January 2005

DMA 2000
Multi-Hazard Mitigation Plan
for
Placer County, California

EXECUTIVE SUMMARY

This multi-jurisdictional, Multi-Hazard Mitigation Plan was prepared on behalf of Placer County and participating Districts and the incorporated communities of Auburn, Colfax, Lincoln, Loomis, and Rocklin.

The purpose of hazard mitigation and this plan is to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This plan has been prepared to meet the Disaster Mitigation Act of 2000 (DMA 2000) requirements in order to maintain Placer County's eligibility for FEMA Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Programs (HMGP). The Plan also serves to enhance the County's CRS Floodplain Management Program.

The process followed a methodology prescribed by FEMA. It began with the formation of a Hazard Mitigation Planning Committee (HMPC) compromised of key County and Stakeholder representatives. The planning process examined the recorded history of losses resulting from natural hazards, and analyzed the future risks posed to the county by these hazards. The greatest risk and vulnerability to the County are associated with floods and wildfires. The HMPC puts forth several mitigation goals and objectives that are based on the results of the risk assessment. The plan also puts forth specific recommendations for actions that can mitigate future disaster losses.

The plan is based on a hazard identification and risk assessment of all the potential natural hazards that could impact Placer County. The plan also includes a review of the County's current capabilities with regards to reducing hazard impacts. The plan includes recommended additional action items for the County and its jurisdictions to reduce their vulnerability to potential disasters.

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Multi-Hazard Mitigation Plan
1.0 Introduction

As part of the overall community planning effort for hazard mitigation, Placer County, California has prepared this Multi-Hazard Mitigation Plan pursuant to the requirements of the Disaster Mitigation Act of 2000, PL 106-390 390 (hereafter referred to as DMA; see Appendix A for a list of acronyms used in this document). This section of the Plan describes the purpose and need for the Plan, the scope of this effort and the Plan organization.

Hazard Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Planning is the process of setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals.

Hazard Mitigation Planning is the process through which natural hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are determined, prioritized, and implemented.

Hazard Mitigation Planning is required for state and local governments to maintain their eligibility for certain federal disaster assistance and hazard mitigation funding programs. Communities at risk from natural disasters can ill afford to jeopardize this funding.

PURPOSE AND NEED

Each year, natural disasters in the United States kill hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and non-government organizations are not reimbursed by tax dollars.

Additionally, many natural disasters are predictable, and, often with the same results. Many of the damages caused by these events can be alleviated or even eliminated.

FEMA, the Federal Emergency Management Agency, now a part of the Department of Homeland Security, has targeted reducing losses from natural disasters as one of its primary goals. Hazard Mitigation planning and subsequent implementation of projects, measures, and policies developed through those plans are the primary mechanisms for achieving these goals. Success in reducing disaster damages has taken place as the result of mitigation projects implemented subsequent to mitigation planning.

This Plan was developed pursuant to the Disaster Mitigation Act of 2000, PL- 106-390 (hereafter referred to as DMA; see Appendix A for a list of acronyms used in this document), and the regulations published in the *Federal Register* Volume 67, Number 38, Tuesday, February 26, 2002. Section 104 of DMA revises the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding Section 322, which provides new and revitalized emphasis on hazard mitigation, including adding a new requirement for local mitigation plans. These new local mitigation planning regulations are implemented through 44 CFR Part 201.6.

Proactive mitigation planning at the local level can help reduce the cost of disaster response and recovery to property owners and governments by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruption.

SCOPE

Placer County's Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that identifies goals, objectives, and measures for hazard mitigation and risk reduction to make communities less vulnerable and more disaster resistant and sustainable. This Plan covers the jurisdiction of Placer County, including the incorporated communities of Auburn, Colfax, Lincoln, Loomis, and Rocklin; and various special districts located throughout the County. Roseville chose not to participate in this otherwise countywide process. Information in the Plan can be used to help guide and coordinate mitigation activities and local policy decisions for future land use decisions within the County.

This Plan follows DMA 2000 planning requirements and associated guidance for developing Local Hazard Mitigation Plans. This guidance sets forth a generalized 4-task process: 1) Organize your Resources, 2) Assess Hazards and Risks, 3) Develop a Mitigation Plan, and 4) Evaluate your Work. This Plan also utilizes the criteria set forth in FEMA Region IX's Crosswalk Reference Document for Review and Submission of Local Mitigation Plans.

This Plan focuses on natural hazards only. Although Placer County recognizes that FEMA is both encouraging and promoting communities to integrate human-caused hazards into the mitigation planning process, the scope of this effort did not address these hazards for two reasons. First, DMA requires extensive public information and input, and this is in direct conflict with the security and secrecy necessary in planning for chemical, biological, and radiological hazards. Secondly, organizationally, many of the planning activities for human-caused hazards are either underway or complete, and have been developed by a different set of organizations. A discussion of existing County planning activities for these human-caused hazards is included in Section 3.0.

PLAN ORGANIZATION

Placer County's Multi-Hazard Mitigation Plan is organized as follows:

Executive Summary
1.0 Introduction
2.0 Community Profile
3.0 Planning Process
4.0 Risk Assessment
5.0 Mitigation Strategy
6.0 Plan Adoption
7.0 Plan Implementation & Maintenance

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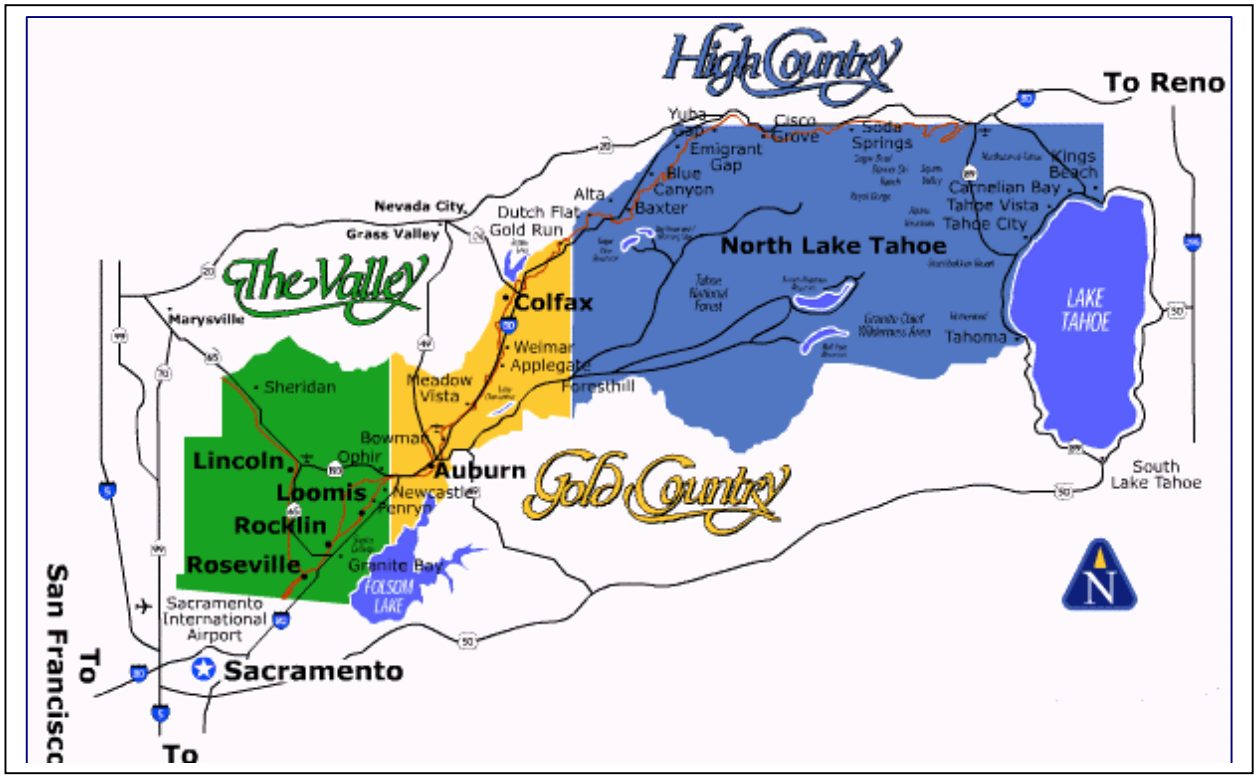
Multi-Hazard Mitigation Plan
2.0 Community Profile

PLACER COUNTY

Location and Geography

Placer County is located in northern California and stretches from Sacramento County to Lake Tahoe and the Nevada border. The Counties of Sacramento, El Dorado, Sutter, Yuba, and Nevada border Placer County. Regional access to the County is provided via Interstate 80 (I-80), which runs east west through the entire County. Placer County includes the incorporated communities of Auburn, Colfax, Lincoln, Loomis, Rocklin, and Roseville. The County has a total land area of 1,501 square miles, 98 square miles of which are comprised of water. The County decreases in elevation going east to west from the Sierra Nevada Range and Tahoe region to the more suburban areas in the western portion of the County. Below is a map of Placer County and its three distinct regions (The Valley, The Gold Country and The High Country).



(Source: Placer County)

Brief History

Placer County was home to the Nisenan Native Americans for hundreds of years before the discovery of gold in 1848 when multitudes of miners migrated to the area. Auburn was settled in 1848 upon the discovery of gold and later became a shipping and supply center for the surrounding gold camps. Three years after the discovery of gold in the region, the fast-growing county was formed from portions of Sutter and Yuba Counties on April 25, 1851 with Auburn as the County seat. The name Placer comes from the Spanish word meaning "sand and gravel deposits containing gold". Gold mining remained a major industry through the 1880s, eventually overtaken by the industries of farming, timber, and the Southern Pacific Railroad. The commercial fruit industry also expanded rapidly in western Placer County in the late 1870s and early 1880s, with the Central Pacific Railroad providing a wide market in the east for California's agricultural products. Among the produce raised were citrus, apples, peaches, pears, plums, cherries, olives, almonds, and walnuts.

Population and Growth Trends

According to the U.S. Census, the 2000 population for Placer County was 248,399, an equivalent of 177 persons per square mile on average. The County currently has the fastest growing population in California with an estimated increase of 17.6 percent between 2000 and 2003. Between 1990 and 2000, the unincorporated portion of the County increased its population by 20 percent, while the County as a whole increased 44 percent. Based on the most recent (2002) data from the U.S. Bureau of Economic Analysis, Placer County has a per capita income of $37,083 with the greatest number of jobs in the services industry.

From 1990 to 2000 the Countywide housing stock increased by 38 percent. According to the California Department of Finance, Placer County is projected to have an increase in housing units of approximately 56 percent between 2000 and 2020.

AUBURN

Location and Geography

The City of Auburn is located on the western slope of the Sierra Nevada Range at elevations between 1,000 and 1,400 feet above mean sea level (msl). Auburn is the county seat of Placer County and is also located at the crossroads of I-80 and Highway 49. The City is about 7.5 square miles in area and rests near the confluence of the North and Middle Forks of the American River.

Brief History

In 1849 a mining camp became officially known as Auburn and by 1850, Auburn's population had reached 1,500 people. A Frenchman named Claude Chana first discovered gold in the Auburn Ravine in 1848. By 1849 the North Fork Dry Diggings had become a well-established mining camp. Later in the year the camp was officially named Auburn. Because Auburn was a

short distance from Sacramento, centrally located in the gold country, and located just below the snow line, it became known as the "jumping off" spot for the miners. By 1865, Auburn had developed into a permanent town with the Central Pacific Railroad connecting people to the area. Auburn was first incorporated in 1860 and again in 1888. By 1900 the population of Auburn was just over 2,000.

Population and Growth Trends

Today the City of Auburn has a population of approximately 12,500 residents within its city limits and an estimated population of 44,000 in the greater Auburn area. The per capita income within the City was approximately $26,258 in 2000. Throughout the years, the City of Auburn has grown steadily and areas just north and east of Auburn are continuing to urbanize. The City continues to attract large retailers and new businesses and is an important retail trade center. Housing in Auburn increased by 14 percent over the ten-year period from 1990 to 2000. Auburn is projected to have a housing unit increase of 37.8 percent between 2000 and 2020. The population is projected to increase by 30.3% between 2000 and 2020.

