developed fire rotation or frequency measures for the entire state. Data is stratified into three classes of frequency. These classes represent the amount of time necessary for fires to have burned an entire area, based on historic fires. For example, in an area classified as < 100 years, the entire area would have burned over at least once in < 100 years. This could be by a single fire, though is more commonly the culmination of many fires in that area.

### 6.3 Fire Weather

Lightning causes most wildland fire ignitions in the Markleeville area. Summer thunderstorms bring erratic winds and lightning to the area. Fire behavior is most extreme after long periods of hot, dry weather with no precipitation. It is common to have a southwesterly wind coming over the Sierra's in the afternoons during the summer. Most catastrophic fires have occurred during these conditions along the Sierra Front.

### 6.4 Fuels Map

Wildfire fuels are mapped by fire agencies in an effort to understand what fire behavior might be like in specific areas. Areas with dense, heavy fuels, such as trees, would have more extreme fire behavior than areas with lighter fuels, such as grass. Fire fuels have been mapped by both CAL FIRE and the Sierra Front Wildfire Cooperators. The CAL FIRE data covers the entire county but is less detailed. The Sierra Front data is more detailed but only covers the eastern slope of Alpine County. Both data identify fuels based on the 13 standard fuel models developed by Rothermel. Though the absolute model numbers differ, they are consistent across the general fuel model categories; grass,

brush, and timber. For example, the CAL FIRE classes may indicate fuel model 9, but Sierra Front data indicates fuel model 10, however, they are both of the timber fuel model category.

Assignment of fuel models and hazards were based on vegetation data collected from satellite imagery. For the data from the Sierra Front, the satellite data was from the early 1990's, so some the data is out of date, particularly where fires have occurred. This data is intended for use on a regional basis, it should be updated around communities as planning becomes more specific.

Figure 17 shows the fuel models in the Markleeville Planning Area from the Sierra Front data. The CAL FIRE data does not cover the Markleeville Planning Area. Below is a brief description of the models.

<i>Fuel Model</i>	<i>Fuel Model Category</i>	<i>Description</i>
1	Low Grass Fuel Model	Low Intensity, Slow Rate of Spread
2	Grass Fuel Model	Low Intensity, Fast Rate of Spread, Suppression can be effective but fire typically spreads too fast.
5	Brush Fuel Model	Moderate to High Intensity,
10	Timber Fuel Model	High Intensity, typically a crown fire, direct suppression ineffective

#### **6.4.1 Hazard Maps**

Combining the wildfire fuels data with other information that would affect fire behavior, such as slope, fire agencies compile wildfire hazard maps. These maps show areas that, given the specific fuel and slope conditions, would have extreme to moderate fire behavior. These hazard maps can help prioritize wildfire mitigation projects. Hazards have been developed by both CAL FIRE and the Sierra Front Cooperators.

Figure 18 is a more detailed look at the hazards in neighborhoods in the Markleeville Planning Area. The data is again from the Sierra Front as the CAL FIRE data does not cover the Markleeville Planning Area.

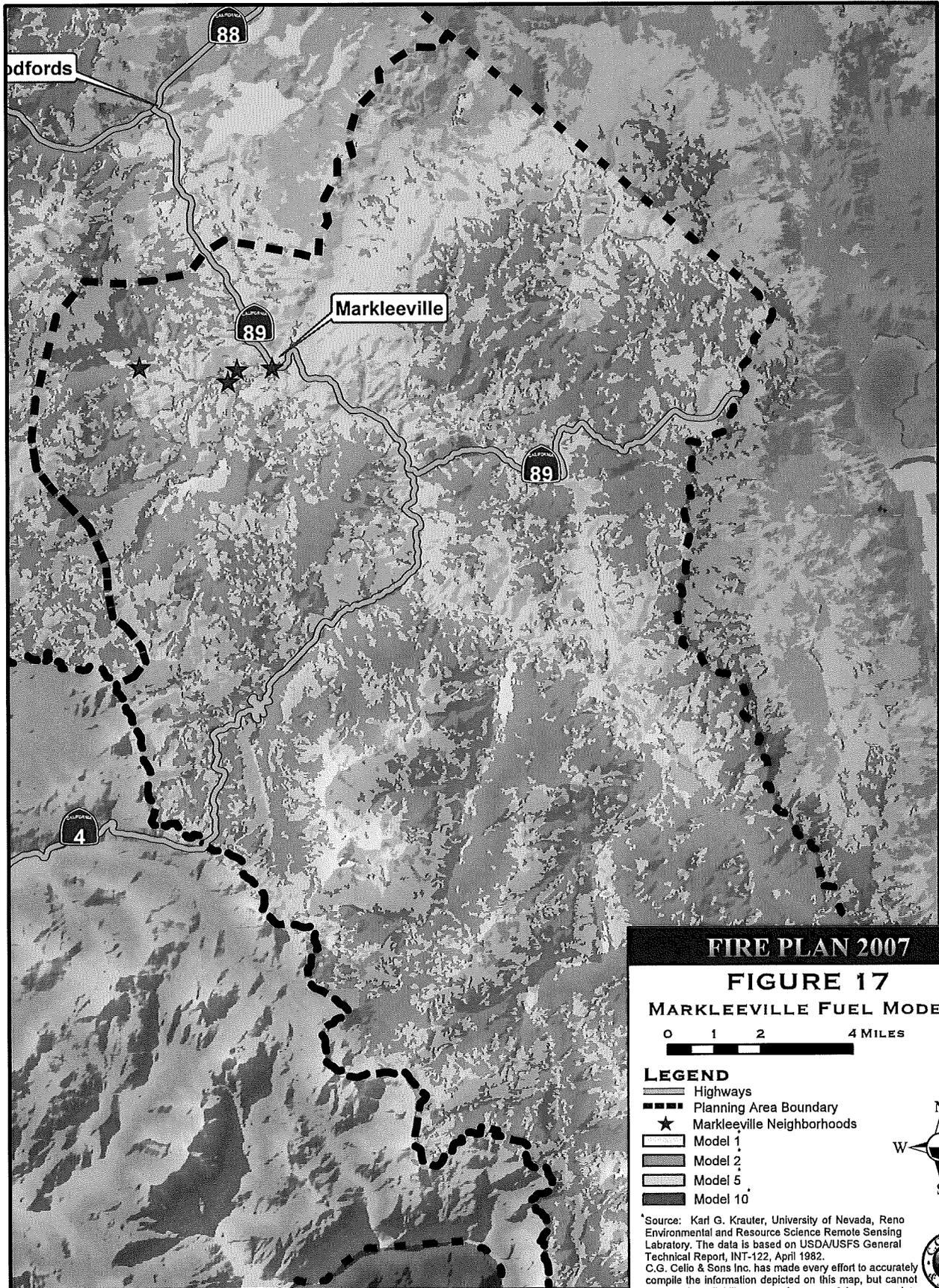
#### **6.4.2 Condition Class**

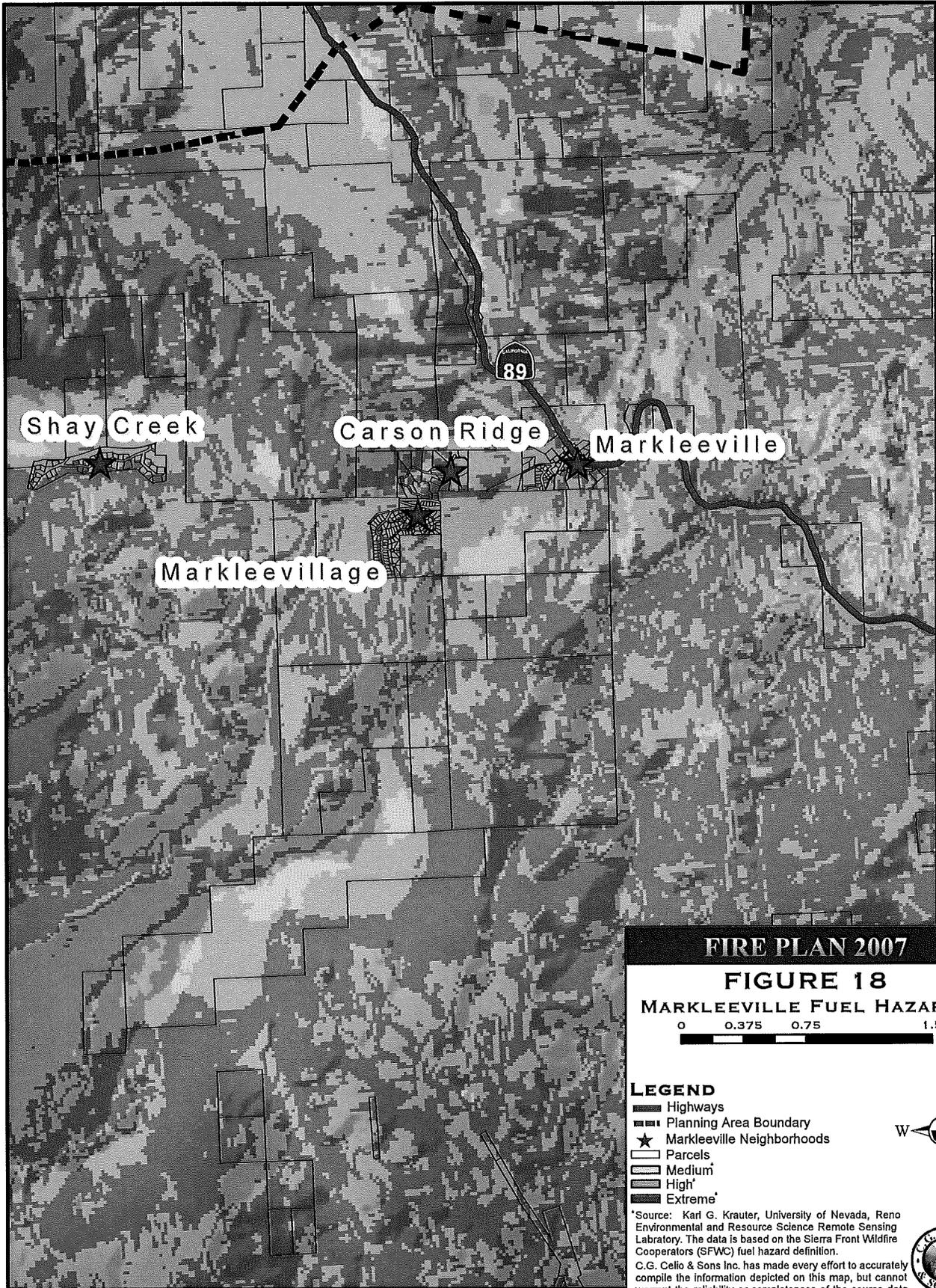
The National Fire Plan and Healthy Forest Act dictate that the federal agencies use Condition Class as a criteria for planning projects. As defined previously in the fire ecology section, the Condition Class represents a relative measure of how far an area is from its historical fire regime. As dictated by the national fire plan, areas of Condition Class 3 have a higher priority for treatment than those of lower condition class. CAL FIRE has calculated Condition Class across the state. Figure 19 shows Condition Class for Markleeville Planning Area. Note that much of the area is in Condition Class 3.