COLFAX

Location and Geography

The City of Colfax is the northern-most incorporated city in Placer County, located in the Sierra Nevada Foothills at a general elevation of 2,400 feet above msl. The City covers an area of 1.3 square miles and straddles I-80 approximately 16 miles north of Auburn and east of Grass Valley.

Brief History

In 1849 during the frenetic days of the Gold Rush, southeast of present-day Colfax, Illinoistown rose as a major supply hub for the Sierra Foothill mining camps. In 1865, destiny doomed the thriving community when transcontinental railroad engineers bypassed it. Railroad construction Camp 20 became the town site of choice. Camp 20 was later renamed Colfax in honor of Schuyler Colfax, who visited the town in 1865 when he was Speaker of the House, assuring the construction crew that the government was committed to completing the transcontinental railroad. The town went on to become a major switching and maintenance station for the Central Pacific and Southern Pacific, and in 1876 a terminus for the Nevada County Narrow Gauge Railroad, serving the fruit orchards of the area and Nevada County gold mines. Colfax was incorporated as a city in 1910.

Population and Growth Trends

The City of Colfax has a population of approximately 1,500 in 2000, only slightly more populated than it was in the mid 1800s. The 2004 population, according to the Department of Finance, was 1,756. The City had a 15 percent increase in population between 1990 and 2000.

Today Colfax businesses include the largest publisher of medical forms in Northern California, and Colfax continues to grow as a location for light industry. Housing stock in the City increased by only 2 percent between 1990 and 2000. The population is projected to increase by 38 percent between 2000 and 2020, growing to 2,900 according to the 2004 Wastewater Treatment Plan. Per capita income in Colfax in 2000 was $37,391.

LINCOLN

Location and Geography

With the exception of the City of Roseville, Lincoln is the western-most incorporated city in Placer County, located just east of Highway 65 and south of Highway 193. The City comprises 18.3 square miles and is at a general elevation of 164 feet above msl.

Brief History

The City of Lincoln was named after Charles Lincoln Wilson, a real estate magnate who is largely credited with bringing the railroad to the area in 1861. The City was incorporated in 1890. Lincoln is the home of one of the County's oldest businesses, the Gladding McBean terra cotta clay manufacturing plant established in 1875. The City continues to support ranching and farming.

Population and Growth Trends

The City of Lincoln was named the fastest growing city in California in 2002. The population grew from approximately 11,205 residents to 24,000 residents from 2000 to 2004. Housing stock in the City increased by 59 percent between 1990 and 2000 and the number of housing units is expected to increase by another 404.9 percent between 2000 and 2020. In 2000, the City had a per capita income of $19,447. Its largest employers include an electronics manufacturing company, Western Placer School District, a lumber company, a retirement community, and a charter school.

LOOMIS

Location and Geography

The Town of Loomis is located approximately 9 miles southwest of Auburn adjacent to I-80. The town ranges in elevation from approximately 399 to 625 feet above msl and covers an area of about 7.3 square miles.

Brief History

As early as 1825, trappers and hunters following the American River came into the Loomis basin. Like the beginnings of many cities in Placer County, Loomis began as a mining town, but soon became a booming center of the fruit-growing industry, supporting many packinghouses. During the 1850s miners worked along Secret Ravine and farmers and ranchers began to move into the Loomis area. The town was established in 1850, but not incorporated until 1984. The Central Pacific Railroad was constructed through Loomis in 1864. By 1872 the transcontinental link was completed and helped to expand the market for fruits, which were being produced on a commercial scale. For several years, fruit from the Loomis area was world renowned for its quality. Eventually disease destroyed many orchards established in the late 1800s and fruit production declined significantly. Today it is a very small part of the town's economy.

Population and Growth Trends

Today the population of the Town of Loomis is approximately 6,260 with a per capita income of $30,384. Between 1990 and 2000 the population increased by 10 percent, while housing stock grew by 12 percent. Housing units are projected to increase by 61.9 percent in the City of Loomis between 2000 and 2020. The population is projected to increase by 57% between 2000 and 2020.

ROCKLIN

Location and Geography

The City of Rocklin is located in south Placer County in the Loomis Basin, 14 miles southwest of Auburn. Rocklin covers an area of approximately 21 square miles and ranges in elevation from 150 to 525 feet above msl in the western foothills of the Sierra Nevada Range. The area consists of urban, agricultural, and riparian habitat areas, partially covered with native oaks and grasslands. The planning area of Rocklin, which includes 9 square miles that are outside the boundaries of the City but included in the "sphere of influence", is divided into 16 community areas.

Brief History

Rocklin began as a railroad town and later became home to several granite quarries. The Gold Rush affected the area, but no major gold discoveries occurred in the vicinity. Rocklin became the principal granite-producer in Sacramento Valley with the first quarry open in 1863. Granite is no longer commercially quarried in Rocklin. The Central Pacific Railroad arrived in Rocklin in May of 1864, making the area an important transportation center. A major locomotive terminal was established in Rocklin in 1866 and served as the railroad's roundhouse until 1908 when it moved to Roseville. The commercial fruit industry also expanded rapidly in the Rocklin

area in the late 1870s and early 1880s, supported mainly by Chinese laborers. In 1894, Japanese laborers began to move into the region, eventually providing almost all of the fruit orchard labor. Today, soils in the area are generally poor quality and do not support commercial agricultural activities, with the exception of livestock grazing. The City of Rocklin was incorporated in 1893, with a population of approximately 1,060.

Population and Growth Trends

The population decreased until 1950 when slight growth began. From 1980 to 1990 the population dramatically increased from 7,344 to 19,033; however, a large reason for this growth was due to the annexation of the Sunset-Whitney area. According to the State Department of Finance, the population of Rocklin has doubled over the past ten years and as of January of 2004 stands at 48,919. Housing stock in Rocklin increased by 93 percent between 1990 and 2000 and is projected to increase by 70.3 percent between 2000 and 2020. Per capita income in the area was $26,910 in 2000. The population is projected to increase by 89.6% between 2000 and 2020.

SPECIAL DISTRICTS

There are several types of districts located and functioning within Placer County. These include independent special districts, school districts, special assessment districts, rapid transit districts, flood control districts, and others.

An independent special district is a local agency of the state formed under state statute to perform specific functions within defined boundaries. Special districts are categorized in several ways. Generally, the most important is by the services that the district may provide. The principal act or state statute under which the district is formed lists the service option(s) available to that district. That district may choose to provide one or all of the services authorized. A listing of some of the types of districts includes:

- Airport Districts
- Cemetery Districts
- County Sanitation Districts
- County Water Districts
- Fire Protection Districts
- Garbage and Refuse Disposal Districts
- Irrigation Districts
- Mosquito Abatement Districts
- Municipal Utilities Districts
- Police Protection Districts
- Public Utility Districts
- Resort Improvement Districts
- Sanitary Districts
- California Water Districts
- Community Service Districts
- County Service Areas
- County Waterworks Districts
- Garbage Disposal Districts
- Hospital Districts
- Library Districts
- Vector Control Districts
- Municipal Water Districts
- Port Districts
- Recreation and Park Districts
- Resource Conservation Districts
- Small Craft Harbor Districts

There are over 55 special districts either partially or wholly within Placer County. All special districts in Placer County, except one, are independent special districts. The single dependent special district is a county service area (CSA28) that is governed by the Board of Supervisors. CSAs are a convenient way to fund and provide services to a single neighborhood. Typical services provided by CSAs include street lighting, road maintenance, and snow removal.

Section 3.0 of this Plan identifies those districts that participated in this Multi-Hazard Mitigation Plan.

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Multi-Hazard Mitigation Plan

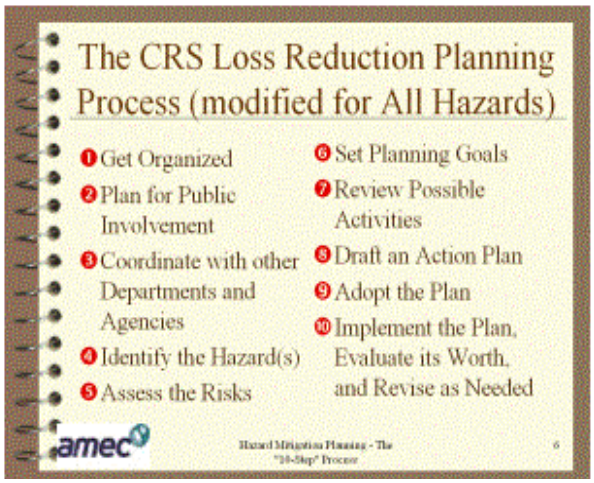
3.0 Planning Process

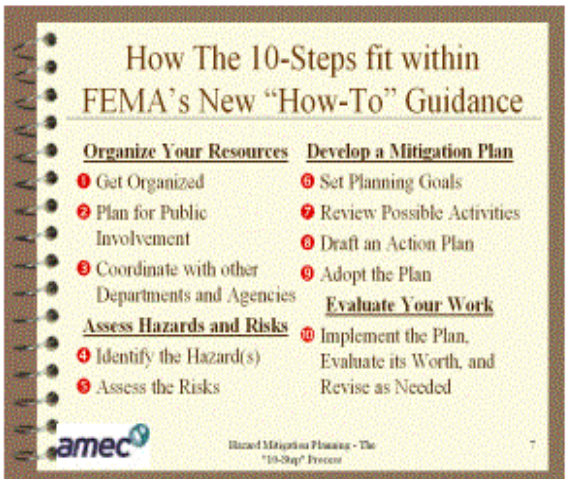
44 CFR 201.6(b): "An open public involvement process is essential to the development of an effective plan".

The Placer County Office of Emergency Services (OES) contracted with Robert Olson Associates (ROA) who subcontracted with AMEC Earth & Environmental (AMEC) to facilitate and develop a DMA Hazard Mitigation Plan. AMEC's role was to:

- Establish a planning organization for Placer County and all of the participants;
- Meet all of the DMA requirements as established by federal regulations, following FEMA's planning guidance;
- Facilitate the entire planning process;
- Identify the data requirements that the participating communities, and other FEMA "eligible applicants" could provide, and conduct the research and documentation necessary to augment that data;
- Develop and facilitate the public input process; and
- Produce the draft and final plan documents.

AMEC established the planning process utilizing the DMA planning requirements and FEMA's associated guidance. Based on Placer County's participation in FEMA's Community Rating System (CRS) with a current rating of six, AMEC also integrated an older, more detailed 10-step planning process that was required, at the time this effort was initiated, for other FEMA mitigation plans such as for FEMA's CRS and Flood Mitigation Assistance (FMA) programs. Thus, AMEC formulated a single planning process to meld these two sets of planning requirements together and meet the requirements of five major programs: CRS, FMA, HMGP, FEMA's Pre-Disaster Mitigation program (PDM) and new flood control projects authorized by the U.S. Army Corps of Engineers (USACE). The graphics below show how the old 10-step process fits within the new 4-phase process.





The following table also serves as a means of cross-referencing the two sets of planning requirements.

Disaster Mitigation Act Planning Regulations (44 *CFR* 201.6)	**FEMA's "old" 10-Step Planning Process (used for CRS and FMA)**
Planning process	
201.6(c)(1)	1. Organize
201.6(b)(1)	2. Involve the public
201.6(b)(2) & (3)	3. Coordinate
Risk assessment	
201.6(c)(2)(i)	4. Assess the hazard
201.6(c)(2)(ii) & (iii)	5. Assess the problem
Mitigation strategy	
201.6(c)(3)(i)	6. Set goals
201.6(c)(3)(ii)	7. Review possible activities
201.6(c)(3)(iii)	8. Draft an action plan
Plan maintenance	
201.6(c)(5)	9. Adopt the plan
201.6(c)(4)	10. Implement, evaluate, revise

LOCAL GOVERNMENT / COMMUNITY PARTICIPATION

The DMA planning regulations and guidance stress that each local government seeking the required FEMA approval of their mitigation plan must:

- Participate in the process;
- Detail areas within the planning area where the risk differs from that facing the entire area;
- Identify specific projects to be eligible for funding; and
- Have their governing board formally adopt the plan.

For Placer County, "participation" means the local government representatives will:

- Attend the Hazard Mitigation Planning Committee meetings;
- Provide available data that is requested by the Hazard Mitigation Planning Committee;
- Review and provide/coordinate comments on the draft plans;
- Advertise, coordinate and participate in the public input; and
- Coordinate the formal adoption of the plan by the County Board of Supervisors.

THE PLANNING PROCESS

As described in the following sections, the planning process encompassed Planning Step 1: Organize Your Resources; Planning Step 2: Plan for Public Involvement; and Planning Step 3: Coordinate with other Departments and Agencies.

Step 1: Get Organized – Building the Planning Team

With Placer County's commitment to participate in the DMA/CRS planning process, the ROA/AMEC team next established a framework and organization for development of the Plan. This Plan was developed by a planning team led by the Placer County Emergency Services Program Manager and comprised of key County, City and District stakeholder representatives. The team meetings were facilitated by ROA/AMEC. This team is called the Hazard Mitigation Planning Committee or HMPC. The HMPC met six times over an eight-month period. Typical representatives to each meeting included, the police, fire, engineering, GIS, public information, planning, public works, utilities, and finance departments as well representatives from the local school board, local college and various other interested state and federal agencies. The list of participating HMPC members is provided below. Attendees and agendas for each of the HMPC meetings are on file with the Placer County OES. The HMPC will stay in existence for the purpose of implementing and updating this plan.

Participating HMPC members include the following:

- Ackerman Elementary School District
- Alpine Springs County Water District
- Alta-Dutch Flat School District Elementary
- Auburn Area Recreation and Park District
- Auburn Union Elementary School District
- California Department of Forestry and Fire Protection
- California OES Inland Region
- Caltrans
- City of Auburn
- City of Colfax
- City of Lincoln
- City of Rocklin
- Colfax Elementary School District
- Donner Summit PUD
- Dry Creek Joint Elementary School District
- Eureka Union School District
- Foresthill Fire Protection District & Iowa Hill
- Foresthill Union School District
- Loomis Fire Protection District
- Loomis Union School District

- Mid-Placer Public School Transportation Agency
- National Weather Service, Sacramento
- Newcastle Elementary School District
- Newcastle Fire Protection District
- North Fork American River Watershed Group
- North Tahoe Fire Protection District
- Northstar Community Services District
- Ophir Elementary School District
- Penryn Elementary School District
- Penryn Fire Protection District
- Placer Consolidated Fire Protection District
- Placer County Agricultural Commission
- Placer County FDUD
- Placer County Fire Chief's Association
- Placer County Fire Safe Alliance
- Placer County Flood Control and Water Conservation District
- Placer County OES
- Placer County Office of Education
- Placer County Resource Conservation District
- Placer County Water Agency
- Placer Hills Fire Protection District
- Placer Hills Union School District
- Placer Union High School District
- Ponderosa Fire Safe Council
- Roseville City School District
- Roseville Joint Union High School District
- San Juan Water District
- Sierra Joint Community College District
- Sierra Lakes County Water District
- South Placer Fire
- South Placer Municipal Utility District
- Squaw Valley Fire Department
- Squaw Valley Public Service District
- State Highway Patrol
- Suburban Pines Community Service
- Tahoe National Forest
- Tahoe Truckee Unified School District
- Town of Loomis
- Weimar-Applegate-Colfax Area Municipal Advisory Council

Step 2: Plan for Public Involvement – Engaging the Public

An open public planning process was utilized, providing opportunities for the public and stakeholders to comment on the plan at all stages of its formation. At HMPC Meeting #1 in June 2004, the plan for public involvement was discussed and agreed upon. Public involvement activities included: invitations to participate in the planning process; a Public Awareness Campaign, which included, press releases, website postings, and flyers; and collection of public comments to the Draft Plan(s).

Early on during the plan development stage, interested members of the general public were invited to participate on the HMPC, at their choosing. The invitations were extended from the County OES and Public Information Officer (PIO) through a Planning Public Awareness Campaign that consisted of an initial press release/news article and subsequent posting to the County website. HMPC meeting schedules and plan updates were also posted on the County's web page. All articles, press releases and Internet postings are on file with the County OES. The Plan is online and available for viewing at http://www.placer.ca.gov/emergency/dma-plan/hazard-mitigation-plan.htm.

A second press release and web posting were developed prior to the public review (and formal adoption) of this Multi-Hazard Mitigation Plan. This public review took place through two formal public meetings conducted within the County, one in Auburn (west Placer) and one in the Tahoe area (east Placer). Stakeholder and public comments are reflected in the preparation of the Plan, including those sections addressing mitigation goals and action strategies.

In addition, members of the public provided input during the planning process. Input received by the public was discussed by the HMPC and addressed in the Plan as determined appropriate by the team.

Step 3: Coordinate with other Departments and Agencies

Early on in the planning process, the HMPC determined that data collection, mitigation and action strategy development, and plan approval, would be greatly enhanced by inviting other state and federal agencies to participate in the planning process. Based on their involvement in hazard mitigation planning, their landowner status in the county, and/or their interest as a neighboring jurisdiction, representatives from the following key agencies were invited to participate as members of the HMPC:

- Bureau of Land Management, Fire & Fuels Management, Folsom Field Office
- California Department of Forestry and Fire Protection
- California Department of Transportation (Caltrans)
- California Department of Water Resources
- California Highway Patrol
- California Office of Emergency Services
- City of Roseville
- FEMA Region IX
- High Sierra Resource Conservation & Development Council
- Kinder Morgan Energy Partners
- National Weather Service
- Pacific Gas & Electric
- Placer County Fire Safe Alliance
- Placer County Resource Conservation District
- U. S. Forest Service, Tahoe National Forest
- U.S. Army Corps of Engineers
- U.S. Bureau of Reclamation
- U.S. Fish & Wildlife, California-Nevada Operations and Sacramento Field Office
- Union Pacific Railroad
- Union Pacific Railroad Western Region
- USDA Natural Resource Conservation Service

In addition to the agencies listed above, the HMPC utilized the resources of the agencies listed below in the development of this Plan. Specifically, technical data, reports and studies were obtained from those agencies listed below as well as those identified above either through web-based resources or directly from agency resources.

- American River Watershed Group
- Bureau of Land Management
- California Department of Health
- California Fire Alliance

- California Geological Survey
- Governor's Office of Emergency Services
- National Interagency Fire Center
- National Oceanic and Atmospheric Administration, National Climatic Data Center
- State and Federal Historic Preservation Districts
- The Natural Resource Conservation Service and it's predecessor, the Soil Conservation Service
- U.S. Environmental Protection Agency
- U.S. Geological Survey

Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is also paramount to the success of this Plan. Hazard mitigation planning involves identifying existing community policies, tools and actions that will reduce a community's risk and vulnerability from natural hazards. Placer County utilizes a variety of comprehensive planning mechanisms such as the County General Plan and community plans, the Zoning Ordinance, emergency response and mitigation plans, and municipal ordinances and building codes to guide and control community development. Integrating existing planning efforts and mitigation policies and action strategies into this Multi-Hazard Mitigation Plan establishes a credible and comprehensive plan that ties into and supports other community programs. This Plan, therefore, links the specific natural hazards that present a risk in the community with the existing mitigation elements found in the various County plans. The development of this Plan utilized information included in the following community plans, studies, reports, and initiatives:

- Auburn Ravine, Coon, and Pleasant Grove Creeks Flood Mitigation Plan, 1993
- Auburn State Recreation Area Prefire Management Plan
- Auburn/Bowman Community Plan Hydrology Study 1992
- City of Auburn General Plan, 1993
- City of Colfax General Plan, 1998
- City of Lincoln General Plan, 2003
- City of Rocklin Floodplain Management Program
- City of Rocklin General Plan, 2004 (draft)
- Community Fire Safe Plan for Placer County, Phase I, updated January 2004
- Community Wildfire Protection Plans for the California Portion of the Lake Tahoe Basin –Draft, 2004
- Dry Creek Watershed Flood Control Plan, 1992
- Foresthill Emergency Plan
- Forests with a Future Campaign
- Greater Auburn Area Community Fire Safe Plan
- Iowa Hill Divide Public Lands Forest Management Plan
- Placer County Chipper Program
- Placer County Community Plans for various areas
- Placer County Defensible Space Inspection Project

- Placer County Emergency Response Plan
- Placer County Flood Control and Water Conservation District, Flood Response Handbook, 2002
- Placer County Flood Control and Water Conservation District's Stormwater Management Manual, 1990
- Placer County General Plan 1994
- Placer County General Plan Background Report, 1994
- Placer County Local Emergency Operations Plan, 1997
- Placer County Stormwater Management Plan 2003-2008
- Placer/Sutter County Joint Flood Study, Auburn Ravine, Coon, and Pleasant Grove Creeks, 1994
- Squaw Valley Public Service District, Disaster Response Plan
- Town of Loomis General Plan, 2001

Placer County Human-Caused Hazards Summary

As indicated in Section 1.0, an analysis of human-caused hazards was not included in the scope of this effort. However, it is important to be aware of some of the other ongoing community efforts with respect to hazard mitigation planning and human-caused hazards. These efforts are described in the following paragraphs.

During 2003-4 Placer County and the incorporated Communities of Auburn, Colfax, Lincoln, Loomis, Rocklin, and Roseville participated in a Federal Department of Homeland Security (DHS) county-wide (Operational Area) project funded through the California Office of Emergency Services (OES) to assess terrorist threats and natural and human-caused hazards, to update existing or prepare new Emergency Operations Plan (EOP), and other related activities. The work was completed in May 2004. The new EOPs now conform to the State's Standardized Emergency Management Systems (SEMS) requirements and the plans have been adopted or are on the agendas for adoption by the County Board of Supervisors and the various city and town councils.

The hazard information used was based largely on the County's and cities' General Plan Safety Elements; where they existed, applicable portions the County's and cities' Emergency Operations Plans; data collected from various technical studies and Internet sites; discussions with governmental officials at various levels and representatives of private organizations having significant facilities in the County; and the results of a Homeland Security Assessment completed for Placer County.

With the exception of discussing potential terrorist targets, the other summary hazards information has been incorporated into the appropriate sections of the County's and cities' emergency response plans. Especially for natural hazards, this provided baseline data that was expanded on and used for this Plan.

Terrorism: A Note

Terrorist threats fall into three main categories: concentrated populations (e.g., office buildings, churches, casinos, stadiums), system elements (e.g., railroad and highway bridges, pipelines, communications nodes); and facilities/structures (e.g., pumping plants, communications centers, medical facilities). A threat, vulnerability, capabilities, and needs assessment has been completed. Although the document is confidential, the work involved analyzing and rating potential threats, determining the vulnerability of the community, evaluating existing capabilities and determining additional community needs.

The County's *Terrorism Contingency Plan* (January 2004) notes that "At least three important considerations distinguish terrorism hazards from other types of hazards. First, in the case of chemical, biological, and radioactive agents, their presence may not be immediately obvious, making it difficult to determine when and where they have been released, who has been exposed, and what danger is present for first responders and medical technicians. Second, there is limited scientific understanding of how these agents affect the population at large. Third, terrorism evokes very strong emotional reactions, ranging from anxiety, to fear, to anger, to despair, to depression."

Hazardous Materials Emergency Response Plans

With Federal financial support, the City of Roseville and Placer County (for the remainder of the County) are reviewing and updating their respective Hazardous Materials Emergency Response Plans to:

- Increase local effectiveness when handling hazardous materials accidents and incidents;
- Enhance implementation of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA);
- Incorporate the challenges added by responses to increases in population, businesses, and transportation networks; and to
- Convert the Placer Operational Area plan to a Contingency Plan Annex to the Emergency Operations Plan (EOP).

This work is scheduled for completion by June 30, 2005.

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Multi-Hazard Mitigation Plan

4.0 Risk Assessment

44 CFR 201.6(c)(2)(ii): "The risk assessment shall include…A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community".