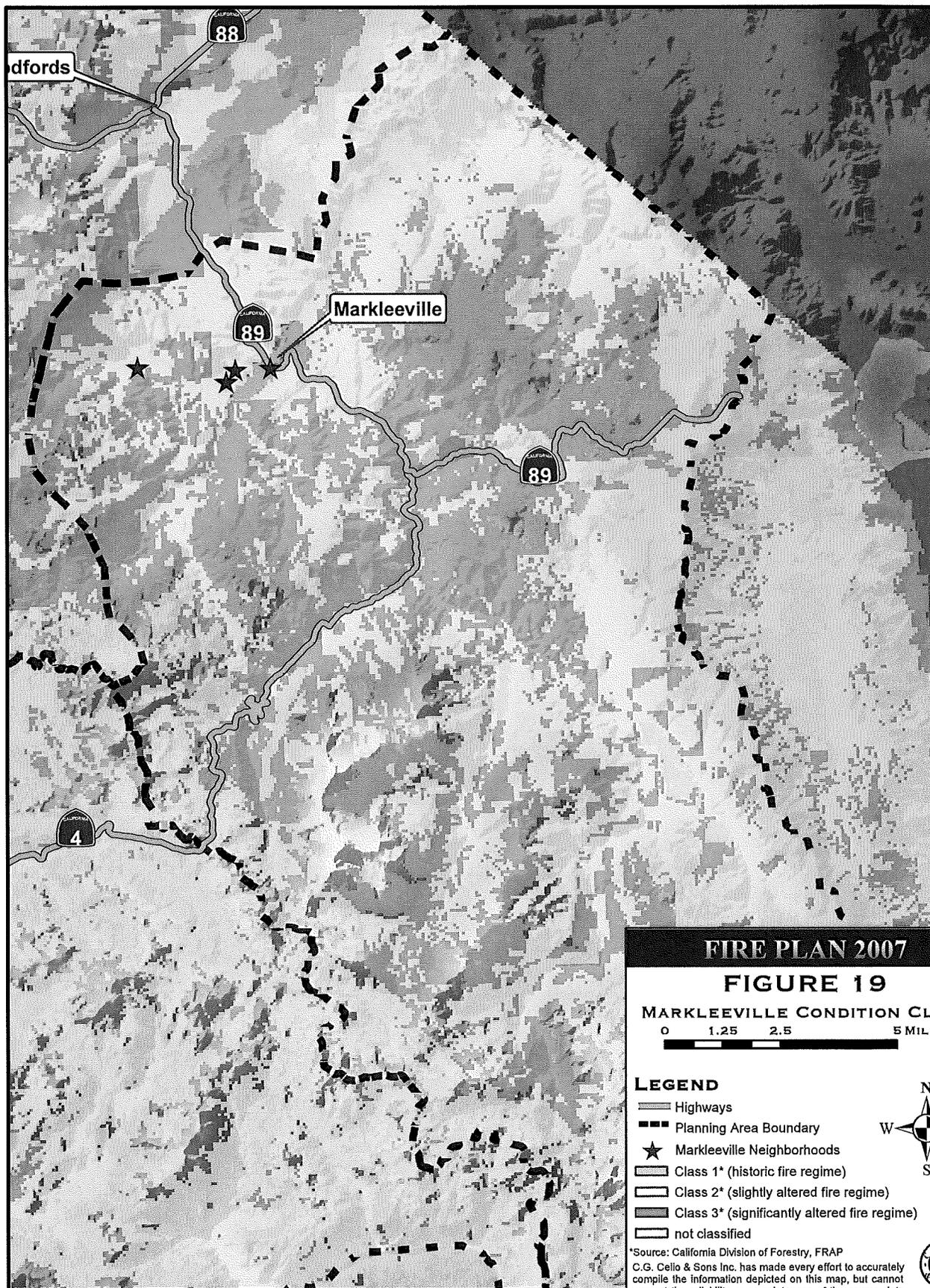
#### **6.4.3 Natural Fire Breaks**

There are few natural fire breaks in the Markleeville Area. The meadows around Markleeville would provide the best natural fire break. However, meadows, like the one at Grover's Hot Springs, may be too loaded with grass fuels to be effective fire breaks

during a fire event. At the upper edges of communities, such as ridgelines, rock outcroppings create natural fire breaks, however they are not large enough to be effective.







**FIRE PLAN 2007**

**FIGURE 19**

**MARKLEEVILLE CONDITION CLASS**

0 1.25 2.5 5 MILES

**LEGEND**

- Highways
- Planning Area Boundary
- Markleeville Neighborhoods
- Class 1\* (historic fire regime)
- Class 2\* (slightly altered fire regime)
- Class 3\* (significantly altered fire regime)
- not classified



\*Source: California Division of Forestry, FRAP  
 C.G. Cello & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.



**6.5 Fire History**

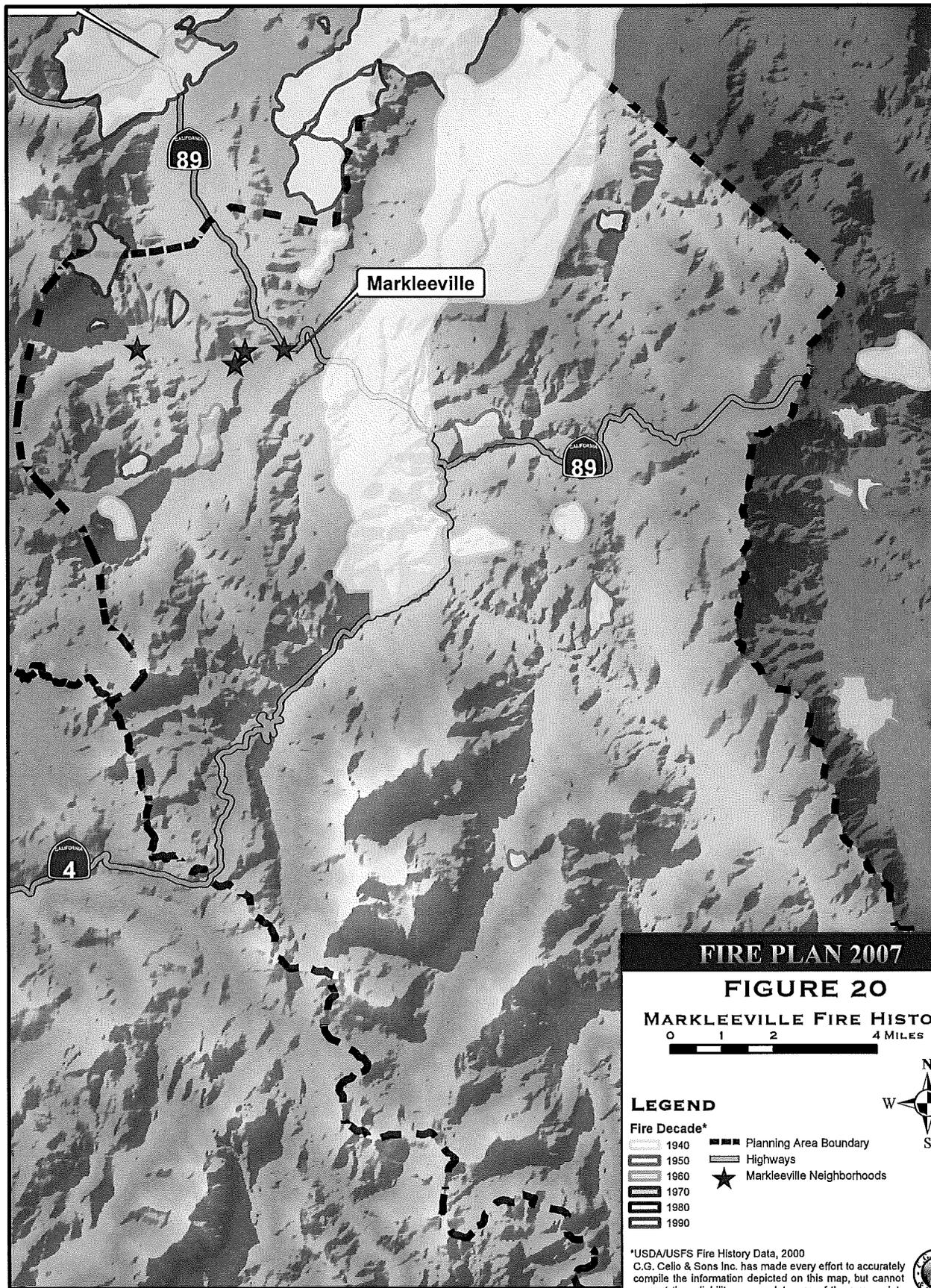
Figure 20 describes the previous fires in the Markleeville area. Most fires have occurred at the lower elevations on the eastern slope of Alpine County. The largest recorded fire in Alpine County occurred in the Markleeville Planning Area in 1947, stretching from Silver Mountain City to Gardnerville in Nevada. Of note is the absence of many large fires in the Markleeville area. The area is at the same elevation and fuel types as those in Woodfords that have burned frequently, indicating that the area can burn but hasn't. The combination of extremely high fuel loadings and lack of past fire activity indicate a high potential of catastrophic fire.

**6.6 Expected Fire Behavior**

Fire behavior is expected to be extreme and uncontrollable during the worst case conditions. Slopes are steep, wind commonly increases in the afternoon, and fuel loadings are high. While a wide range of fire behavior can be expected in the various fuel types and weather conditions, extreme fire behavior is likely during severe fire weather conditions.

**6.6.1 Range of Fire Conditions**

A wide range of fire conditions can be found in the Markleeville Planning Area. Conditions range from heavy fuels on steep slopes to flat grass meadows and low sage on rocky ridges.



**FIRE PLAN 2007**

**FIGURE 20**

**MARKLEEVILLE FIRE HISTORY**

0 1 2 4 MILES

**LEGEND**

**Fire Decade\***

- 1940
- 1950
- 1960
- 1970
- 1980
- 1990

- Planning Area Boundary
- Highways
- Markleeville Neighborhoods



\*USDA/USFS Fire History Data, 2000  
 C.G. Cello & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.



## **7B. Risk Evaluation – Markleeville**

### **7.1 Risk Evaluation**

Most of the neighborhoods within the Markleeville Planning Area are at high risk for catastrophic wildfire. Fuels around the communities are of the forest type and typically dense. Slopes are steep and the wind blows from the southwest during hot summer afternoons.

Natural and human ignitions are common. The highest ignition risk is from the tourist and recreational user groups who are unfamiliar with the area and commonly use outside barbecues and campfires. The amount of tourist traffic on the road increases the risk of ignition from vehicles.

Fire protection is provided by the Markleeville Volunteer Fire Department (all volunteer) for all the neighborhoods. They have a single structure engine, a single wildland engine, and a single water tender at their firehouse. They also have a small squad truck. The hydrant system extends from Markleevillage to Markleeville, but is small and aging. There are a number of draft sites around, including year round creeks and the pools at Grover's Hot Springs State Park.

Alpine County recently completed its Field Operations Guide complete with evacuation maps for neighborhoods in Markleeville. Safety zones and strategic fuel breaks are available but not well coordinated. There are some meadows around the state park, Markleeville, and the Markleevillage Subdivision. Safety in these areas will be dependant upon the height of the grass that season. The USFS and BLM have completed some fuels breaks around the neighborhoods.

The neighborhoods along Hot Springs road represent the most dangerous wildland fire situations in Alpine County. A single two-lane paved road stretches four miles from Markleeville to a dead end terminus at Grover's Hot Springs State Park. On any given summer weekend, the total population in this area can easily reach into the thousands. The population peak could easily correspond with long periods of hot, dry, severe fire weather conditions.

These conditions make the likelihood of an ignition relatively high. Should a fire occur, evacuating the Hot Springs Road corridor while moving suppression resources to the fire will be extremely difficult. An accident or other roadway obstruction would result in many people trapped in the area. Without alternatives such as safety zones or other evacuation routes, loss of life is likely.

## 7.2 Risk Evaluation Summary

<u>Asset</u>	<u>Rating</u>
<b>Structures</b>	
1. Downtown Markleeville	Medium
2. Markleevillage/Thornburg Subdivision	High
3. Shay Creek Subdivision	High
4. Carson Ridge Subdivision	Medium (when built)
5. Carson River Resort	Medium
<b>Business</b>	
1. Downtown Markleeville	Medium
2. Carson River Resort	Medium
<b>Infrastructure</b>	
1. Downtown Markleeville	Medium
2. Markleevillage/Thornburg Subdivision	High
3. Turtle Rock Park	High
4. Power Lines	High
5. Evacuation Routes	High
<b>Recreation</b>	
1. Grover's Hot Springs State Park	High
2. Turtle Rock Park Campground	High
3. USFS and BLM Campgrounds	Medium
<b>Fishing</b>	
1. East Fork Carson River	Medium
<b>Wildlife Habitat</b>	Medium
<b>Endangered Species</b>	Medium
<b>Watersheds</b>	Medium
<b>Historical Resources</b>	
1. Downtown Markleeville	Medium
<b>Cultural Resources</b>	
1. Downtown Markleeville	Medium

### 7.3 Fire Hazard Assessment by location

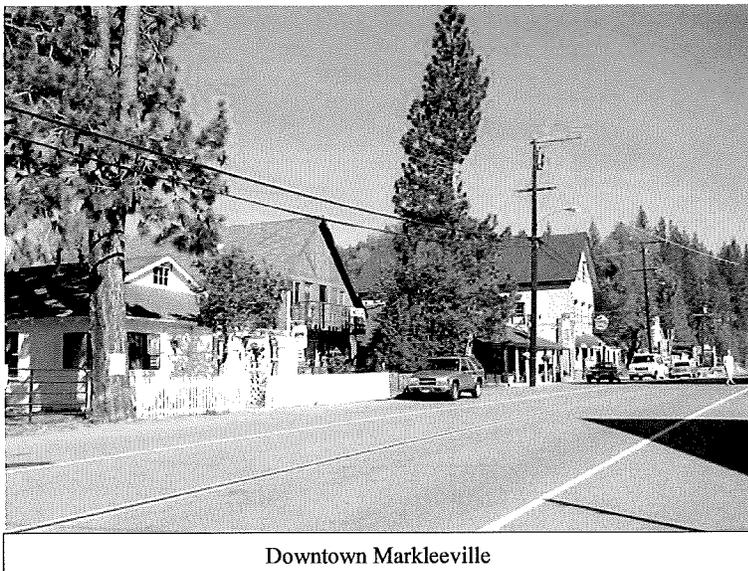
#### 1. Downtown Markleeville

**Rating: Medium**

Fuels: Nearly 50% of the Downtown Markleeville perimeter is exposed to fuel model 5 and 10 fuels of Jeffrey pine and sagebrush / bitter brush with medium to high density on adjacent (mostly private) lands.

Weather: The prevailing wind blows from the Southwest across irrigated pasture and forested lands.

Historically, lightning ignitions occur all around the area.