Risk from natural hazards is a combination of hazard, vulnerability and exposure. The risk assessment process measures the potential loss to a community, including loss of life, personal injury, property damage, and economic injury resulting from a hazard event. The risk assessment process allows a community to better understand their potential risk and associated vulnerability to natural hazards. This information provides the framework for a community to develop and prioritize mitigation strategies and plans to help reduce both the risk and vulnerability from future hazard events.

This risk assessment for Placer County followed the methodology described in the FEMA publication 386-2 Understanding Your Risks – Identifying Hazards and Estimating Losses (FEMA, 2002) and was based on a four-step process: (1) Identify Hazards, (2) Profile Hazard Events, (3) Inventory Assets, and (4) Estimate Losses.

This risk assessment covers Planning Step 4: Assess the Hazard and Planning Step 5: Assess the Problem. It also includes a third component, Existing Mitigation Capabilities, where the risk and vulnerability are analyzed in light of existing mitigation measures such as building codes, warning systems and floodplain development regulations.

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Multi-Hazard Mitigation Plan

4.1 Hazard Identification

The Placer County HMPC conducted a Hazard Identification study to determine what hazards threaten the planning area. This section of the plan documents the previous occurrence of natural hazards, those that might occur in the future, and the likelihood of their recurrence.

Utilizing existing multi-hazard plans available from participating jurisdictions as well as input from planning meetings, the HMPC agreed upon a list of those natural hazards of concern to the participating communities. Historical data from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC), CA-OES and other sources were also examined to confirm the significance of these hazards to the planning area. Significance was measured in general terms, focusing on key criteria such as frequency and resulting damage, including, deaths/injuries and property, crop, and economic damages to a community. The natural hazards evaluated as part of this plan include those that have either historically or have the future potential to cause significant human and/or monetary losses.

The natural hazards identified and investigated for the Placer County multi-jurisdictional plan include:

- Severe Weather
    - Heavy Rains/Thunderstorms/Wind/Lightning
    - Snow
    - Tornadoes
    - Fog
    - Drought
- Floods
- Dam Failure
- Landslides
- Avalanches
- Wildfires
- Earthquakes
- Volcanoes
- Agricultural Hazards
- Natural Health Hazards
    - West Nile Virus

Also discussed by the HMPC, the natural hazard listed below were eliminated from further consideration because: (1) they either occur rarely or not at all, and (2) when they do occur, they are limited in magnitude - no or very limited damages are sustained.

- Hurricanes

DISASTER DECLARATION HISTORY

One method to identify hazards based upon past occurrence is to look at what events triggered federal and/or state disaster declarations within the planning area. Disaster declarations are granted when the severity and magnitude of the event's impact surpass the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state government's capacity is exceeded, a federal disaster declaration may be issued, allowing for the provision of federal disaster assistance.

Since the passage of the Stafford Act in 1988, FEMA Region IX has experienced 50 Presidential Disaster Declarations, obligating $10.4 billion to date. Within Placer County, there have been seven federal and four state declarations since 1950. All seven of the federal declarations and three of the state declarations were associated with flood events.

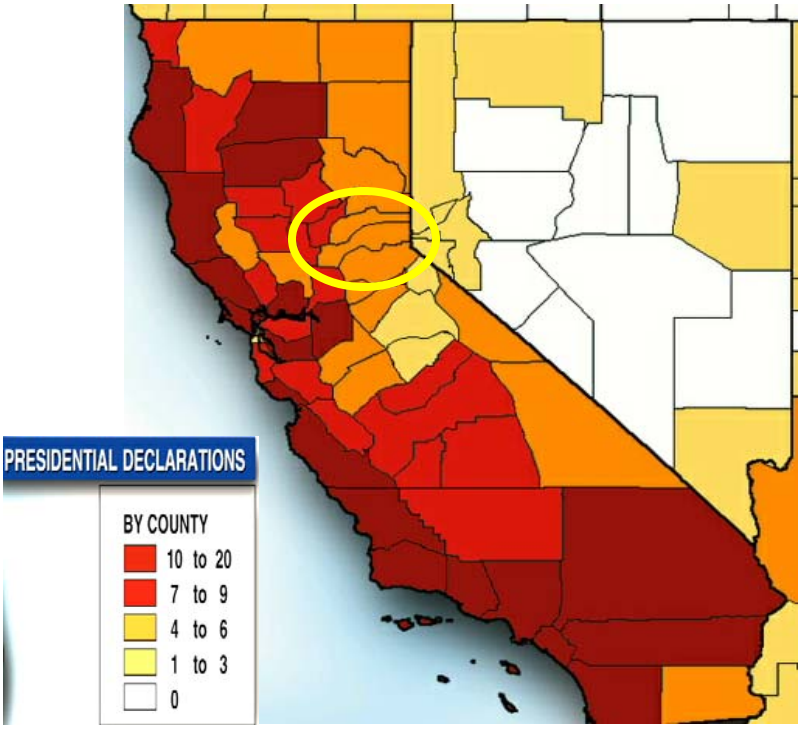
It is important to note that the federal government may issue a disaster declaration through the U.S. Department of Agriculture and/or the Small Business Administration (SBA), as well as through FEMA. The quantity and types of damage are the determining factors. In fact, recent SBA declarations included several declarations for Placer County making small, non-farm businesses eligible for Economic Injury Disaster Loans as a result of damages associated with extreme weather events occurring between January 2001 and September 2003. These include the following declarations:

- SBA – Placer County, January 2004 (Extreme heat followed by unseasonable rainfall)
- USDA - Placer County, December 2003 (Extreme heat followed by unseasonable rainfall)
- USDA – Placer County, November 2003 (Unseasonable rainfall)
- SBA #9ZG4 – San Luis Obispo and Placer Counties Ag losses, Oct/Nov 2003 (Unseasonable rainfall and wheat stripe rust)
- SBA #ZD6 – Placer County Ag Losses, August 2003 (rain, poor winter chill and high heat)
- SBA #9Z79 – Sutter and Yuba Summer Rain 2003 (unseasonable late rainfall)
- SBA #9Z00 – Colusa & Sacramento Agricultural Loss, June-August 2003 (extreme heat followed by unseasonable rainfall)
- SBA #9X85 – CA Statewide Agricultural Losses, March-May 2003 (excessive rain, hail, freezing temperatures & wheat stripe rust)
- SBA #9X63 – Nevada Drought, January 2003-ongoing (drought and insect infestation)
- SBA #9X60 – Rain & Wheat Stripe Rust March-May 2003
- SBA #9V58 – El Dorado & Placer Counties October 2002 Drought
- SBA #9V57 – Sutter County December 2002 Storms (rain & wind)
- SBA #9S95 – Nevada Drought 2003-02
- SBA #9O39 – Washoe County Fires & Drought
- SBA #9M64 – Placer County Drought, January 2001-ongoing

The following map, from the FEMA Website, displays the number of Presidential Disaster Declarations within the planning area between 1965 and 2002.

Presidential Disaster Declarations Map

January 1, 1965 to November 1, 2002



Other Disaster data obtained by the HMPC is provided, in chronological order, in the table below. In general, this data is incomplete and inconsistent from source to source.

Date	Event	Location	Declaration Type	Damages*	Source of Data	Notes
11/21/1950	Flooding	Placer County	State		CA-OES	CA OCD 50-01
12/23/1955	Flooding	Placer County	Federal		CA-OES	CD 47-DR-CA
01/13/1957	Thunderstorm, Wind	Placer County			NCDC	
02/26/1958	Flooding	Placer County	State		CA-OES	CDO 58-03
04/04/1958	Flooding	Placer County	Federal		CA-OES	CD 82-DR-CA

Date	Event	Location	Declaration Type	Damages*	Source of Data	Notes
10/24/1962	Flooding	Placer County	Federal		CA-OES	OEP-138-DR-CA
02/07/1963	Flood and Rainstorms	Placer County	Federal		CA-OES	145
12/29/1964	Late Winter Storms/Flooding	Placer County	Federal		CA-OES	OEP-183-DR-CA
09/18/1965	Major and Widespread Fires	Placer County	County	113,766 acres/41 buildings destroyed	CA-OES	
12/12/1967	Severe Winter Storm	Placer County		$8,620.69	Sheldus: USC Hazards Research Lab	FIPS: 6061
01/26/1969	Storms	Placer County	Federal	47 dead; 161 injured; $185 million – public; $115 million-private	CA-OES	
04/17/1972	Freeze and Severe Weather	Placer County	County	Crop loss-$$	CA-OES	
1/16/1973	Severe Thunderstorm	Entire State of California			Sheldus: USC Hazards Research Lab	FIPS: 6061
02/28/1973	Storms and Floods	Placer County	County	$1.357 million – public; $507,000 – private -	CA-OES	
01/12/1977	Drought	Placer County	State		CA-OES	GP – 1977 Drought
12/23/1979	Severe Winter Storm				Sheldus: USC Hazards Research Lab	FIPS: 6061
04/03/1980	Heavy Rains/ Flooding	Placer County	State		CA-OES	
03/15/1983	Winter Storms	Placer County	Federal	$151,185,641 – public; $158,641 – private	CA-OES	FEMA 682-DR-CA
03/22/1983	Tornado	Placer County		$250,000	NCDC	

Date	Event	Location	Declaration Type	Damages*	Source of Data	Notes
02/18/1986	Springs Storms/ Flooding	Placer County	Federal	$157,987,493 – public; $249,551,411 – private; 12,477 homes damaged; 1,382 homes destroyed; 967 businesses damaged; 185 businesses destroyed.	CA-OES	FEMA 758-DR-CA
09/10/1987	Wildland Fires	Placer County	County	$18 million (estimated); 1,070 fires; 534,661 acres burned; 835 sq. miles; 38 homes destroyed	CA-OES	
04/23/1990	Tornado	Placer County		$3,000	NCDC	
01/10/1995	Severe Winter Storms/ Flooding	Placer County	Federal	$3,395,399 PA; $299.6 million – public; 128.4 million – individuals; 58.4 million – businesses; $158 million – highways; $97 million – agricultural.	CA-OES, PA Costs only	FEMA 1044-DR-CA
01/10/1995	Late Winter Storms	Placer County	Federal	$190.6 million – public; $122.4 million – individual; $46.9 million – businesses; $79 million – highways; $651.6 million – agricultural.	CA-OES	FEMA 1046-DR-CA
12/22/1996	Thunder Storm, Wind	Roseville			NCDC	
01/04 /1997	Winter Storms/ Flooding	Placer County	Federal	$28.7M total or 1.8 billion total; $3,339,568 PA; 300 square miles of land flooded; 23,000 homes, 2,000 businesses damaged or destroyed; 8 deaths.	NOAA/ Sheldus: USC Hazards Research Lab/ CA-OES	FEMA 1155-DR-CA
01/22/1997	Flash Flood	Roseville			NCDC	Included in FEMA 1155

Date	Event	Location	Declaration Type	Damages*	Source of Data	Notes
01/26/1997	Flash Flood	Roseville			NCDC	Included in FEMA 1155
01/26/1997	Flash Flood	Granite Bay		$150,000	NCDC	Included in FEMA 1155
04/02/1997	Wind	Kings Beach		$20,000	Sheldus: USC Hazards Research Lab	FIPS: 6061
01/12/1998	Heavy Rain	Placer County			NCDC	
01/18/1998	Severe Storm	Placer County			Sheldus: USC Hazards Research Lab	FIPS: 6061
09/05/1998	Heavy Rain	Brockway			NCDC	
09/05/1998	Heavy Rain	Kings Beach			NCDC	
09/26/1998	Thunderstorm, Hail, Wind	Kings Beach		$1,000	NCDC	
09/26/1998	Waterspout	Tahoe City			NCDC	
01/22/2000	Heavy Rain	Auburn, Blue Canyon, Newcastle, Roseville			NCDC	
02/11/2000	Heavy Rain	Roseville		$10,000	NCDC	
07/11/2001	Thunderstorm, Wind/hail	Auburn			NCDC	
09/19/2002	Wildfire (Sierra Fire)	Placer County	Federal – Fire Management Assistance Grant	$59,730	CA-OES	FMAG – 2463
11/07/2002	Heavy Rain	Homewood			NCDC	
07/23/2003	Hail	Kings Beach			NCDC	

*Note: Damage totals are for all affected areas and may not be specific to Placer County.

SEVERE WEATHER

Almost all of Placer County's state and federal disaster declarations are a direct result of extreme weather conditions. For this plan, severe weather is discussed in the following subsections:

- Heavy Rain/Thunderstorms/Wind/Lightning
- Snow
- Tornadoes
- Fog
- Drought

Severe weather conditions such as extreme heat and cold also occur in the County. As there were no documented damages associated with these weather conditions beyond crop-related damages, these are discussed in the section on agricultural disasters.

Weather conditions can vary greatly from the western portion to the eastern portion of Placer County due to topographical changes and variance in elevation. Therefore, for the purpose of this Section, the County will be described as two distinct sections: western Placer County, which is mostly below an elevation of 4,000 feet above sea level, is generally below the snowfall region, and includes the Community of Foresthill and all land to the west (including all incorporated cities and towns); and eastern Placer County, which is generally above 4,000 feet above sea level, receives snowfall, and includes all of the County east of Foresthill.

Heavy Rain/Thunderstorms/Wind/Lightning

Severe storms/thunderstorms in the planning area generally include heavy rains often accompanied by strong winds, lightning, and hail. Tornadoes often occur during these big storms. Thunderstorms can produce a strong rush of wind known as a downburst, or straight-line winds which may exceed 120 miles per hour. These storms can overturn mobile homes, tear roofs off of houses and topple trees.

Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: (1) Hail, three-quarters inch or greater; (2) Winds gusting is excess of 50 knots (57.5 mph); or (3) A tornado.

Lightning is defined as any and all of the various forms of visible electrical discharge caused by thunderstorms. Thunderstorms and lightning can occur throughout the year and are not always accompanied by rain. Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be directly struck and this impact may result in an explosion, burn, or total destruction. Or, damage may be indirect when the current passes through or near it.

Past Occurrences

As discussed further in the following sections, heavy rains and severe storms occur in the planning area primarily during the late fall, winter and spring seasons.

Heavy rain is the most frequent occurrence of severe weather occurrences within the County. The bulk of the rain occurs during the months of November through April but can be quite variable depending on different regions of the County. Due to the dramatic change in elevation from the western portion of Placer County to the eastern limit (from approximately 100 feet to more than 9,000 feet above sea level), precipitation and temperature can vary greatly throughout the County. According to available NCDC data, two weather stations are located within western Placer County (Auburn and Colfax) and two stations are located in eastern Placer County (Blue Canyon and Tahoe City). Weather data is also provided for Rocklin, however, only through 1976.

In addition to the weather stations, both the Placer County Flood Control and Water Conservation District and the City of Roseville maintain a system of ALERT Flood Warning gages, including 28 precipitation gages and 22 stream level gages located throughout western Placer County.

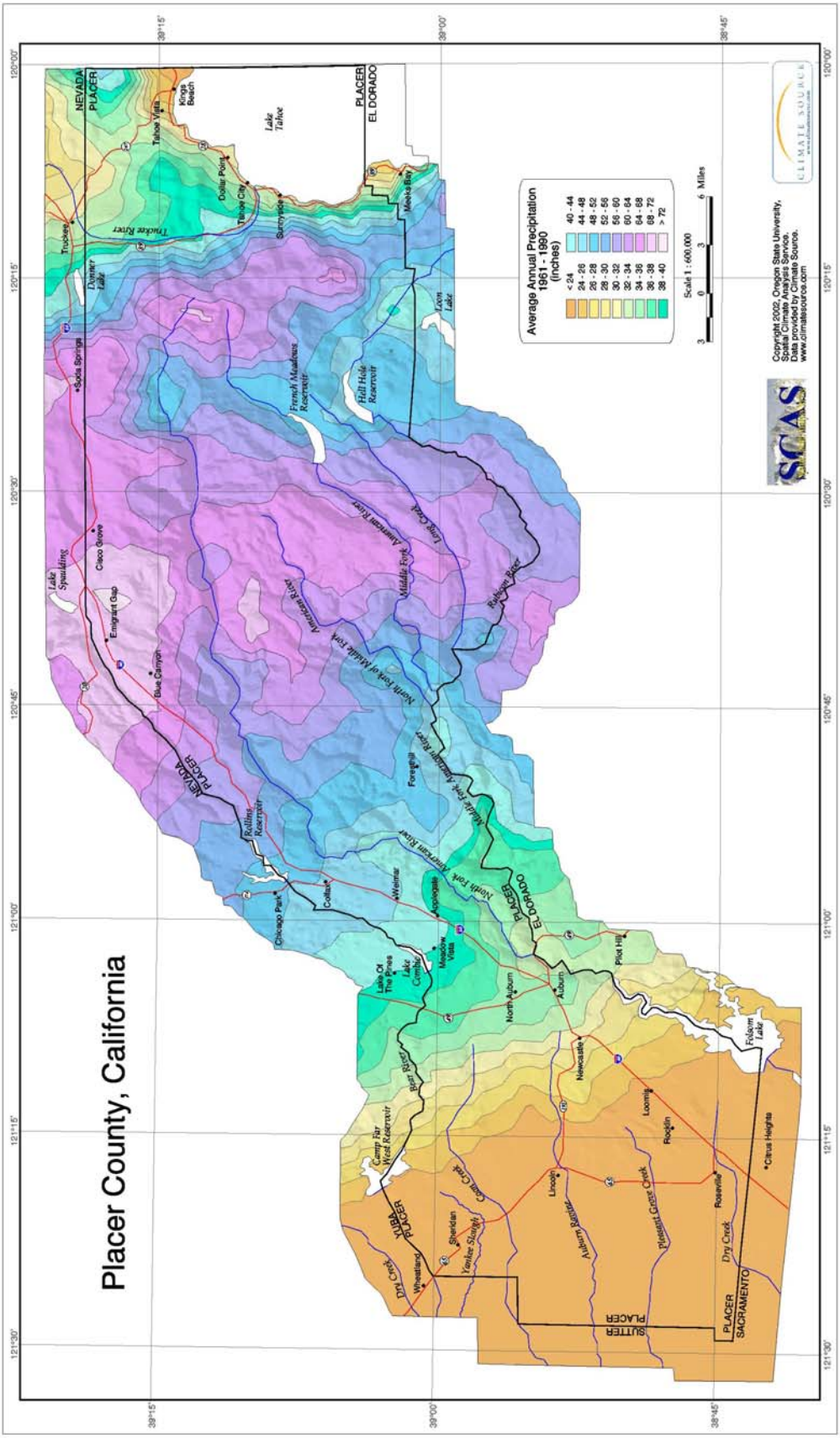
Western Placer. Average annual rainfall in western Placer County ranges from about 23 inches to 45 inches per year. From 1914 through 2001, annual rainfall averaged 34.63 inches in the City of Auburn. During the same time period, the highest recorded annual rainfall for Auburn is 64.87 inches in 1983; the highest recorded rainfall for a 24-hour period in Auburn is 5.41 inches on October 13, 1962. The lowest annual rainfall total in Auburn is 11.6 inches in 1976. Between 1948 and 2002 the highest recorded annual rainfall for Colfax is 86.91 inches in 1983; the lowest annual rainfall in Colfax is 15.38 inches in 1976. The highest recorded rainfall for a 24-hour period in Colfax is 10.02 inches on October 13, 1962.

In western Placer County, monthly average maximum temperatures in the warmest months (May through October) range from the mid 70's to the low 90's. Monthly average minimum temperatures from November through April range from the mid 30's to the mid 40's. The highest recorded daily extremes in western Placer County include 115 degrees Fahrenheit (°F) on June 16, 1961 in Rocklin, 113°F on July 14, 1972 in Colfax, and 111°F in Auburn on August 10, 1978**.** The lowest recorded daily extremes include 9°F in Colfax on December 10, 1972, 15°F on December 11, 1972 in Rocklin, 16°F on December 9, 1972 in Auburn.

Eastern Placer. Average annual rainfall in eastern Placer County ranges from 45 inches to 75 inches. From 1914 through 2001, annual rainfall averaged 68.21 inches in Blue Canyon in the northern portion of the County. A large area, which centers on Tahoe National Forest, receives 55 to 65 inches of precipitation per year. A small pocket of the County located approximately 10 miles east of Blue Canyon receives the largest amount of precipitation on average at 75 to 85 inches per year. Between 1948 and 2002 the highest recorded annual rainfall for Blue Canyon is 121.71 inches in 1983; the lowest annual recorded rainfall is 23.48 inches in 1976. Tahoe City's highest recorded annual precipitation was 66.41 inches in 1996.

Average maximum temperatures in eastern Placer County during the months of May through October range from the low 60's to high 70's, whereas monthly average minimum temperatures from November through April range from the low 20's to high 30's. The highest recorded daily extremes in eastern Placer County include 94°F in Tahoe City on August 15, 1933 and 97°F in Blue Canyon on August 8, 1978. The lowest recorded temperatures include 3°F for Blue Canyon on December 9, 1972, and -16°F for Tahoe City, on December 11, 1972.

The map on the following page shows average annual precipitation for Placer County, California.


Placer County, California
Average Annual Precipitation
1961 - 1990
(inches)
< 24
24 - 26
26 - 28
28 - 30
30 - 32
32 - 34
34 - 36
36 - 38
38 - 40
40 - 44
44 - 48
48 - 52
52 - 56
56 - 60
60 - 64
64 - 68
68 - 72
> 72
Scale 1 : 600,000
Miles
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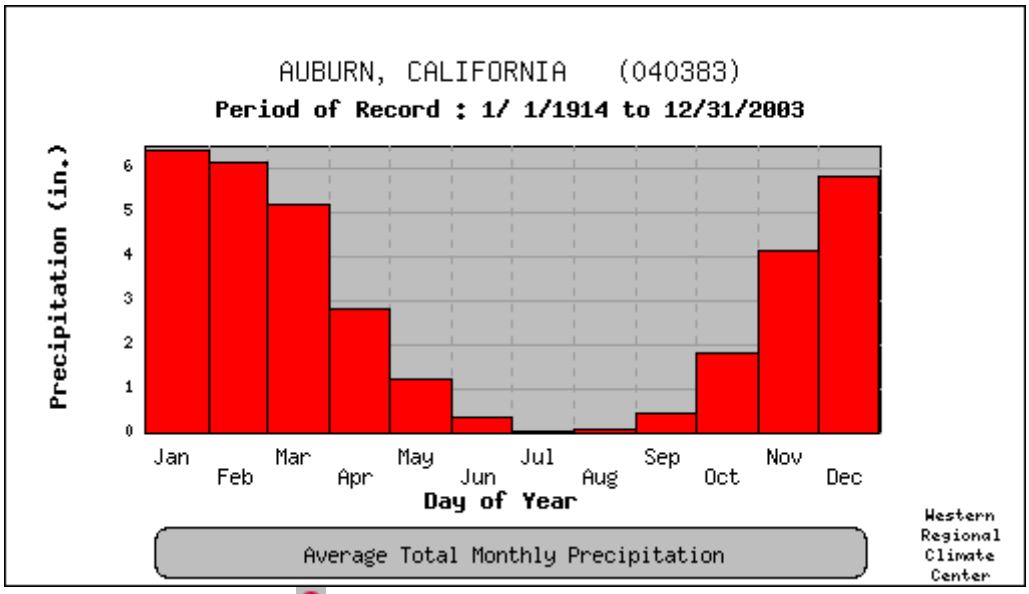
SCAS
CLIMATE SOURCE
NEVADA
PLACER
EL DORADO
YUBA
SUTTER
SACRAMENTO
Lake Tahoe
Truckee River
Donner Lake
Soda Springs
Cisco Grove
Emigrant Gap
Blue Canyon
Lake Spaulding
Rollins Reservoir
Chicago Park
Colfax
Weimar
Applegate
Meadow Vista
Lake Combie
Lake Of The Pines
Bear River
Camp Far West Reservoir
Wheatland
Sheridan
Yankee Slough
Coon Creek
Auburn Ravine
Lincoln
Newcastle
North Auburn
Auburn
Pilot Hill
Loomis
Rocklin
Roseville
Citrus Heights
Folsom Lake
Pleasant Grove Creek
Dry Creek
Foresthill
North Fork American River
Middle Fork American River
North Fork of Middle Fork
American River
Middle Fork
Long Creek
Rubicon River
French Meadows Reservoir
Hell Hole Reservoir
Loon Lake
Meeks Bay
Sunnyside
Tahoe City
Dollar Point
Tahoe Vista
Kings Beach
Truckee
39°15'
39°00'
38°45'
120°00'
120°15'
120°30'
120°45'
121°00'
121°15'
121°30'