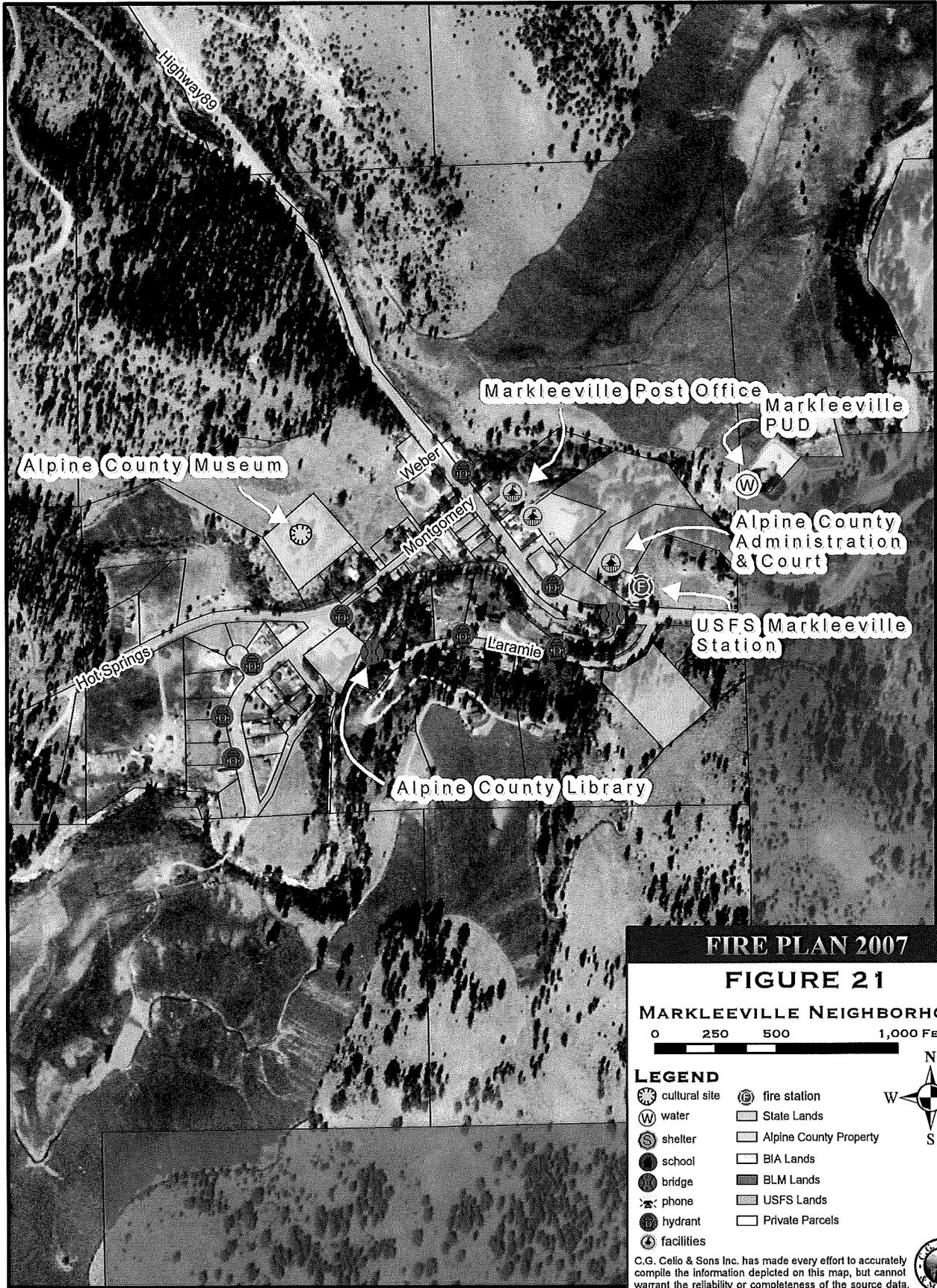


Topography: Downtown Markleeville sits near the confluence of two drainages.

Human Sources of Ignition: A number of sources of human ignitions exist in the town of Markleeville. The majority of residences use wood heating. Power is supplied through overhead lines adjacent to roads. Lines have been knocked down during storm events and traffic accidents. To date, no major fires have resulted. Vehicles often park on unpaved shoulders in and around Markleeville near flammable vegetation. The large influx of tourists during the summer, particularly on weekends, increases the number of potential ignition sources.

Community Preparedness: Building construction is primarily wood frame with wood siding and composition roofing. Paved roadways offer some degree of defensible space however the high density of buildings within the neighborhood would likely result in rapid fire spread. Markleeville is served by a hydrant system and the nearest draft site is approximately two miles away on the East Fork of the Carson River. The Markleeville Volunteer Fire Department (unmanned station) is located 3/4 mile away. The USFS fire station is downtown and is staffed with two wildland fire engines seasonally. Ingress and egress is along Laramie St. (over Markleeville Creek) and Montgomery St. to Highway 89 in two directions. The southeastern egress passes over one bridge on Highway 89. There are three two-lane paved roads leading out of town, providing good egress during a fire event. Cars parked along Hot Springs Road (Montgomery Street) create crowded conditions, it may be difficult for fire apparatus to pass. Evacuation of the tourist population will be a challenge during a fire event.

Fire Protection Resources: The Markleeville Volunteer Fire Department is located  $\frac{3}{4}$  of a mile from the town and can respond engines within ten minutes if volunteers are available. No predefined safety zones have been identified, however the large meadow to the south of town would provide one possible safety zone. No fuels breaks are currently completed around Markleeville.



**2. Markleevillage/Thornburg Subdivision**

**Rating: High**

Fuels: The entire area is surrounded by medium to high density fuel model 5 and 10 fuels of Jeffrey pine and sagebrush / bitter brush. Since 1990, two fuel reduction projects have focused on a half-mile strip along forest lands adjacent to Markleevillage/Thornburg Subdivision (see photo). The treatment involved overstory thinning with understory burning or chipping. This accounts for approximately 50% of the direct wildland exposure. The remaining 50% on private lands contain higher density fuel loads. Though ground fuels are generally light in the neighborhood, stand density is too high with many crowns touching creating a contiguous canopy across the neighborhood.



Forest boundary next to Markleevillage subdivision



Markleevillage neighborhood.

Weather: Prevailing winds from the southwest and west blow from adjacent forested lands.

Topography:

Markleevillage/Thornburg Subdivision sits on a north/northwest facing aspect with moderate to steep slopes above Hot Springs Creek. The subdivision is bounded by three creek drainages with several smaller drainages contained within it.

Human Sources of Ignition: Numerous human ignition sources exist including fuelwood heating in homes, campfires on private and public lands, and overhead power lines. Firewood cutting activities and vehicles parked on vegetated areas also pose ignition sources. Hot Springs Road carries most tourists past the neighborhood to Grover’s Hot Springs State Park providing a significant ignition risk, though no tourist

destinations are actually in the neighborhood. A small number of visitors drive through the neighborhood to Pleasant Valley to the south of the neighborhood.

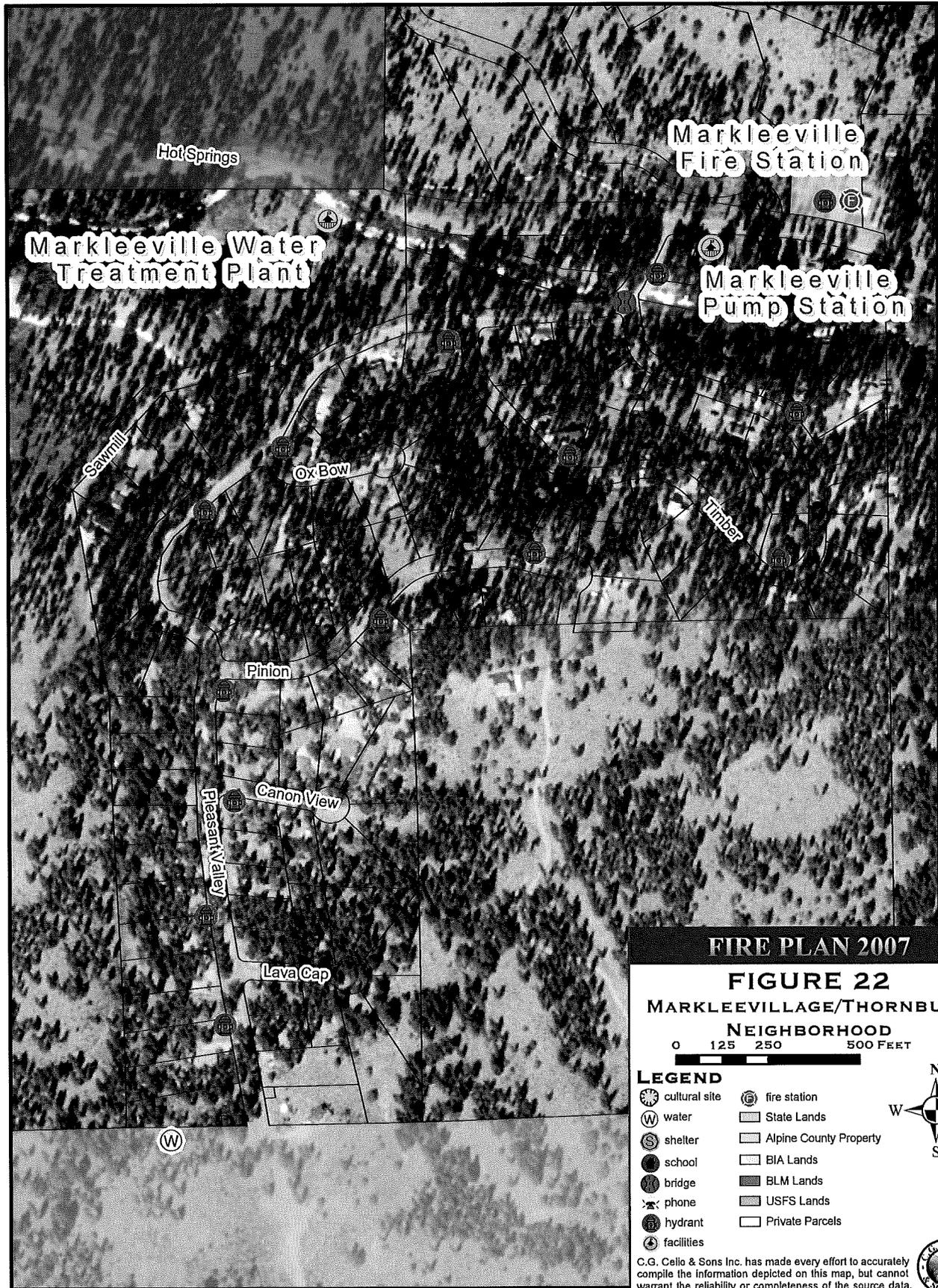
Community Preparedness: Building construction is primarily wood frame with wood siding and composition roof. Decks are common and not enclosed, some have significant material stored underneath, providing an excellent place for embers to ignite a home. Building density is fairly low with approximately 80 homes on 1/2 acre lots. Defensible space varies by owner with approximately 50% compliant with the 30' clearance requirement. Tree density is too high with many homes having one or more trees within the defensible space perimeter. An aging hydrant system supplies water for fire protection resources. The system has one 238,000 gallon tank and the nearest draft site is within one quarter mile. The Markleeville Volunteer Fire Department station (unmanned) is within one quarter mile and can respond in less than five minutes if volunteers are available. The USFS station is one mile away in Markleeville and is staffed with wildland engines in the summer. No predefined safe zones have been identified and no natural areas exist near the neighborhood. With some treatment, an area above the subdivision may be useable as a safe zone.

Evacuation issues are important. All roads in the subdivision are dead-ends with the exception of Timber Lane. There is one route for access/egress from the subdivision over a bridge at the bottom of Pleasant Valley Road. Once on Hot Springs Road, there is only one way out to Markleeville. Power lines cross over the road in numerous locations. To the south of the subdivision is a dirt road to Pleasant Valley, however it is also a dead end. Should



Hot Springs Road, the dead-end primary access route for residents of Markleevillage and Shay Creek

a fire event start between this neighborhood and Markleeville, egress from the area would be cut off. Further, the small double lane road leading out of the neighborhood will be quickly clogged with traffic during a fire event.



**3. Shay Creek Subdivision**

**Rating: High**

Fuels: The entire subdivision is surrounded by fuel model 5 and 10 fuels of Jeffrey pine and fir with variable density. Beginning in 1990, the USFS conducted three fuel reduction projects on forest lands adjacent to the subdivision (overstory thinning, understory removal, burning, chipping). Approximately 300 acres have been treated. These projects provide a margin of lower density fuels one quarter to one half mile wide along the subdivision/forest boundary. The homeowners association has also hired Nevada Division of Forestry crews to complete some fuels projects on the private land common areas. The remainder of adjacent interface exposure is privately owned or Grover’s Hot Springs State Park (GHSSP). Fuel loads on these lands vary from light to heavy.



Shay Creek timber stands

Weather: Same as Markleevillage.

Topography: Shay Creek Subdivision occupies a north-facing slope of low to steep slopes. The west end of the subdivision sits near a rolling meadow at GHSSP. Several small drainages run through the subdivision.



Shay Creek Road

Human Sources of Ignition: Numerous ignition sources exist in the Shay Creek neighborhood due to the seasonal residency and surrounding recreational population base. These include campfires, propane lanterns,

cook stoves, generators from the campground at GHSSP. Most homes in the Shay Creek neighborhood use fuelwood heating and are of a more flammable construction. Other ignition sources are firewood cutting activities and overhead power lines.