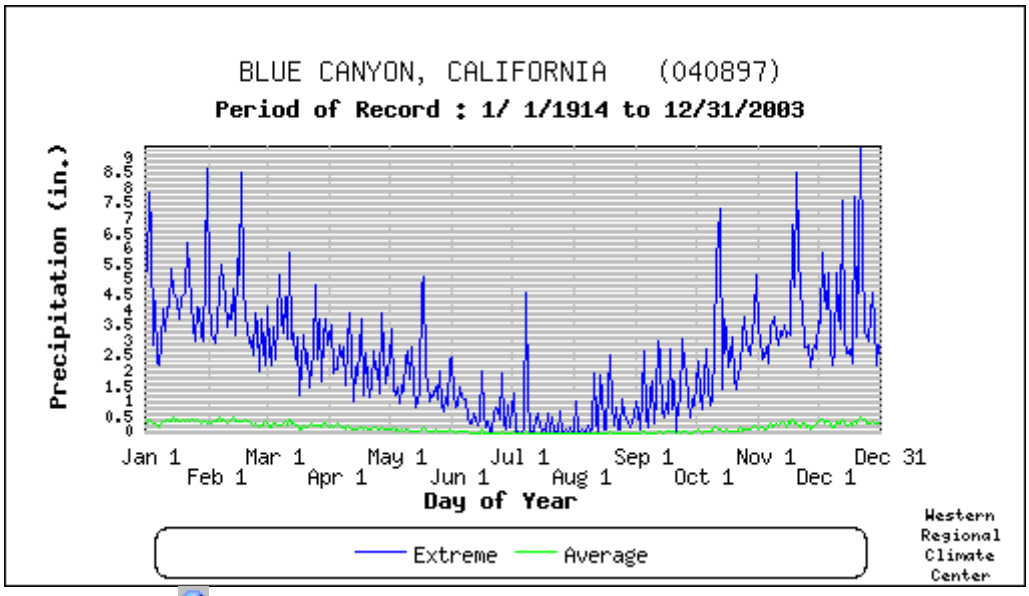
The following graphs illustrate recorded weather conditions for specific areas within Placer County.

Auburn, California
Monthly Average Total Precipitation



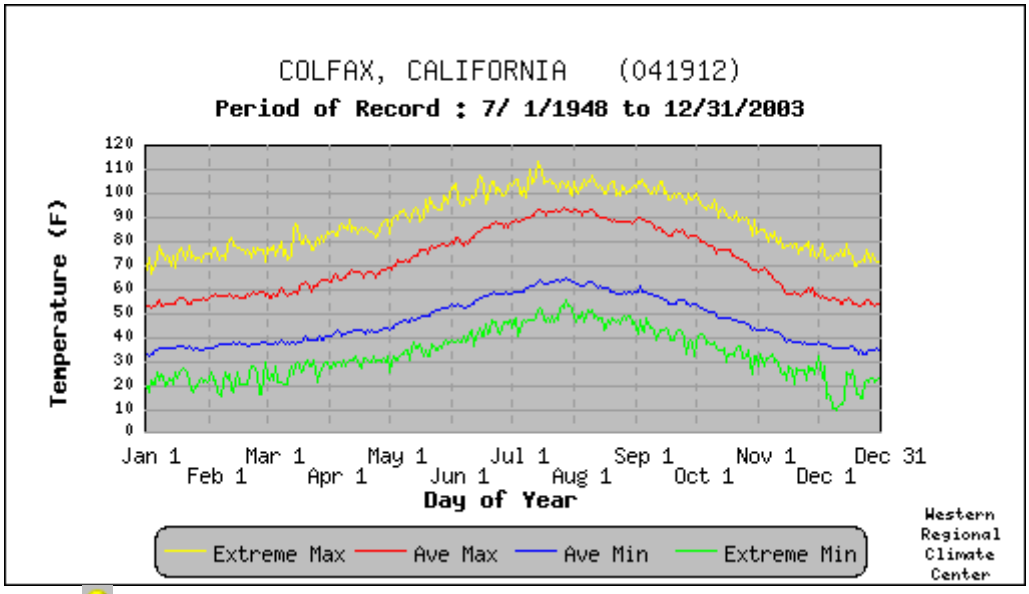
- Average precipitation recorded for the month.
(Source: Western Regional Climate Center)

Blue Canyon, California
Daily Precipitation Average and Extreme



- Extreme is the greatest daily precipitation recorded for the day of the year.
- Average is the average of all daily precipitation recorded for the day of the year.
(Source: Western Regional Climate Center)

Colfax, California
Daily Temperature Averages and Extremes



- Extreme Max. is the maximum of all daily maximum temperatures recorded for the day of the year.
- Ave. Max. is the average of all daily maximum temperatures recorded for the day of the year.
- Ave. Min. is the average of all daily minimum temperatures recorded for the day of the year.
- Extreme Min. is the minimum of all daily minimum temperatures recorded for the day of the year.

(Source: Western Regional Climate Center)

In conjunction with those weather events previously listed in the Disaster Declaration Section of the Plan, the additional storm events and details were identified by the HMPC:

February 1, 1990 – A rain storm caused water damage to a floor in the Forresthill Union School District causing $4,680 in damages.

February 20/21, 1990 – Excessive rain and wind closed the school in Colfax and Iowa Hill; damages unknown.

December 1990 – Freezing temperatures cause the fire sprinkler pipes to burst in the main office of the Placer County Office of Education causing $107,487 in damages.

March 4, 1991 – High winds caused a roof to blow off a building in the Forresthill Union School District causing $ 10,629 in damages.

December 17, 1992 – Heavy snows on a roof caused damages to a building located in the Forresthill Union School District causing $ 3,371 in damages.

January 10/11, 1995- Excessive rain and wind closed the school in Colfax; damages unknown.

March 23, 1995 – Excessive snow closed the school in Colfax; damages unknown.

1995 Winter Storms – The roof drains of the Placer Union High School gymnasium became clogged, damaging the roof and flooding the gymnasium. Damages were incurred and FEMA paid out disaster monies in the amount of $7,108.33.

December 12, 1995 – High winds caused a power outage resulting in the closure of Franklin Elementary, Placer Elementary, and Loomis Grammar School (Loomis Union School District).

1996 – Heavy rain clogged storm drains causing flooding in the Cavitt School gymnasium in south Placer County. Total damage was $85,976 covered by Emergency Services under a disaster declaration.

January 26, 1999 – Excessive snow closed the school in Colfax; damages unknown.

December 16, 2002 – Excessive rain and wind closed the school in Colfax; damages unknown.

December 20, 2002 – High winds caused a power outage resulting in the Franklin Elementary school closure (Loomis Union School District).

October 31, 2003 - Winds associated with heavy storms caused a power outage and closure of Truckee Elementary School. The area affected Truckee, California and Donner Pass Road. Costs associated with closure was paid for by the State insurance program.

Likelihood of Future Occurrences

Given the history of severe weather events in Placer County, severe weather, including thunderstorms, heavy rain, wind and lightning are very likely to continue to occur annually in the Placer County planning area.

Snow

The western portion of Placer County does not receive snowfall on a regular seasonal basis; however, the eastern portion of the County receives abundance of snow, mostly between the months of November and March. Between the period from 1914 to 2002 and based on the sum of monthly averages, the City of Auburn received an annual average of 1 inch of snow per year. On the other extreme, in the eastern limit of the County, Tahoe City receives 188.3 inches of snow on average with a record annual snowfall of 499.3 inches in 1952. Between 1948 and 2002 Blue Canyon averaged 251 inches of snow per year with an annual record of 591.1 inches in 1952. Within the 54-year time period, it snowed less than 1 inch per month on average in Blue Canyon during the months of June through September, whereas the highest average was 52.4 inches for the month of March.

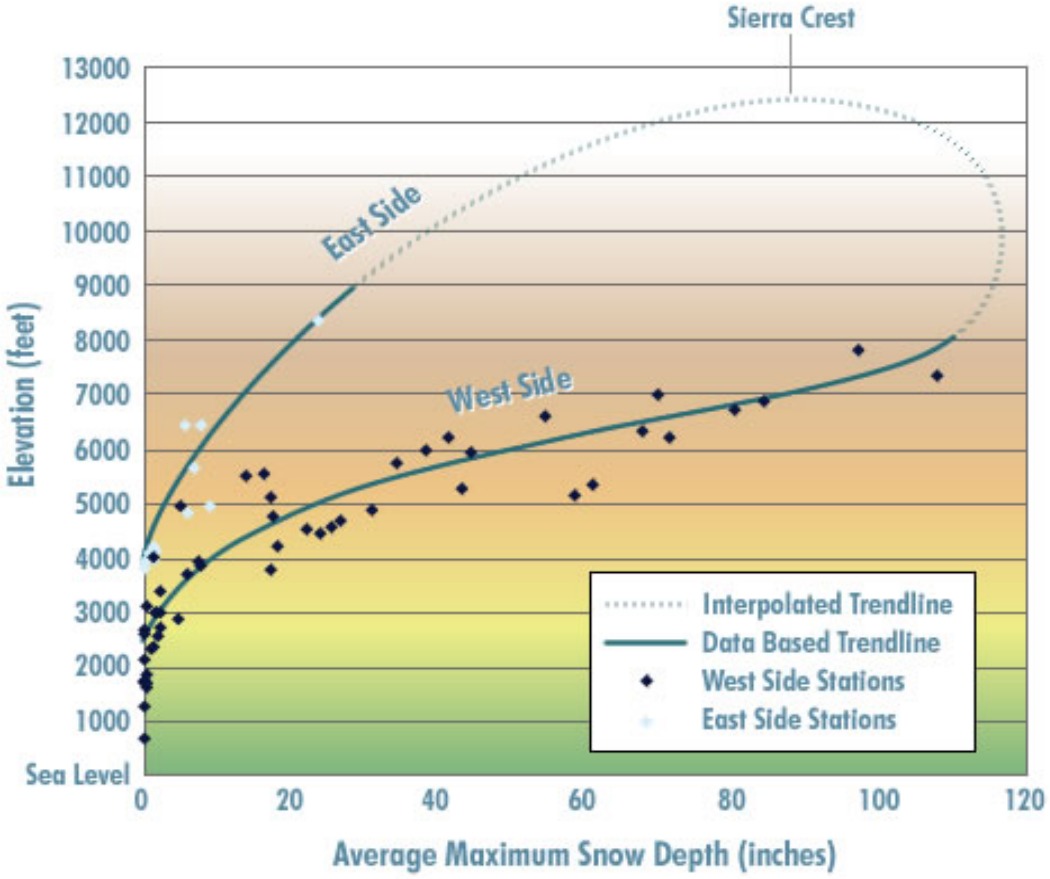
Other notable records found at http://www.sierranevadaphotos.com/about.html include:

- 1 day snowfall: 67 inches (5.6 ft.) at Echo Summit, Jan 4, 1982 (2nd in US)
- Single storm snowfall: 186.6 inches (15.6 ft.) at Donner Summit, 1982 (2nd in US)

- 1 month snowfall: 390 inches (32.5 ft.) at Tamarack, Jan. 1991 (US record)
- Total winter snowfall: 884 inches (73.7 ft.) Tamarack, 1906-07
- Greatest snow depth: 451 inches (37.6 ft.) at Tamarack, Mar. 11, 1911 (US record)
- Highest average March snow depth: 108 inches (9 ft.) at Echo Summit

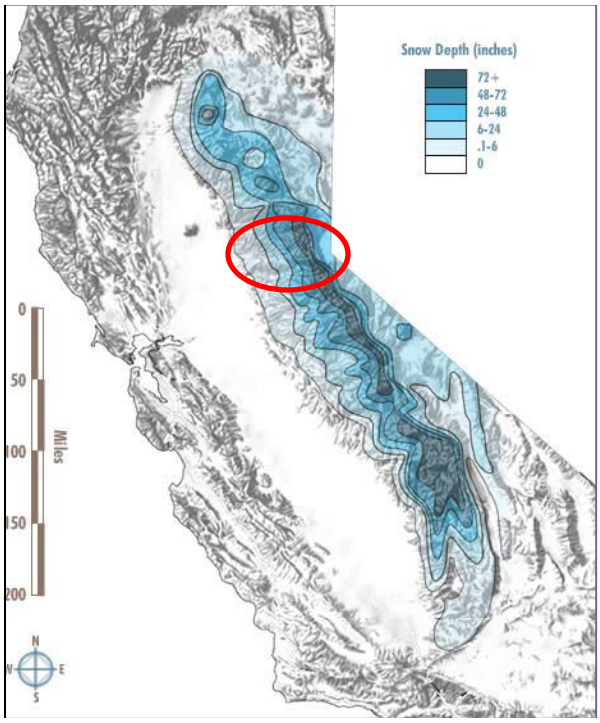
Snowfall in the Sierra increases with elevation. The lower foothills rarely receive any measurable snow. Middle elevations receive a mix of snow and rain during the winter. Above about 6,000 ft., the majority of precipitation falls as snow. It is not unusual, in some locations, to have ten feet of snow on the ground for extended periods.

However, snow accumulation does not directly follow precipitation in the Sierra. While the greatest total precipitation occurs in the northern part of the range, the greatest snow accumulation occurs in the central and high southern parts of the range, due to higher elevations and colder temperatures which inhibit snow melt. The west side of the Sierra Nevada acts as trap for winter storms, ringing out the moisture before it can get to the east side. Weather stations located on the west side begin registering measurable snow between 2,500 and 3,000 feet elevation. On the east side, measurable snow accumulation doesn't begin until about 4,000 feet and increases more slowly with altitude. Snow depths drop dramatically on the east side of the range due to the rain shadow effect as illustrated in the comparative east side/west side snow depth chart shown on the following page.



(Source: http://www.sierranevadaphotos.com/geography/east_west_snow_depth.html)

The following map shows the average maximum measured snow depth in the Sierra Nevada for the month of March (the month of greatest average snow depths).



(Source: http://www.sierranevadaphotos.com/geography/snow_depth.asp)

Past Occurrences

1999 - A severe freeze caused broken pipes at three schools in the Eureka Union School District (Oakhills, Ridgeview, Cavitt) in South Placer County. Total damage to carpet, drinking fountains, and miscellaneous supplies was $10,281 ($1000 deductible, remainder insurance).

February 2003 – A severe snowstorm caused a variety of damages to schools located in the areas of Truckee, Donner Pass, Tahoe City, West Shore, Polaris Road and Timberline. The snowstorm caused an underground propane leak at one school, a district-wide power outage, and damages resulting from roof snow loading and removal. Schools closures ranged from two days to two weeks.

The heavy levels of snow combined with other inclement weather in the northern and eastern portion of Placer County create many issues that impact the area. These include:

- Heavy rain/snow melt weakens the root structure of trees. When significant wind events occur, trees fall onto power lines and homes. While the HMPC could not recall injuries or deaths associated with this type emergency, there have been numerous close calls. Actual data on property loss amounts for these types of events is not maintained. This kind of emergency will continue to occur on an annual basis.

- Heavy snowfall creates numerous challenges for emergency responders. In the higher elevations at Lake Tahoe, snowfall will bury fire hydrants and street signs, not to mention periodically stranding residents until the Placer County Road Department can open up surface streets. It can often take the fire district weeks to dig out the approximately 2500 fire hydrants. This is exacerbated by County snow plows/blowers re-burying the hydrants in subsequent plowing efforts. Inaccessible hydrants and/or delayed responses can impact life and property. Also occurring periodically is having to respond to individuals that have been buried in snow, typically when caught in snow shedding off roofs. Responders have also experienced the danger during residential structure fires when firefighters are in the path of snow shedding off roofs. Finally in the category of heavy snow, the fire district trains in avalanche response (mostly in Alpine Meadows) when snow takes out homes and cars along Alpine Meadows Road. Avalanche conditions also create unique challenges of emergency responders.

- Winter weather including snowfall and rain, leads to an increase in the number and severity of traffic accidents. This occurs every year and can only be partially mitigated by sanding and salting roadways by the County and State road departments. Additionally, road closures occurring as a result of winter weather conditions can adversely impact interstate commerce.

According to the California Highway Patrol (CHP), Auburn Area (whose jurisdiction on I-80 extends from the Placer/Sacramento County line to the western edge of Colfax), weather-related incidents resulting in metering, chain control, accident control, holding, and closure are annual occurrences. From January 1, 2000 through June 30, 2004, the Auburn CHP daily log cited 60 days where traffic on I-80 was affected due to adverse weather conditions. Of these, five were associated with dense fog; the remaining were a combination of rain, hail, sleet, and snow conditions.

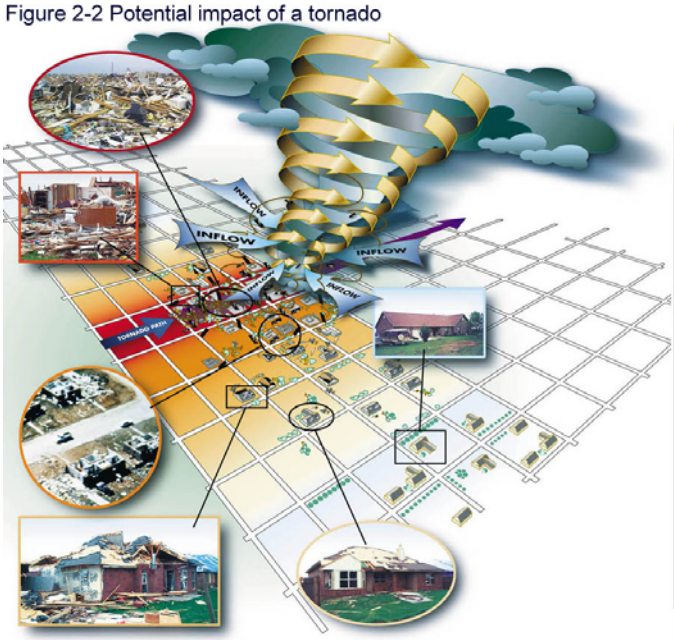
Likelihood of Future Occurrences

Given the history in Placer County, severe snow events are very likely to continue to occur annually in the Placer County planning area.

Tornadoes

Tornadoes are another weather-related event that affects the planning area. Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist. They can be comprised of the same pressure differential that fuels 300-mile wide hurricanes across a path only 300 yards wide or less.

Figure 2-2 Potential impact of a tornado



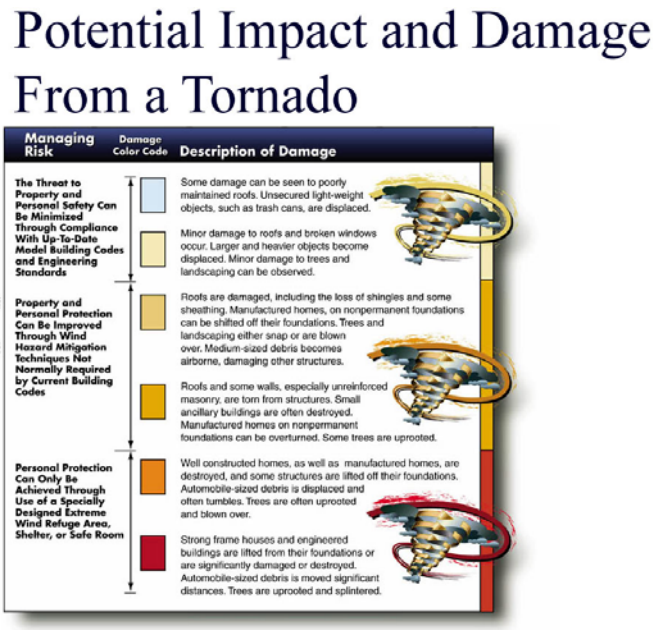


Figure 2-2 Potential damage table for impact of a tornado

Tornado magnitude is ranked according to the Fujita scale listed below:

<u>Fujita Tornado Scale</u>
F0: 40 - 72 mph (35-62 kt)
F1: 73-112 mph (63-97kt)
F2: 113-157 mph (137-179 kt)
F3: 158-206 mph (137-179 kt)
F4: 207-260 mph (180-226 kt)
F5: 261-318 mph (227-276 kt)

Past Occurrences

According to the Placer Operational Area OES, tornadoes, are rare and usually only affect the lower elevations in the western portion of the County. There of four documented incidents of tornadoes in Placer County. According to the NCDC data provided below, only one of the tornadoes that have struck the County has been rated as F1, while all others were rated F0.

October 15, ***1972*** **-** Magnitude F0, Property Damage $0

March 3, 1983 **-** Magnitude F0, Property Damage $0

March 22, 1983 **-** Magnitude F1, Property Damage $250K

April 23, 1990 **-** Magnitude F0, Property Damage $3K. In addition to the $3K in damages reported by the NCDC, the Penryn Elementary School District in Auburn incurred $7,835 in damages associated with the Tornado damaging a portable office and trees.

Likelihood of Future Occurrences

Based on data from 1950 – 1995, California ranks 32 of 50 (compared to other states) for frequency of tornadoes, ranking 36 for injuries and 31 for cost of damages. When compared to other states by the frequency per square mile, California ranks number 44 for the frequency of tornadoes, 44th for injuries per area and 40th for costs per area.

Four tornadoes in Placer County occurred during a 54-year period of record keeping , which equates to one tornado every 13 years, on average.

Fog

Fog results from air being cooled to the point where it can no longer hold all of the water vapor it contains. For example, rain can cool and moisten the air near the surface until fog forms. A cloud-free, humid air mass at night can lead to fog formation, where land and water surfaces that have warmed up during the summer are still evaporating a lot of water into the atmosphere – this is called 'radiation fog'. A warm moist air mass blowing over a cold surface can also cause fog to form-this is called 'advection fog'. Severe fog incidents can close roads, cause accidents, and impair the effectiveness of emergency responders.

Past Occurrences

The NCDC data shows no severe fog incidents for Placer County; however, the USC Sheldus data shows one incident of countywide severe fog on December 11, 1997 resulting in $300,000 in property damages. From January 1, 2000 through June 30, 2004, the Auburn CHP daily log cited 60 days where traffic on I-80 was affected due to adverse weather conditions. Of these, five were associated with dense fog; the remaining were a combination of rain, hail, sleet, and snow conditions.

Likelihood of Future Occurrences

Given the history in Placer County, severe fog events are likely to continue to occur annually in the Placer County planning area.

Drought

Drought is a complex issue involving many factors, with differing conditions and drivers throughout the state making this more of a regional focus. Drought can be defined regionally based on its effects:

- Meteorological - this type of drought is usually defined by a period of below average water supply.

- Agricultural - this type of drought occurs when there is an inadequate water supply to meet the needs of the state's crops and other agricultural operations such as livestock.