Community Preparedness: Building materials are similar to Markleevillage, though more cabin-like in nature with many wood roofs. Building density is moderate with structures on ¼ acre lots. Some residents have done a good job of reducing and removing ground fuels, including pine needles. Tree stand density is still too high with a contiguous canopy in places.

Community Design: Access and egress is very poor, with roads that are steep, single lane, and winding, particularly in the southern portion of the neighborhood. As two vehicles can barely pass, fire apparatus have limited ability to function. Portions of the neighborhood have a loop road with two exits, but some areas dead-end with no turnaround. Roads do not meet county standards for fire equipment. Once out on Hot Springs Road, a single two-lane road leads to Markleeville and ends at the State Park. This is the only route out of the neighborhood to Markleeville. There is a single bridge crossing out of the neighborhood and multiple overhead powerlines within and out of the neighborhood.

Fire Suppression Resources: The Markleeville Volunteer Fire Department is two miles away and can respond in 10 to 15 minutes if volunteers are available. A small (1 1/2") seasonal hydrant system provides water for fire suppression. Draft sites exist at the Hot Springs pool, and within one mile at the Hot Springs Creek Bridge. No predefined safety zones exist, however the large meadow in the state park could be used depending upon the condition of the grass.



**FIRE PLAN 2007**

**FIGURE 23**

**SHAY CREEK NEIGHBORHOOD**

0      375      750      1,500 FEET

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**LEGEND**

cultural site	fire station	
water	State Lands	
shelter	Alpine County Property	
school	BLM Lands	
bridge	USFS Lands	
phone	Private Parcels	
hydrant		
facilities		

C.G. Celio & Sons Inc. has made every effort to accurately compile the information depicted on this map, but cannot warrant the reliability or completeness of the source data.

**4. Carson Ridge Subdivision****Rating: Medium**

**Fuels:** The Carson Ridge Subdivision sits entirely within medium to high density fuel model 5 and 10 fuels of Jeffrey pine, sagebrush, and bitter brush. A small BLM fuels reduction project in 2002 thinned timber on 40 acres on the western boundary. Private lands about the remainder of the subdivision show similar fuel types and loading. Below the ridgeline, large open areas of low sage and scattered pinion juniper trees create lower fuel loadings.



A typical parcel in the largely undeveloped Carson Ridge subdivision

**Weather:** Prevailing southwest winds blow across the Markleevillage/Thornburg Subdivision before reaching the Carson Ridge Subdivision. Westerly winds blow down-canyon from the Hot Springs Valley and GHSSP.

**Topography:** The subdivision lies on a south-facing slope of moderate to steep angle, traversed by a low to moderate angle bench. Hot Springs Creek follows the southern boundary and several small drainages run through the subdivision.

**Human Sources of Ignition:** The subdivision's first home is under construction.. Power is underground. Heavy equipment use during construction has been a source of past ignitions. One likely source of ignition is traffic on Hot Springs Road.

**Community Preparedness:** With only one improved parcel, defensible space assessments and treatments apply primarily to the infrastructure and are adequate.

**Community Design:** Roads within the subdivision meet the county standard for fire protection and would allow two fire apparatus to pass during a fire event. Turnarounds do not meet standard but would likely allow fire apparatus to turn around. There is a gated dirt road at the top of the subdivision that would allow egress during a fire event, but it is locked. Both roads exit onto Hot Springs Road, the only access into Markleeville.

**Fire Protection Resources:** A hydrant system with its own 60,000-gallon water tank will serve the subdivision. A draft site is within two miles. The Markleeville Volunteer Fire Department station (unmanned) is at the main entrance to the subdivision.



## 8B. Action Plan- Markleeville

### 8.1 Desired Future Conditions

1. Reduced threat to residents and their property from wildfires.
2. Increased community preparedness for wildfire.
3. Increased fire suppression capabilities.
4. Improved forest health with lower tree mortality.

### 8.2 Mitigation Goals and Responsibilities

#### Goals:

Initiate long term planning for vegetation: species types, density, and maximum height for the Markleeville Planning Area.

#### Objectives:

Determine strategies for vegetation management, prescriptions, fuels reduction, and maintenance.

#### Responsibilities

##### Homeowners:

For the entire Markleeville Planning Area:

1. Replace flammable roofing materials with fire-resistant materials.
2. Provide a minimum 100' defensible space around all structures.
3. Support the Markleeville Volunteer Fire department in pursuit of recommended actions below.

For Markleevillage/Thornburg Subdivisions:

1. Pursue the creation of a secondary evacuation route from the subdivision.
2. Thin overstory and clear brush.

For Shay Creek Subdivision:

1. Widen roads and provide turnouts and turnarounds for fire apparatus.
2. USFS must develop an aggressive Defensible Fuel Profile Zone (DFPZ) as soon as possible for adjacent forest lands.

##### Markleeville Volunteer Fire Department:

1. Actively coordinate training with the Woodfords Volunteer Fire Department.
2. Assist in developing a community evacuation plan for the Hot Springs Corridor.
3. Insist upon and participate in an annual pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment

resources

4. Pursue dedicated access to key draft sites located on public and private lands.
5. Pursue a long term solution to fire suppression services with the Woodfords Volunteer Fire Department and the Eastern Alpine County Fire Services Plan.
6. Continue to purchase wildland firefighting equipment and train volunteers to the NWCG 310-1 certification levels.

**Alpine County Sheriff's Office:**

1. Establish community safety zones for use when evacuation routes are compromised. Develop a shelter-in-place plan.
2. Assist in developing a community evacuation plan for the Hot Springs Corridor.
3. Participate in an annual, pre-fire season tabletop exercise with the Alpine County Sheriff's Office, Markleeville Volunteer Fire Department, Woodfords Volunteer Fire Department, CAL FIRE, and USFS to develop a coordinated agency response to a wildfire incident. Topics should include communications, training, and equipment resources.

**Alpine County Board of Supervisors:**

1. Ensure the emergency services agencies are addressing the public safety issues outlined in this plan.
2. Support use of county-owned chipper in local fuel reduction projects.
3. Pursue and enforce legislation, ordinances, or other codes to eliminate wildland fuel hazards within the communities.
4. Lobby federal agencies to implement fuels reduction projects on public lands surrounding communities.
5. Explore Biomass Utilization Opportunities  
Long term biomass disposal solutions should include developing alternatives other than the community burn pile. Cost effective biomass disposal solutions, such as commercial processing in the Carson Valley or utilization by government and school buildings, should be explored. The background information necessary to pursue biomass opportunities can be found in Appendix 1.
6. Support community efforts to increase water supply and distribution.
7. Expand Solutions for Community Fuels Disposal  
The Community Burn Pile, coordinated by the Alpine County Public Works Department, is a success. Every fall and spring, tons of biomass material is cleared from lots in the community and burned. This results in a reduction of fuels in our neighborhoods. This opportunity should be continued. Solutions for fuels reduction within the community during times other than when the burn pile is available should be explored in concert with the Alpine Fire Safe Council.
8. Enforce existing defensible space ordinances by creating and filling a County Fire Marshal position.

#### Alpine Fire Safe Council

1. Establish system for monitoring and maintaining fuel reduction projects.
2. Continue to provide public education information on defensible space at County buildings, through mailings, and through Courtesy Fire Safe Reviews.
3. Explore and facilitate community fuels reduction projects. Assist the Alpine County Board of Supervisors as requested with development of fuels reduction solutions.
4. Actively support the efforts of the local fire departments and other emergency services in mitigating wildfire risk.

#### Utilities (power and water)

1. Encourage Sierra Pacific Power to provide a local power shut-off including necessary training for the VFD and Alpine County Sheriff.
2. Remove or chip fuels from underneath power lines and power poles.
3. Update existing water utilities and increase storage capacity. Replace water system with year round, larger lined system. Maintain clearly- marked potable and non-potable water sources.

### **8.3 Mitigation Projects**

The USFS has conducted fuels reduction projects around the Markleevillage area in recent years. This year the effort focuses on maintenance of a past project area at the top of Pleasant Valley Road using mastication.

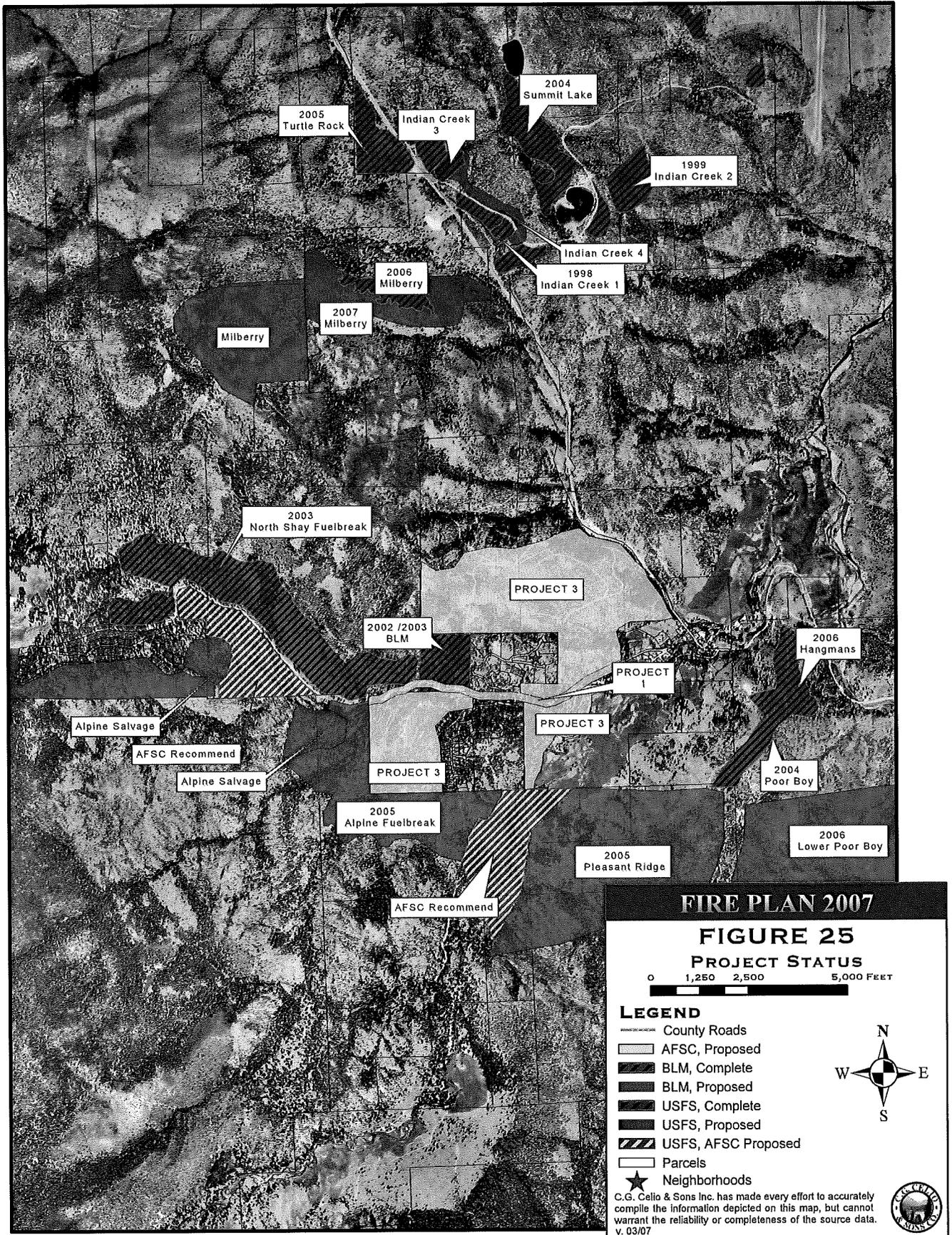
Past fuels reduction has occurred west of Shay Creek and north of Hot Springs road. In these projects, fuels have been treated using the hand thin, cut, pile, and burn method. It is labor intensive, requiring a hand crew to use chainsaws and hand tools to remove fuels and pile them for burning. After fire season, the piles are burned. The areas are treated by opening pockets within the continuous fuel beds, breaking up the canopy. In this method, the entire area is not treated, rather small areas are treated so that they might slow the spread of a wildfire and allow an anchor point for hand crews during a fire event.

In addition to completed projects, the USFS and BLM also have a variety of proposed fuel reduction projects planned. Most of these projects are continued maintenance of previous fuels reduction work or timber salvage operations. Figure 25 shows project areas and status as completed or proposed. It is imperative that those projects move forward as planned in concert with the proposed fuels projects on private lands to effectively mitigate the wildfire risk to these communities. All past fuels projects should be reviewed in the field by representatives of all concerned fire agencies to evaluate the potential effectiveness of completed and proposed projects. Also note on Figure 25, additional Forest Service projects have been recommended to tie-in areas missed in older and proposed projects.

**8.4 Actions**

The following summary of projects has been developed for the Markleeville Planning Area. They are intended to provide the background information necessary for grant development and funding. Where possible they are identified on the project map, Figure 25.

<i>Priority</i>	<i>Name</i>	<i>Acreage</i>	<i>Estimated Cost</i>
1	Roadway and Utility Access Treatment	31	\$96,000
2	Develop and implement an Evacuation Plan for the Hot Springs Road Corridor. Explore the feasibility of Alternative Evacuation Routes and Community Safety Zones.	n/a	\$15,000
3	Private Land Fire and Forest Health Co-op	392	\$804,000
4	Residential Lot Treatment	50	\$65,000
5	Create Alternative Evacuation routes and Community Safety Zones	n/a	\$5,000



## **PROJECT 1: Roadway and Utility Access Treatment**

**Description and Location:** Reduce the fuels along Hot Springs Road and along the power line corridor from Markleeville to Shay Creek.

**Objective:** To ensure Hot Springs Road is passable for evacuation during a fire event. To limit the risk of power poles burning during a fire event or igniting a fire should a power line fall to the ground.

**Vegetative condition and topography:** Along Hot Springs Road from Markleeville to Markleevillage, trees and brush grow right to the edge of the roadway. Tree density is thick, with the stand overstocked. Bitterbrush and sage are 4-6 feet tall in the understory and are close to the roadway edge. Next to the road, slopes are < 30% but drop off sharply 10-30 feet from the road edge. Trees grow very close to the power lines, sometimes into them, and there is no cleared area at the base of the poles.

**Prescription for treatment:** Next to the roadway, trees and brush need to be removed so that flames cannot be blown across the road. Within 100 feet of the road centerline, tree density needs to be thinned from below to a stocking level of 100 square feet per acre of basal area. Residual trees (those that remain) should have a canopy spacing of at least 1 ½ times the size of the canopy. Trees under or impinging on the power lines should be removed. Trees can be removed as firewood, with the slash and other material to be chipped.

Brush must also be removed along the roadway. Acceptable methods of treatment would include cutting and chipping the material or using mechanical mastication where appropriate. Within 100 feet of the road, individual plants should be thinned to a spacing of 1 ½ times the height of the remaining plants (i.e. plants 3 feet tall should be 4 ½ feet apart). Power poles should be cleared for a radius of 30 feet around the poles, removing trees and brush.

**Estimated cost:** \$3,000 per acre X 32 acres = **\$96,000**

**Expected completion time:** This project should be completed within one field season.

**Environmental Compliance:** Within the utility right of way, environmental compliance may already be completed with the construction and maintenance of the lines. On the private land, simple cultural resource surveys would be required and mitigation measured used during project implementation. On USFS, BLM, and county land, some level NEPA and CEQA compliance will be necessary, but should be limited given the small size of the projects and the proposed treatment methods.

**Ownership and Partners:** A variety of partners will need to be incorporated for successful project completion. The proposed treatment crosses four private properties. CAL FIRE would be involved with treatment on these parcels. A small portion of USFS and BLM land may also be affected. Alpine County has jurisdiction over right-of-way maintenance for the county road and Sierra Pacific Power holds the right-of-way for the utility lines.

*Note: in 2005, the Alpine Fire Safe Council received grant funds to carry out this project. While Sierra Pacific Power was able to complete their portion of the project, lack of cooperation from the primary landowners along Hot Springs Road resulted in a premature termination of the project and forfeiture of the grant funds. The primary objective (securing safe public access during a wildfire) was not met and remains to be completed.*



**PROJECT 2: Hot Springs Road Corridor Evacuation Plan**

**Goal:** Develop clear and concise information for an orderly response to a major wildfire threatening the Hot Springs Road Corridor. Distribute relevant packets to visitors, residents, and emergency response agencies.

**PROJECT 3: Private Land Fire and Forest Health Co-op**

**Description and Location:** Develop a coordinated fuels reduction and forest health plan for the large landowners surrounding the Markleevillage and Carson Ridge Subdivisions

**Vegetative Condition and Topography:** Forests on private land around the Markleevillage subdivision are typically overstocked, with mortality in some areas. The understories have significant amounts of brush and other ladder fuels. Previously treated areas are in need of retreatment. Slopes range from flat meadows to steep south-facing aspects.

**Prescription for Treatment:** Establish a coordinated effort to develop a single forest management prescription for fuels reduction and forest health is necessary and cost effective. Each landowner could have their own Forest Management Plan developed, specific to their property, but doing so in concert with surrounding landowners will make environmental compliance more cost effective and ensure that treatment prescriptions are consistent across ownerships.

Fuels reduction should be accomplished with the following prescription:

Thin stands from below (remove smaller trees, keep the larger ones) to a basal area of 100 square feet per acre. Trees can be removed as fuelwood, with the slash and other debris chipped. Brush should be reduced so that individual plants are thinned to a spacing of 1 ½ times the height of the remaining plants (i.e. plants 3 feet tall should be 4 ½ feet apart). Where appropriate, mechanical mastication could be employed to reduce brush and chip slash on site.

**Estimated Cost:** Should the landowners wish to complete a collective plan, the cost is estimated at \$50 per acre for the plan and environmental compliance for projects. If the landowners do not want to collectively address these issues, each will have to pay a similar cost for project preparation on individual projects.

Specific treatments would include hand crews, mechanical thinning, and mastication. An average treatment cost of \$2000 per acre is assumed.

392 acres X \$50 per acre = **\$19,600**  
392 acres X \$2,000 per acre = **\$784,000**  
Total project cost: **\$803,600**

**Estimated time to complete:** Six months to get the landowner agreements and common elements of the forest management plan developed. Treatment would occur on an annual basis after that, having the entire area treated within four years.

**Environmental Compliance:** Development of the coordinated forest management plan should have little environmental compliance steps. Implementation of the prescriptions and projects in the plan would involve cultural resource surveys and operational mitigation measures. Tree removal from private lands is exempt from the Forest Practices Act if the material is not sold, bartered, exchanged or traded as per California Public Resource Code 4527. Otherwise, the appropriate tree harvesting document must be filed at no charge with CAL FIRE. Depending on the document required (i.e. Timber Harvesting Plan, or some form of harvesting exemption notice), the document must be prepared by a California Registered Professional Forester and the document also signed by and the material harvested by a Licensed Timber Operator. These requirements must be met even when removing trees from within 150 feet of any structures. These requirements are triggered any time native commercial tree species are planned for commercial harvest from non-federal lands anywhere in California.

With a combined effort, costs for environmental compliance might be a little less than each landowner pursuing compliance individually.

**Owners and Partners:** The private landowners involved would be the primary partners. The Alpine Fire Safe Council or Alpine Resource Conservation District could facilitate plan development and provide technical and project management assistance to the landowners. CAL FIRE has regulatory authority for the harvesting of native commercial tree species on these lands.



**PROJECT 4: Residential Lot Treatment – Markleevillage Planning Area**

**Description and Location:** Develop a neighborhood centric fuels reduction program within the Markleevillage Planning Area neighborhoods.

**Vegetative Condition and Topography:** The forest stand within the Markleevillage and Shay Creek subdivisions are over stocked. Trees are stressed from competition and from residential development. Forest health is declining, with an increase in mistletoe and beetle-infested trees. In many cases, individual or groups of trees are too close to residential structures for effective defensible space during a fire event. A fire could easily move through the neighborhood or, more likely, be carried from an ignition within the neighborhood (such as a house fire to the surrounding wildland fuels.)

The area has steep slopes but the residential development allows for good access through most of the subdivision.

**Prescription for Treatment:** Establish a neighborhood fuels treatment program to help homeowners remove excess fuels and maintain areas with good fuels clearance. This program would have a number of elements to the various needs of the neighborhood.

**Curbside chipping program** – Hire a contractor or tree service to provide curbside chipper services in the neighborhood. Like similar programs, residents could either set material at the curb to be chipped and hauled away on certain days or could call to schedule an appointment for chipping. Material would be disposed of by the contractor. Residents would be responsible for hauling approved chipping material to the side of the road for disposal.

**Tree Removal** – Hire a tree service to remove trees near houses. The general prescription across the community would be to create defensible space around the homes and thin the forest stand from below, removing the smaller, suppressed trees. A professional tree service could remove trees without damaging homes and dispose of the slash material by chipping and hauling. Any firewood produced could be provided to the homeowners.

**Estimated Cost:** It is difficult to estimate the cost of these programs since they are dictated by the amount of public participating in the program. For the curbside chipping program, assuming that a contractor would charge approximately \$1000 per day to go to each of the neighborhoods and the service was available for 15 separate days throughout the summer season, the cost would be \$15,000. For tree removal, assuming 50 homes participated (approximately 50% of the total homes) and that on average a contractor charged \$1000 per lot, the total would be \$50,000. Given the number and size of trees to be potentially removed from each lot, an average of \$1000 was used as an estimate. It would vary by lot, where larger trees right next to houses would drive the cost up.

**Total project cost:** \$15,000 + \$50,000 = **\$65,000.**

**Estimated Time to Complete:** This project should operate for at least two years. It will take time for the community to become comfortable with the prescription and treatment.

**Environmental Compliance:** Environmental compliance should be minimal with these treatment methods. The curbside chipping will require no compliance as the homeowners will be doing the work. Tree removal from private lands is exempt from the Forest Practices Act if the material is not sold, bartered, exchanged or traded as per California Public Resource Code 4527. Otherwise, the appropriate tree harvesting document must be filed at no charge with CAL FIRE. Depending on the document required (i.e. Timber Harvesting Plan, or some form of harvesting exemption notice), the document must be prepared by a California Registered Professional Forester and the document also signed by and the material harvested by a Licensed Timber Operator. These requirements must be met even when removing trees from within 150 feet of any structures. These requirements are triggered any time native commercial tree species are planned for commercial harvest from non-federal lands anywhere in California.

**Other Partners:** A number of potential organizations or agencies could participate in this program. The Alpine Fire Safe Council has coordinated these types of projects in the past, however a county department, such as the fire department would also be an excellent choice for taking the lead on implementation. Regardless of who takes the lead, the Fire Safe Council, CAL FIRE, fire departments, homeowners groups, and community groups will be instrumental in project implementation. A concerted community effort to educate the public about these programs and the need to create defensible space will increase participation.

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**PROJECT 5: Create Alternative Evacuation Routes and Community Safety Zones**

**Description and Location:** Develop alternative evacuation routes within or near all neighborhoods between Markleeville and Shay Creek. Ensure all agencies are aware of these zones and educate the public on their use

**Current conditions:**

Safety Zones– Hot Springs road provides the only egress from the neighborhoods during an evacuation. Should this route become blocked, there are no designated community safety zones in the neighborhoods between Markleeville and Shay Creek. Natural openings exist, such as the Thornburg meadow and the meadow at Grover’s Hot Springs, but unless the grass in these areas is reduced during the fire season, they cannot be counted upon during a fire event. Other potential sites for safety zones exist but will require some vegetative treatment. There is no educational material to let the public, particularly the tourist population, know where safety zones might be.

Alternative Access– In the Shay Creek neighborhood, some roads dead-end. Hot Springs Road is the only access / egress to these neighborhoods. Alternative routes are necessary to provide a secondary means of evacuation.

**Proposed Project:** Safety zones and alternative evacuation routes should be established. Potential safety zone sites should be identified and evaluated for feasibility during a fire event. Contact must be made with the landowner regarding use of the site as a safety zone and how access would be allowed. Specific vegetative treatments in these zones should be defined and provided to the landowner to achieve the necessary vegetative treatment prior to fire season. Where possible, safety zones should be created within existing public right of ways and on public land. The final list of potential safety zones needs to be compiled in the Alpine County Emergency Operation Plan (EOP) and Field Operation Guide (FOG) manuals, as well as provided to the public through educational material. Information also needs to be provided to tourists visiting the State Park.

**Alternative Access Research:**

Shay Creek– Evaluate the feasibility of connecting the dead end road at the end of “C” loop with the State Park access road to the hot springs. This would provide another critical access to this neighborhood.

Markleevillage– Discuss with the private landowners east of Markleevillage the possibility of developing a fire access road from Markleevillage to the meadow south of Markleeville. Access would be gated, available only during a fire event. This would provide a route to the meadow as a safety zone, people would not be able to get all the way to Markleeville. If the landowner is willing, evaluate the feasibility and estimate the cost to develop this alternative route.

Hot Springs Road / Carson Ridge Subdivision– Discuss with the private landowner north and east of the Carson Ridge Subdivision the possibility of developing an alternative fire access road from the Carson Ridge Subdivision to State Highway 89 north of

Markleeville. Dirt roads have connected these areas in the past. If the landowner is willing, evaluate the feasibility and estimate the cost to develop this alternative route. This route, in concert with the Hot Springs Road, could allow for one-way traffic in (fire engines) and Hot Springs Road could allow one-way traffic out.

**Estimated Cost:** Landowner and agency cooperation will determine the feasibility of these proposed projects. Once the scope of work is determined, a project or projects can be outlined and the costs estimated. The estimated cost for the feasibility study is \$5,000.

**Estimated time to complete:** Landowner contacts, brief field research, and a basic report with letters of agreement could be completed within three months. This portion of the project cannot last more than one year.

**Environmental Compliance:** None for this project. Environmental compliance on new access construction could be significant.

**Responsible Parties:** Alpine County as the local public safety agency must be the project lead. The Sheriff's Office, Markleeville Fire Department, or Public Works department would all be appropriate departments to head this project. The Alpine Fire Safe Council or Alpine Resource Conservation District could facilitate the project.

# Appendices

## APPENDIX 1: BIOMASS OPPORTUNITIES

### **Economic Opportunities**

Disposing of the biomass created through fuel reduction projects is always a challenge. The most effective and long term solution to disposal is to create a marketable product from the biomass. No available markets currently exist that will purchase this material. The following section is intended to demonstrate the types and rough amounts of material generated in Alpine County. It should be used as background information in pursuing biomass utilization solutions.

### **Product Types**

Alpine County has traditionally provided commercial forest products. Historically, much of the area was logged for fuelwood in the local and surrounding mining communities. Resource extraction has continued to present day, though not in the volumes of the turn of the century. Today, small commercial timber sales, usually associated with development, occur on private land. The USFS and BLM continue to sell firewood and Christmas tree permits, though not in great numbers. The relatively small amount of material removed is due to the lack of commercially viable options for resource removal. Fuels loading is likely worse than it have ever been, due to fire suppression and the unmanaged approach to forest health.

Timber- There is some opportunity for timber removal in fuels reduction projects in Alpine County. As thinning is the primary fuels reduction treatment for timber, the timber is typically small diameter. Occasionally a large tree will be removed due to hazard or disease, but this would not constitute enough material for a single truckload to the mill.

Communities around Markleeville and Woodfords have this type of material. Some commercial timber could be removed in these areas, but to make the operation economically feasible, a number of small landowners would have to cooperate to provide enough sawlogs or firewood.

Slash, Pine Needles, and Woody Brush (Biomass)- Much of the fuels reduction efforts by private landowners results in limbs, sticks, twigs, pine needles and some brush. Removing ladder fuels on trees, raking pine needles, and removing flammable material next to the house comprise this material. A good example of this material is in the “burn pile” hosted by Alpine County every April and October at Turtle Rock Park.



The pile is the effort of many landowners bringing a few truckloads of material to the site for disposal. The site is supervised to eliminate those who would throw trash, construction waste, and other inappropriate materials into the pile. Many landowners also simply burn piles on their land to remove the material. The volume of material removed through private burning is likely not much more than visible in this photo.

Some large piles of this material are created when a landowner is clearing a site for their home. Currently, this material is not eligible to be dumped at the community burn pile.

Pinion Pine is another source of this material type. The BLM has proposed some fuels reduction projects in Pinion. A development is currently proposed around the Alpine County Airport, which would result in another significant amount of Pinion material.

Sagebrush, Bitterbrush, and other Biomass- North of Woodfords, much of the fuel reduction efforts focuses on sagebrush. Some of this material ends up in the community burn pile. Also, the county road department creates a large pile in the process of their summer road / ditch maintenance activities. This pile is behind the Public Works yard. Again, piles like this are created by landowners clearing lots for homes, an increasing common occurrence north of Woodfords.



County Public Works pile



Private Landowner (Lot Clearing for Home)

**Uses**

Traditional forest product users, such as lumber mills, are no longer in operation near this area. The closest forest mills are in Camino, Sonora or Pioneer, California, meaning that logs must be of a large size to be profitable to haul. Fire wood distributors or compost operations appear to be the only local wood product producers.

Typically, compost operators charge to take biomass. The material is inconsistent, a mix of everything from slash to sagebrush to pine needles. Making a valuable wood product from this material, such as residential stove pellets, is difficult.

Other areas in California have experimented with cogeneration plants, power plants that use biomass, and other wood product buyers for using local forest products. It appears there are mixed results, as some of these plants have closed. An effort is underway to bring a biomass products plant to Carson City, which would produce everything from stove pellets to soil treatments.

**Volumes**

Relatively, Alpine County produces small amounts of the above materials. If all the material pictured above were in one pile, it would only take an operator a few days to chip and remove. This is not enough biomass to create a sustainable market. Including the burn pile, the public works pile, lot clearing and other private sources, the total estimate of biomass would be around 120 tons annually.

**Solutions**

There are a variety of different solution providers for fuels reduction activities on private and public land. As the product types are varied in products and volume, there is overlap between what each solution provides. It takes some research into each specific situation to determine which solution is right.

One constant appears to remain. There is little local market for materials right now, so whatever the solution it will likely cost the landowner. Costs can be kept down by increasing the volume of material removed, so working together as a community we can lessen the costs to the small landowners.

**APPENDIX 2: CONTRACTOR DIRECTORY**

DISCLAIMER: The following contractors, individuals and consultants are available to help you reduce the risk associated with catastrophic wild land fires. The Alpine Fire Safe Council does not guarantee their performance or suitability for any specific job, and strongly recommends that you satisfy yourself as to their suitability prior to engaging them to work on your property.

<b>California State Licensed Contractors</b>	
<b>Joe Benigno's Tree Service</b> Phone: (530)-577-1553 Email: <a href="mailto:JoeBTree@aol.com">JoeBTree@aol.com</a>	They perform all duties associated with the tree care and removal industry and are fully licensed and insured.
<b>Estabrook Tree Works</b> Phone: (775)-782-2870	Professional tree care, includes attractive trimming, stump and crown removal, brush clearing, chipping, also provides free estimates and is fully insured.
<b>Edney Tree Service</b> Phone: (775)-465-2464	Tree trimming and removal, stump removal, ornamental pruning, hazardous trees, provides free estimates and is fully insured.
<b>Ken Emerson</b> Phone: (775)-266-4507	Professional fuels reduction clearing with "Slashbuster" for larger properties. Additional services include excavation and grading. Emerson is fully insured.
<b>Smith Crane and Rigging</b> Phone: (530)-694-1832	Extensive experience in all phases of timber harvesting and hazard tree removal. Locally owned, licensed and insured.
<b>Local Services</b>	
Below are lists of locals who perform various services, though none are a complete tree service as listed above. Alpine Fire Safe Council recommends checking to ensure your contractor has the appropriate licenses and insurance for your work.	
<b>Lloyd Van Doren</b> Phone: (530)-694-9508	Lloyd is based in Markleevillage and would be willing to perform a number of defensible space tasks. In addition to on site work, he can haul material to the burn pile.
<b>Dave McElroy</b> Phone: (530)-694-2729	Dave can assist with brush clearing and removal services.
<b>Markleeville and Woodfords Volunteer Fire Departments</b> Phone: (530)-694-2223 -Markleeville Phone: (530)-694-2922 -Woodfords Wayne Thompson, Chief, Markleeville VFD Buck McClelland, Chief, Woodfords VFD	The local volunteer fire departments may be willing to assist neighbors with some defensible space work as part of their community service and fundraising programs. Contact your local department chief to determine their availability. Please realize that these all-volunteer departments may not have time to provide these services and homeowners should pursue other alternatives for defensible space creation.
<b>Forestry Management and Community Solutions</b>	
For large landowners or community groups who can come to consensus on their fuels reduction solution, there are some additional resources available.	
<b>Dave Early</b> Phone: (775)-883-4726 California Registered Professional Forester	Based in Carson City, Dave works in the local area providing forest management services such as development of commercial fuels reduction projects and community fuels reduction plans to landowners and communities. Additionally, he can assist in navigating the complex set of California rules and regulations regarding removal of commercially viable products for fuels reduction.
<b>Great Basin Institute (GBI)</b> Phone (775)-784-1192 Web: <a href="http://www.greatbasininstitute.org">www.greatbasininstitute.org</a>	Using Conservation Corps ten-person service crews, GBI is able to offer large landowners and communities forestry assistance through vegetation management, removing invasive species, reducing fuel loads, and monitoring forest health.
<b>Steve Harcourt</b> Phone (530) 577-1689 California Registered Professional Forester	Steve is available for forest and fuels management consultation and contributed to this Community Fire Plan.
<b>Disposal</b>	
If simply having a location to dispose of the material is the problem.	
<b>Full Circle Compost</b> (775)-267-5305 Web: <a href="http://www.fullcirclecompost.com">www.fullcirclecompost.com</a>	Full Circle Compost in Minden will take biomass material for use in composting. There is a dumping fee, although they give credits to use in buying compost.
<b>Alpine County Burn Pile</b> (530)-694-2140 or (530)-694-2791	Turtle Rock Park is open business hours on weekends in April-May and Sept-Oct. for residents to dispose of natural vegetation.

## APPENDIX 3: WILDLAND FIRE EVACUATION RECOMMENDATIONS

### Markleevillage - Thornburg Subdivision - Shay Creek - Markleeville

#### Pre-fire preparation

- Have adequate clearance around structures of all flammable material: minimum of 30 feet. Greater distance may be required based on slope.
- Do NOT have wood piles against house, under porch or deck, or within 30 foot clearance area.
- Clear pine needles and leaves from gutters and roof. Trim back overhanging branches at least 10 feet from chimney.
- Replace roofing and siding with nonflammable or fire resistant materials. No wood roofs.
- Cover all attic and basement or crawl space openings with mesh metal screen 3/8 inch or smaller.
- Reduce or remove flammable vegetation, including landscape plants, and replace with less flammable ones. Manzanita and juniper are particularly flammable.
- Maintain greenbelt modification around developed areas.
- Have a means of transporting pets readily available.
- Make a list of valuables, medications and other personal items which would be important to take with you in case evacuation is ordered. Show location of items on the list. (Think in terms of things which cannot be replaced such as photograph albums, personal recipe books, important papers, insurance information, purse or wallet, etc.)
- Contact your local volunteer fire department, the Sheriff's Department, or a Fire Safe Council member for more pre-fire preparedness information and materials.

#### What to do if a wildfire is approaching

**CONSERVE WATER. WATER SYSTEMS IN BOTH AREAS NEED WATER FOR FIRE FIGHTING. DO NOT FILL BATHTUBS OR OTHER CONTAINERS.**

- Park your vehicle facing out. Put your valuables in the car and roll up windows. Place car keys where you can find them or keep them on your person. Close garage door but leave it unlocked. If applicable, disconnect the electric garage door opener so that door can be opened manually.
- Secure pets and prepare them to be transported.
- Close doors, windows, shutters and heavy drapes.

- Remove lightweight curtains and/or non-fire resistant curtains and move other combustible materials from around windows.
- Place combustible patio furniture in house or garage.
- Do NOT lock doors.
- Place garden hoses around house and attach them to faucets.
- Leave your electricity on and turn some inside lights and porch light on.
- If you have an emergency generator TURN IT OFF
- Close damper in fireplace.
- Turn off gas at propane tank and turn off all pilot lights.
- Place ladder against house on side away from approaching fire and away from power line.
- Cover all exterior vents.
- Wear long pants, long sleeved shirt or jacket (cotton is best), and boots or walking shoes (not sandals). Carry goggles, a bandanna to cover your face, and water to drink.

#### **What would happen in the case of an evacuation**

- The Incident Command will initially decide the areas to be evacuated. This decision will be based on factors such as weather, current and expected fire behavior, access, evacuation timeframes, and most importantly life safety of the public and firefighters.
- The Alpine County Sheriff's Office (ACSO) is responsible for carrying out the evacuation. The ACSO will use deputies, Search and Rescue, and volunteers and will go door to door notifying residents. The ACSO is responsible for the security of the areas that are evacuated. They will also ensure that disabled or non-ambulatory people are looked after.
- Emergency personnel will select a Safety Zone and will direct you to the selected zone during the evacuation process.
- California Highway Patrol (CHP) and the ACSO will control traffic flow and maintain access for emergency equipment.

#### **Evacuation advisories**

- **Precautionary**  
Areas under a "Precautionary Evacuation" are in the influence zone of the fire. While not immediately in danger, changes in weather and/or fire conditions could rapidly cause a threatening situation to occur. (Only residents with proper identification will be allowed in the affected area.)
- **Immediate threat**  
An "Immediate Threat Evacuation" would be issued when the fire is moving towards an area and there is an immediate threat to life and property.

Whenever an area is under “Immediate Threat”, all roads in the area will be closed to incoming, non-emergency traffic.

- **Lifting of Evacuation Advisories**  
Precautionary evacuation advisories may stay in effect for several days. However, “Immediate Threat” advisories should be rescinded when it is determined that the immediate threat is over. Road closures will be opened to residents with identification only if a precautionary evacuation advisory still exists.
- **Area Closures**  
Whenever an area is under “Immediate Threat”, roads in the area will be closed by the CHP or the ACSO. Only residents with proper identification will be allowed to enter the affected area.

### **Sheltering Options**

- **Shelter in place**  
This would be for a low intensity fire where the structures have a good clearance and are made of fire resistant materials and the fire department feels it is safe to stay.
- **Safety zones**  
Temporary holding areas, for smaller groups of people, that provide a safe haven until shelter locations can be established. These locations are distributed throughout the community to provide safe areas that are relatively short distance from their homes. A map of established safety zones and a list of describing their location area attached. Not all safety zones may be available based on the location of the fire.
- **Shelters**  
Red Cross establishes shelters for the immediate and short-term housing and care of evacuated residents.
- **Alternative locations**  
Residents who do not wish to use Red Cross shelters should consider determining in advance alternative housing locations such as family or friends. If you choose not to go to a Red Cross shelter, you are advised to contact the Red Cross to provide information about your location in the event family or friends are trying to find you.
- **Planning your escape route**  
The direction of your escape will be dictated by the location of the fire in relation to your home and the direction and speed it is spreading. The concepts that follow will help you determine the safest travel route.

**Primary travel routes**

- Know the primary travel routes to get out of the area or to safety zones.
- Be prepared to be directed by law enforcement or traffic control personnel. You must follow their directions.
- Drive the routes in advance so that you will be prepared for the confusion of an actual emergency.

**During evacuation**

- Have a checklist and map ready with all the actions you will take prior to and during evacuation.
- If you become trapped by fire while evacuation to your car, park in an area clear of vegetation, close all vehicle windows and vents, cover yourself with a blanket or jacket and lie on the floor.
- If you are trapped by fire while evacuating on foot, select an area clear of vegetation or lie face down in a ditch.
- If you are unable to evacuate when a fire approaches stay inside your house away from outside walls.
- Keep all doors closed but leave them unlocked.
- Keep your entire family together and REMAIN CALM! Remember if it gets hot in the house, it is four to five times hotter and more dangerous outside.

**After the fire passes**

- Check the exterior and roof immediately and extinguish all sparks and embers. If you must climb on the roof, use caution.
- Check inside the attic and in the basement or crawl space for hidden burning embers.
- Check your yard for burning woodpiles, trees, fence posts or other materials.

**Where to keep this plan**

- Refrigerator door
- Home bulletin board
- Wherever it is readily available

**For more information contact:**

Alpine County Sheriff's Office: 694-2231  
Markleeville Volunteer Fire Department: 694-2223  
U.S. Forest Service: 694-2142  
Alpine Fire Safe Council: 694-2791

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**APPENDIX 4: GENERAL PLAN**

Board of Supervisors  
Resolution No. R2007-02  
Exhibit A

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Revision to the Safety Element of the Alpine County General Plan  
Safety Element

A. Fire

Wildland Fire

Wildland fire protection on private lands in California outside of local fire district jurisdictions is typically provided by the California Department of Forestry and Fire Protection (commonly referred to as "CAL FIRE"). The CAL FIRE does not maintain a physical presence (fire station or fire fighting equipment) in Alpine County. As a result, the CAL FIRE responsibility for fire protection has been delegated to federal agencies (U.S. Forest Service "USFS" and Bureau of Land Management "BLM") by virtue of an intergovernmental agreement referred to as the "Five Party Agreement." The goal of this agreement is to efficiently allocate fire suppression resources among federal jurisdiction areas and private lands.

The Sierra Front Interagency Fire Dispatch Center is currently located at the Minden Tahoe Regional Airport in Douglas County Nevada, approximately 18 miles north of Woodfords. This facility has the capability to dispatch wildland fire suppression resources (equipment and manpower) from the Nevada Division of Forestry, BLM, USFS and Bureau of Indian Affairs. Aerial attack resources are also based at this location. Seasonal wildland fire fighting crews have also been stationed at USFS facilities located in Markleeville, west of Kirkwood at the USFS Lumberyard facility in Amador County and west of Bear Valley in the Arnold area of Calaveras County. Early initial attack of wildland fire by ground and aerial attack resources is probably the most effective means of controlling the spread of wildland fire in the County. These resources, available locally and through the Sierra Front Interagency Fire Dispatch Center, are critical to wildland fire protection efforts in Alpine County. However, it is recognized that the first response to wildland fire protection on both private and public lands is often provided by the local fire department(s), many of whose members are trained and certified to fight wildland fires.

Wildland fires within the "wildland urban interface" where development is interspersed with wild lands pose the greatest threat to lives and property. There have been three major wildfires in Alpine County since 1981. In 1984, the "Indian Creek Fire" burned approximately 6000 acres of forest in Alpine County (17,000 acres total) near Indian Creek on the East Slope. In 1986, a fire burned 2000-3000 acres of wildland plus 2 structures near Fredericksburg and in 1987 the "Acorn Fire" burned 6,000 acres and 26 structures near Woodfords. Fortunately none of these fires resulted in loss of life.

Structural Fire

Response to structural fires and other non wildland fires (vehicle fires, etc.) is the primary responsibility of local fire departments. There are four fire departments in Alpine County - Bear Valley, Kirkwood, Markleeville and Woodfords. Of these, only Bear Valley and

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Kirkwood have paid staff. All the departments rely heavily on volunteer fire fighters. Additionally, response may also be provided by fire departments in adjoining communities outside of Alpine County. These include the East Fork Fire Protection District located in Douglas County Nevada, the Lake Valley Fire Protection District located in the Myers area in El Dorado County and the Ebbetts Pass Fire Protection District located west of Bear Valley in Calaveras County.

The Insurance Services Office of California provides ratings of the capabilities of local fire departments to respond and fight fires. These "ISO" ratings are reviewed periodically. The ratings are used by insurance companies to help determine rates for the fire protection component of homeowners insurance premiums. A lower ISO rating means a greater capability and thus, potentially lowers insurance premiums. The rating scale is 1-10 and may vary within a fire department's response area. Areas within Alpine County have ratings between 4 and 9. Lower rated areas have good resources including a readily available water supply and relatively short response times. The Kirkwood area has an ISO rating of 4. Most of the Bear Valley area is rated 5. Areas rated 8 and 9 (eastern Alpine County) have significant deficiencies such as very limited or lack of water sources available for suppression and longer response times.

Note to the reader: The text that follows refers in general to "Fire Safe Councils." As used in this section, the Fire Safe Councils refers to the existing organizations and is intended to refer to any organization that would replace the councils or perform the same functions.

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ELEMENT II - SECTION A

G.P. GOAL NO. 20: MINIMIZE THE THREAT TO LIVES AND PROPERTY POSED BY THE POSSIBILITY OF WILDLAND AND STRUCTURAL FIRES WITHIN THE WILDLAND URBAN INTERFACE IN THE COUNTY.

20a. Fuels Reduction

Background: The National Fire Danger Rating System and the CAL FIRE Fire Hazard Severity Classification System are used to identify the level of wildland fire hazard in local areas. These ratings are generally based on vegetation type, terrain and local weather conditions. Most areas within Alpine County are classified as high or very high hazard for wildland fire. Fuels reduction is the most effective way of reducing hazards. The Alpine Fire Safe Council, Bear Valley Residents Incorporated, U.S. Forest Service and Bureau of Land Management have all either facilitated or implemented fuels reduction projects within the County.

Objective No. 20a: Reduce fuel loading to a low risk level within the wildland urban interface.

Implementation:

20a-1: The County shall coordinate with the Fire Safe councils to distribute informational materials for homeowners regarding wildland fire hazards, defensible space requirements and other measures that can be done by homeowners to reduce wildland fire hazard and fuel loading on individual lots and within existing neighborhoods. These materials should be included in the building permit packet and made available to the general public at county libraries, other public offices within the County and on the County's web site.

20a-2: The County shall work with the California Department of Forestry and Fire Protection to assertively implement the defensible space requirements of Public

Resources Code 4291. This includes implementation of the requirements for individual lots and a periodic inspection program to monitor compliance and correct deficiencies.

20a-3: The County and/or Fire Safe councils shall pursue public and private funding, where available, to assist private landowners in implementing fuels reduction and defensible space measures in order to achieve a low risk condition.

20a-4: The County shall require vegetation management plans for all new development that, at a minimum, include provisions for implementation and maintenance of fuels reduction and defensible space; and which meet the minimum clearance standards pursuant to Public Resources Code 4290 (14 CCR 1270). Consideration should be given to maintaining healthy vegetation, minimizing the potential spread of noxious weeds, habitat for wildlife and visual impacts in formulating these vegetation management plans. For purposes of this policy, new development includes parcel maps and subdivisions that create new lots or building sites, planned developments and conditional use permits that entitle new structures. Requirements for ongoing maintenance of vegetation management plans shall be addressed in conditions of approval and/or CC&Rs for the development. A mechanism for enforcement of the maintenance requirements shall also be implemented.

20a-5: The County shall work with public land management agencies to pursue fuel modification and reduction in addition to prescribed burning projects to reduce risks on public lands in areas both within and surrounding existing communities. Priority areas for this type of project are identified in the Alpine Community Fire Plan.

#### 20b. Water Supply

Background: The availability of water supply for fire suppression varies among communities within Alpine County. Bear Valley and Kirkwood have developed water supply systems with hydrants capable of delivering substantial amounts of water for suppression. Water supplies are more limited or non-existent on the east slope of the County. The Markleeville area and the Alpine Village subdivision in Woodfords have small water systems designed for domestic use only. Fire hydrants have been connected to the South Tahoe Public Utility District effluent disposal pipeline that extends through the Woodfords area. However, there are restrictions on the ability to use this water for fire suppression. Other water sources for wildland fire include rivers and lakes found in various locations throughout the County.

Both the National Fire Protection Association (NFPA) and CAL FIRE have adopted water supply standards for fire suppression. Additionally, Alpine County Code (Section 13.04) sets forth requirements for water systems in new subdivisions. Since this code section was adopted in 1981, only the Morrison Subdivision (AKA "Carson Ridge") subdivision near Markleeville has been required to install a water system designed for fire suppression. Two other subdivisions in the Mesa Vista area approved in the 1990s were granted exemptions from the water system requirement.

In summary, outside of Bear Valley, Kirkwood and the Morrison Subdivision, developed areas in the County do not have adequate water supplies for fire suppression. The Alpine Fire Safe Council has identified the need for water sources in the Mesa Vista and River Ranch areas. Most recently, the Council had a consultant complete the "Mesa Vista/River Ranch Scoping Study" that evaluates alternatives for providing water supplies for fire suppression in these areas.

Objective 20b: Improve water supplies for fire protection in developed areas within the wildland urban interface.

Implementation:

20b-1: The County shall work in conjunction with the Fire Safe councils, CAL FIRE, fire departments and other agencies with responsibility for fire protection to establish uniform minimum water supply standards for new development. The standards shall meet or exceed the requirements of Public Resources Code 4290. These standards shall be officially adopted by the County. Variances, waivers and/or exceptions to the minimum standards shall only be allowed when an alternative that can be documented to provide an equivalent or better level of protection is required. When compliance with the water supply standards specified in Public Resources Code 4290 is not possible, mitigation measures or alternatives shall be included to achieve fire safe goals as an exception in accordance with 14 CCR 1270.03.

20b-2: The County shall encourage long range planning for improved water supplies for fire protection throughout the County. This planning process should involve the Fire Safe councils, local area residents, fire departments, CAL FIRE and other agencies with responsibility for fire protection.

20b-3: The County and/or Fire Safe councils shall pursue public and private funding to improve water supply for fire protection throughout the County.

20c. Access Requirements

Background: Providing adequate and safe access to communities and developed areas is key to reducing the risk of injury or loss of life, and to facilitating access for fire suppression resources. Road design standards are addressed in the Alpine County Code, the "Alpine County Improvement Standards for Subdivisions, Parcel Maps and Site Improvements" adopted by a resolution of the Board of Supervisors, in regulations administered by CAL FIRE and in the National Fire Protection Association (NFPA) standards. The Alpine County Public Works Department has recently initiated work on revising the County's standards in an effort to clarify requirements and eliminate conflicts among the various standards.

Objective 20c: All new development in Alpine County shall be provided with adequate access for emergency response vehicles and an emergency egress route for evacuation.

Implementation:

20c-1: The County shall work in conjunction with the Fire Safe councils, CAL FIRE, fire departments and other agencies with responsibility for fire protection to establish uniform minimum access standards for new development. The access standards shall meet or exceed the requirements of Public Resources Code 4290, except as specifically provided in Item 20c-2, 20c-3 and 20c-4. These standards shall address driveways and roads and shall include minimum standards for the number of access points into and out of the development area, driving lane width, grade, curve and cul de sac radius, dead end roads, turn arounds, emergency access/escape routes, home addressing and signing. These standards shall be officially adopted by the County. Variances, waivers and/or exceptions to the minimum standards shall only be allowed when an alternative that can be documented to provide an equivalent or better level of protection is required.

20c-2: Where through roads or dual access to new development is not feasible or desirable due to significant environmental constraints or legal access rights, mitigation measures shall be required. Possible mitigation measures could include, but not be limited to, increased road width, more frequent turn outs and/or turn around locations,

increased water supply requirements for fire protection and sprinkler requirements for structures.

20c-3: The standards established through implementation of 20c-1 should include special consideration for land uses that customarily rely on remote locations and existing parcels in remote locations that do not have road access or are served by roads that may not meet minimum standards. Examples of these land uses that rely on remote locations include, but are not limited to, backcountry ski huts, pack stations, dispersed recreation sites and campgrounds. Some examples of existing parcels in remote locations with roads that do not meet minimum standards include, but are not limited to, private lands in the Poor Boy Road, Wolf Creek, Willow Creek, Forestdale Road, Blue Lakes and Leviathan Mine areas.

20c-4: When compliance with the access standards specified in Public Resources Code 4290 is not possible, mitigation measures or alternatives shall be included to achieve fire safe goals as an exception in accordance with 14 CCR 1270.03.

#### 20d. Fire Protection Planning and Capability

Background: Recent efforts in fire protection planning include the “Alpine County Community Fire Plan” prepared in 2004 under the direction of the Alpine Fire Safe Council, the “Eastern Alpine Fire Services Plan” prepared in 2005 by an ad hoc committee of the Alpine County Board of Supervisors and the Alpine Fire Safe Council, and the “Bear Valley Community Fire Plan to Reduce Wildfire Risk and Improve Forest Health” completed by the community in Bear Valley. Additionally, in 2005 the Alpine County Board of Supervisors adopted the “Alpine County Natural Hazard Mitigation Plan” that addresses a variety of hazards including wildland fire. Taken together, these plans outline strategies and priorities for reducing the risk of fire and improving fire protection capability. Additionally, each of the fire protection districts within the County undertakes planning for capital needs and other necessary resources.

Objective 20d: Obtain the best possible level of fire protection and emergency response services for all communities in Alpine County.

#### Implementation:

20d-1: The Board of Supervisors should continue to contribute stable funding from the County general fund at recent historical levels for fire protection and emergency services.

20d-2: The County shall support efforts by each fire department within the County to obtain lower ISO ratings for structure fires within all fire protection areas.

20d-3: To the extent allowable by law, the County shall support efforts to implement the recommendations of the Eastern Alpine Fire Services Plan in a timely manner. Further, and also to the extent allowable by law, the County should consider providing funding for completing preliminary studies and other documentation necessary to place a measure on the ballot regarding Option 9 as described in the Eastern Alpine Fire Services Plan and endorsed by the Board of Supervisors.

20d-4: The County shall support efforts to utilize the Alpine County Airport as a base of operations for the Bureau of Land Management SEAT planes and associated fire suppression equipment.

20d-5: No new development shall be approved unless the County can make a finding that the development can be provided with adequate fire protection and emergency services. For purposes of this policy, new development includes parcel maps and subdivisions that

create new lots or building sites, planned developments and conditional use permits that entitle new structures.

20d-6: To the extent possible by law, the County shall require all new parcel maps, subdivisions and planned developments to participate in any prospective or existing benefit assessment district or other similar organization or entity that will develop and improve water supply or other fire protection capabilities in the area where the new development is proposed.

20d-7: The County shall work in conjunction with the Fire Safe councils, CAL FIRE, fire departments, and other agencies with responsibility for public safety and fire protection to establish designated safe emergency evacuation routes and early warning systems.

20d-8: The Community Fire Plan should be completed, adopted and updated on a regular basis.

20d-9: The Alpine County Natural Hazard Mitigation Plan should be reviewed on a regular basis and updated if necessary as provided for in the plan.

20d-10: The County shall support completion of a Master Fire Protection Plan to identify long term capital facility and operational needs for fire protection services in all areas of Alpine County. This plan should include minimum fire protection service standards based on NFPA (National Fire Protection Association) criteria.

20d-11: The County Board of Supervisors should evaluate available options and consider establishing the functions of a Fire Marshall within all areas of Alpine County.

20d-12: The County shall support the continued location of the Sierra Front Interagency Fire Dispatch Center and associated fire fighting resources at the Minden-Tahoe Regional Airport.

20d-13: The County shall designate a suitable site between Woodfords and the Nevada state line for a future fire station and related facilities such as water storage, so that all existing residences and lots that have road access entirely within Alpine County and that are between Woodfords and the Nevada State line will be within five miles of either the Woodfords fire station or the designated site.

20d-14: The County shall evaluate the current and future transportation system and identify opportunities to incorporate fire infrastructure elements such as turn outs, heliports and safety zones.

20d-15: The County shall incorporate or reference the most current fire hazard mapping from CAL FIRE for both the SRA (State Responsibility Area and VHFHSZ (Very High Fire Hazard Severity Zones) in Local Responsibility Areas if applicable.

20d-16: The County shall encourage the local fire protection agencies to conduct pre wildfire attack planning that includes consideration of structures, fuel breaks, back fire areas and staging areas that will support safe fire suppression.

## APPENDIX 5: COUNTY CODE

15.12.010

## Chapter 15.12

**FIRE SAFE REGULATIONS FOR  
STATE RESPONSIBILITY AREAS**

## Sections:

- 15.12.010** Adoption of regulations.  
**15.12.020** Amendments.

**15.12.010** Adoption of regulations.

Alpine County adopts the Fire Safe Regulations for State Responsibility Areas, commencing with Section 1270.00 through 1276.04, Article 5.5, Chapter 7, Division 1.5, Title 14 California Code of Regulation (CCR 14). (Ord. 530 §1, 1991)

**15.12.020** Amendments.

The Fire Safe Regulations for State Responsibility Areas are amended with the following additions, deletions and modifications, made to provide mitigation practices with the same practical effect as those regulations overall towards providing defensible space:

A. To Section 1273.09, amend to read in full:

**1273.09 Dead-End Roads**

All dead end roads shall be constructed to provide a minimum of two paved 10' traffic lanes, with a minimum of 4' improved shoulders adjacent to each traffic lane. Each dead-end road will have a turnaround of a minimum of 100' constructed at its terminus or an equivalent approved by County.

On all roads determined by the County to be collectors, all such dead end roads shall be constructed to provide a minimum of two 12' traffic lanes, with a minimum of 8' shoulders adjacent to each traffic lane. Each such dead-end

road will have a turnaround of a minimum of 100' constructed at its terminus or an equivalent approved by County. In addition, all such dead end collector roads may be required to provide turnouts at such junctures as is approved by County dependent upon such variables as length of road, configuration of terrain and limitations to vision.

B. To Section 1275.01, amend to read in full:

**1275.01 Application**

The provisions of this article shall apply to all new parcels and to all new building construction intended for human occupancy approved by the County effective January 1, 1992, which are not connected to a private, public, or mutual water system providing adequate water supplies to meet the emergency water supply system standards set by these regulations.

To Section 1275.10, add as a new subsection:

Static water systems shall provide a minimum of 2,500 gallons of water in either buried or above ground systems. Buried systems shall be covered to sufficient depth to insure that freezing does not occur. Above ground systems, including reservoirs, ponds and tanks, will provide freeze protection of a natural or artificial nature. All static water systems will be adequately maintained to assure access to, and availability of, the required water gallonage and will be signed as provided by these regulations.

In lieu of the provision of a static water system, each new qualifying building construction project may opt to provide a monetary fee to a trust fund estab-

15.12.020

lished for the purchase of fire agency mobile water equipment. The monetary fee for this option will be set by the Board of Supervisors by resolution and may be modified from time to time to reflect an adequate and fair portion of funding for the acquisition of such equipment, with consideration of development growth in response areas, equipment cost and availability of on-line equipment. This fee will be collected prior to the issuance of any building permit and will be refunded should a static water system, meeting the requirements, be installed prior to the issuance of the notice of occupancy for the unit.

(Ord. 530 §2, 1991)

(Alpine County 8-92)

264-2

**APPENDIX 6: COMPLETED PROJECTS**

Since the release of the first draft of this plan in 2004, three projects identified in the plan have been completed. They are:

**Project:** Mesa Vista/ River Ranch Water Supply Feasibility Study

**Date completed:** March 2006

**Priority rank in 2004 Plan:** #1 Woodfords Planning Area

The study is available on the Alpine Fire Safe Council website: [www.alpinefiresafe.org](http://www.alpinefiresafe.org)  
A working group of concerned residents from the Mesa Vista/River Ranch neighborhoods formed after release of this study. Action taken by this group has secured funding to provide a storage tank and well in their community.

**Project:** Improve Water Storage for Markleevillage/Markleeville

**Date completed:** September 2006

**Priority rank in 2004 Plan:** #5 Markleeville Planning Area

A 238,000 gallon tank has been installed above the existing tank site at the top of Pleasant Valley Road. The tank will serve Markleeville, Markleevillage and Thornburg subdivisions.

**Project:** Residential Treatment-Curbside Chipping Program

**Date Completed:** September 2006

**Priority Rank in 2004 Plan:** #3 Woodfords and Markleeville Planning Areas

Partnering with Lake Valley Fire Protection District, the Alpine Fire Safe Council offered curbside chipping for slash and brush to residents of Woodfords, Markleeville, Woodfords Colony, and the Blue Lakes Area. The project was grant-funded through a USFS grant. Grant funding from the USFS has been approved for a similar program for 2007.

**APPENDIX 7: PUBLIC MEETINGS**

## Community Fire Plan Meetings

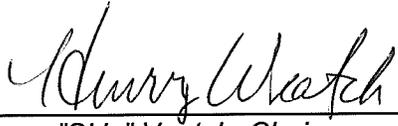
Date	Meeting Type	Discussion
9/2/03	Alpine Fire Safe Council Meeting	Create Fire Plan Document
10/13/04	Alpine Fire Safe Council Meeting	Develop Planning Process, Utilize Western Governor's Outline
12/15/03	Alpine Fire Safe Council Meeting	Rough Draft Presented
2/29/04	Alpine Fire Safe Council Meeting	Review Draft, Circulate draft to agencies, BOS, and stakeholders
3/22/04	Alpine Fire Safe Council Meeting	Discuss Revised Draft with Comments
4/3/04	Woodfords Community Fire Meeting	Present Draft to Public
4/26/04	Alpine Fire Safe Council Meeting	Draft Discussion
5/8/04	Markleeville Community Fire Meeting	Present Draft to Public
5/24/04	Alpine Fire Safe Council Meeting	Draft Additions
6/28/04	Alpine Fire Safe Council Meeting	Draft Additions
7/26/04	Alpine Fire Safe Council Meeting	Draft Additions
8/23/04	Alpine Fire Safe Council Meeting	Draft Update
10/25/04	Alpine Fire Safe Council Meeting	Revised Draft Presented
11/15/04	Alpine Fire Safe Council Meeting	Draft Comments
11/16/04	Alpine Board of Supervisors Meeting	Present Revised Draft
11/22/04	Alpine Board of Supervisors Workshop	Draft Comments
9/23/06	Community Meeting	Collect project ideas from public for CWPP revision

## Alpine County Community Fire Plan Mutual Agreement Page

This Community Wildfire Protection Plan developed for Alpine County by the Alpine Fire Safe Council:

- Was collaboratively developed. Interested parties and state and federal agencies managing land in Alpine County have been consulted.
- Identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect Alpine County communities.
- Recommends measures to reduce the ignitibility of structures throughout the area addressed by the plan.

The following entities mutually agree with the contents of this Community Wildfire Protection Plan:

  
\_\_\_\_\_  
Henry "Skip" Veatch, Chair  
Alpine County Board of Supervisors

Date: 6-5-07

  
\_\_\_\_\_  
Wayne Thomson, Chief  
Markleeville Fire Department

Date: 5-28-07

  
\_\_\_\_\_  
Bill Holmes, Unit Chief  
Amador-El Dorado Unit  
CAL FIRE

Date: 5-22-07

AGENDA TRANSMITTAL

9.1

TO:   x   Board of Supervisors  
       Local Transportation Commission  
       Alpine Water Agency

ITEM NO:  
DATE: May 28, 2007

FROM: Alpine Fire Safe Council

REFERENCE DATES: June 5, 2007  
REQUESTED TIME: 9:00 am  
CONSENT AGENDA:

PREPARED BY: Jeff Brees

**AGENDA ITEM TITLE. ACTION REQUESTED, SUBJECT AND JUSTIFICATION:**

Request Board Adoption of the Community Wildfire Protection Plan.

**SUMMARY – DESCRIPTION OF ISSUE – BACKGROUND AND HISTORY:**

*(Please attach separate sheet(s) if needed.)*

In November of 2003, the recently formed Alpine Fire Safe Council undertook the task of creating a community based wildfire protection plan that would identify: community assets at risk, measures to reduce the ignitibility of structures, and priorities for fuels hazard reduction. The Draft Alpine County Community Fire Plan was completed by C.G. Celio and Sons in December of 2004. This document was a collaborative effort involving the local fire departments, California Department of Forestry and Fire Protection, U.S. Forest Service, and the Bureau of Land Management. In January of 2005, the Alpine County Board of Supervisors approved a letter supporting the priority projects identified in the plan. The plan provides the basis for grant funding under the National Fire Plan as well as several other legislative acts that provide funds for fuels reduction projects (Healthy Forest Initiative, California Prop. 40.) The draft version of the plan has now been finalized and has received signature approval from CAL FIRE (formerly CDF) and the local fire chief. With the signature of the Board chair, the document will become a valuable tool for reducing the risk of catastrophic wildfire in our Alpine County communities. The Bear Valley element of the plan is currently being written and will be submitted for Board approval when finished. We expect to update the plan every two years or as needed to maintain the project priorities.

COPY OF PLAN IS AVAILABLE FOR VIEWING AT THE COUNTY CLERKS COUNTER.

**COSTS**

( ) Not Applicable

**SOURCE:**

- A. Budgeted current FY \$ \_\_\_\_\_
- B. Total anticipated cost current year \$ \_\_\_\_\_
- C. Total anticipated cost annual year \$ \_\_\_\_\_

Unanticipated revenues \$ \_\_\_\_\_  
From contingency \$ \_\_\_\_\_  
Other \_\_\_\_\_

**NOTATIONS / INSTRUCTIONS:**

**INSTRUCTIONS TO BOARD CLERK:** After meeting, copies to be provided to:

Provide Certified copy to Fire Safe Council.