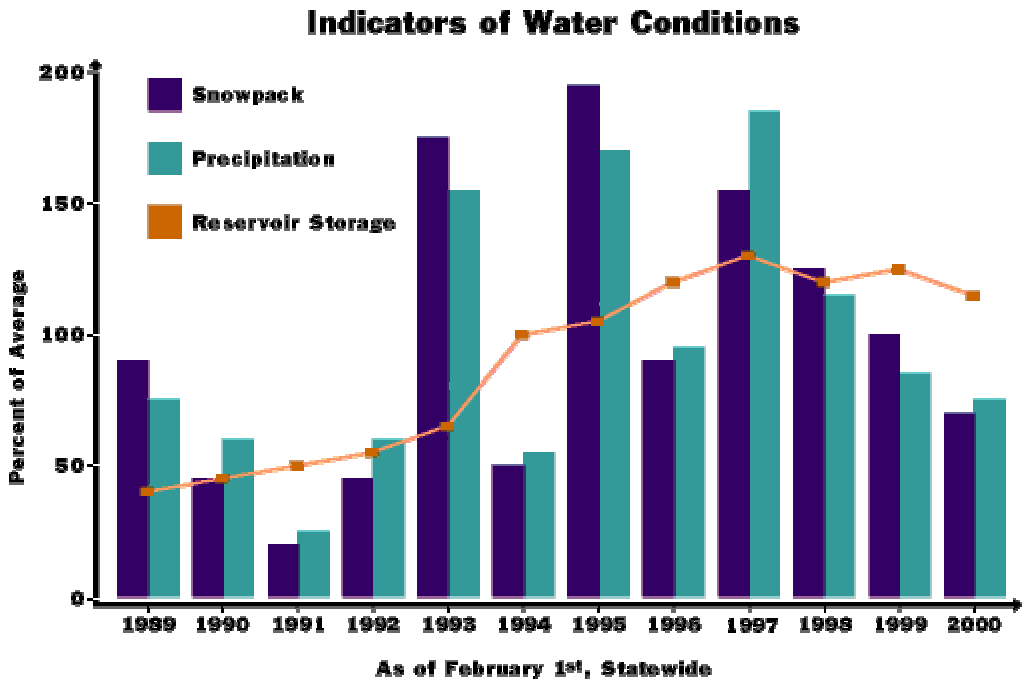
- Hydrological - a hydrological drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured as stream flow, snowpack, and as lake, reservoir and groundwater levels.

- Socioeconomic - a socioeconomic drought occurs when the results of drought impacts the health, well being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

According to the California Department of Water Resources (DWR), drought is defined as follows: "One dry year does not normally constitute a drought in California. California's extensive system of water supply infrastructure -- its reservoirs, groundwater basins, and inter-regional conveyance facilities -- mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions."

The drought issue is further compounded by water-rights specific to any state or region. Water is a commodity possessed under a variety of legal doctrines. In addition, the prioritization of water rights between farming and federally protected fish habitats in the state is also at issue.

The graphic below, from the California DWR website, illustrates several indicators commonly used to evaluate California water conditions. The percent of average values are determined for measurement sites and reservoirs in each of the State's ten major hydrologic regions. Snowpack is an important indicator of runoff from Sierra Nevada watersheds, the source of much of California's developed water supply.



(Source: California DWR Website)

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall -- ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

Past Occurrences

Historically, California has experienced multiple severe drought conditions. According to the DWR website, droughts exceeding three years are relatively rare in Northern California, the source of much of the State's developed water supply. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large Northern California reservoirs. The table below compares the 1929-34 drought in the Sacramento and San Joaquin Valleys to the 1976-77 and 1987-92 droughts. The driest single year of California's measured hydrologic record was 1977. California's most recent multi-year drought was 1987-92.

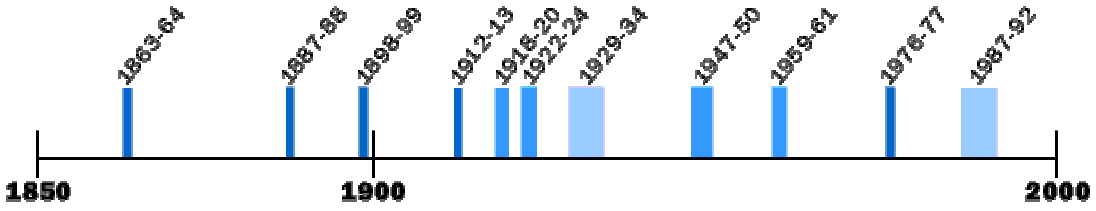
Severity of Extreme Droughts in the Sacramento and San Joaquin Valleys

Drought Period	Sacramento Valley Runoff		San Joaquin Valley Runoff	
	(maf/yr)	*(% Average 1901-96)*	*(maf/yr)*	*(% Average 1906-96)*
1929-34	9.8	55	3.3	57
1976-77	6.6	37	1.5	26
1987-92	10.0	56	2.8	47

(Source: California DWR Website)

Based on additional information provided by the DWR, measured hydrologic data for droughts prior to 1900 are minimal. Multi-year dry periods in the second half of the 19th century can be qualitatively identified from the limited records available combined with historical accounts, as illustrated in the figure below, but the severity of the dry periods cannot be directly quantified.

California's Multi-Year Historical Dry Periods
1850 - Present



1. Dry periods prior to 1900 estimated from limited data.
2. Covers dry periods of statewide or major regional extent.

(Source: California DWR Website)

With respect to Placer County, the following drought events were identified by the HMPC:

- In 1977, a Federal Disaster Declaration was declared as a result of a drought affecting Placer and surrounding counties. The Placer County Water Agency (PCWA) declared a water shortage and restricted water use for both irrigation and treated water users. The restrictions included 50 percent reduction in water usage by customers and rate increases. This shortage lasted until January 1978 when the Board terminated the water shortage restrictions.

- The next water shortage occurred in 1988. Again the PCWA Board passed a resolution declaring a water emergency. All customers had their water use reduced by 25 percent and rates were again increased for excessive usage. The County wide emergency prohibited washing of sidewalks, driveways, parking lots and other hard surfaces, restricted the washing of vehicles, airplanes and trailers to 3 gallons of water, prohibited

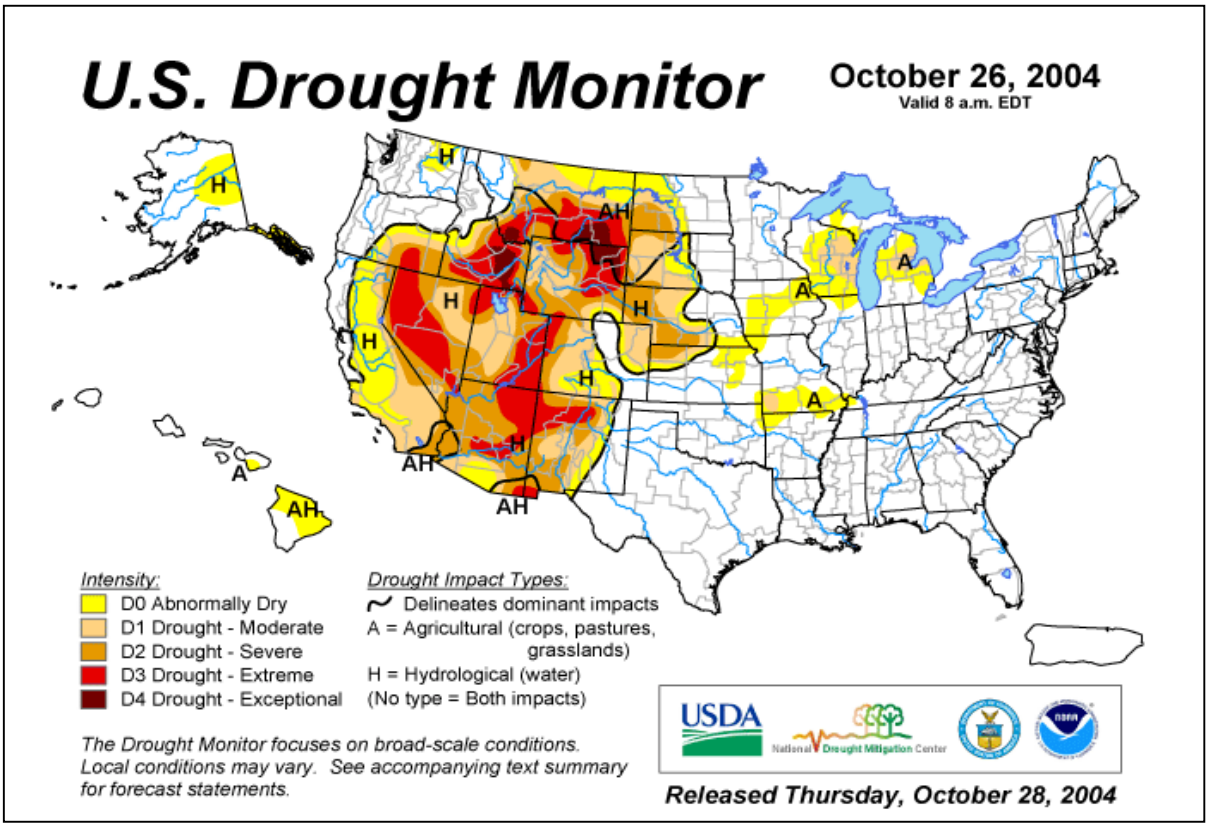
fire hydrant flushing and drills, prohibited filling of pools and prohibited new agricultural land irrigation.

- The most recent Drought Emergency declared by the PCWA Board was in 1991. In February 1991, an emergency was declared by the Board. Raw water customers had their water usage reduced: annually by 50 percent and seasonally by 25 percent. Treated water users were given most of the same restrictions and prohibitions as in 1988. Due to a very late storm season, the emergency was lifted by April 1991.

No hard costs for these emergencies were identified, although PCWA did incur increased operating costs and extra expenses along with an effect on revenue.

Other periods of identified drought have impacted the County, including, several SBA declarations for drought events affecting agriculture between 2001 and 2003 as previously identified in the Disaster Declaration Section of this Plan.

The map that follows provides a "snapshot in time" perspective of the current drought conditions during August of 2004. According to the U.S. Drought Monitor, most of Placer County is currently designated a D0 region, and is considered abnormally dry. This map illustrates that Placer County continues to be subject to drought conditions. The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. This map considers several factors including, the Palmer Drought Index, Soil Moisture Models, USGS Weekly Streamflows, Standardized Precipitation Index, and Satellite Vegetation Health Index.



Likelihood of Future Occurrences.

On average, about 75 percent of California's average annual precipitation falls between November and March; half occurs between December and February. A persistent high-pressure zone over California during the December through February period usually results in a dry water year. Northern California is much wetter than Southern California. More than 70 percent of California's average annual precipitation and runoff occurs in the northern part of the State. The amount of precipitation over the next few years will be a major factor in determining if Placer County continues in abnormally dry conditions. Based on historical drought activity in California, droughts will likely continue to occur on a cyclic basis.

FLOOD

Floods can be among the most frequent and costly natural disaster in terms of human hardship and economic loss, and can be caused by a number of different weather events. Certain health hazards are also common to these events. Standing water and wet materials in structures can become a breeding ground for microorganisms such as bacteria, mold, and viruses. This can cause disease, trigger allergic reactions, and damage materials long after the flood. When floodwaters contain sewage or decaying animal carcasses, infectious disease is of concern. Direct impacts such as drowning can be limited with adequate warning and public education about what to do during floods. Where flooding is in populated areas, warning and evacuation will be paramount to reduce life and safety impacts with any type of flooding. Placer County is susceptible to various types of flood events as described below.

Riverine flooding is defined as when a watercourse exceeds its "bank-full" capacity and is usually the most common type of flood event. Riverine flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include many independent river basins. The duration of riverine floods may vary from a few hours to many days. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. The warning time associated with slow rise floods will assist in life and property protection.

The term "flash flood" describes localized floods of great volume and short duration. In contrast to riverine flooding, this type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour. Once flooding begins, personnel will be needed to assist in rescuing persons trapped by flood waters, securing utilities, cordoning off flooded areas, and controlling traffic. This could overtax local response capabilities and require outside mutual aid.

Urban flood events have resulted as land is converted from fields or woodlands to roads and parking lots and loses its ability to absorb rainfall. Urbanization increases runoff 2- 6 times over what would occur on natural terrain. During periods of urban flooding, streets can become swift moving rivers, while basements can become death traps as they fill with water.

Other types of floods include general rain floods, thunderstorm floods, snowmelt and rain on snow floods, dam failure floods, and local drainage floods.

The area adjacent to a channel is the floodplain. Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The potential for flooding can change and increase through

various land use changes and changes to land surface, resulting in a change to the floodplain. A change in environment can create localized flooding problems in and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Major Sources of Flooding

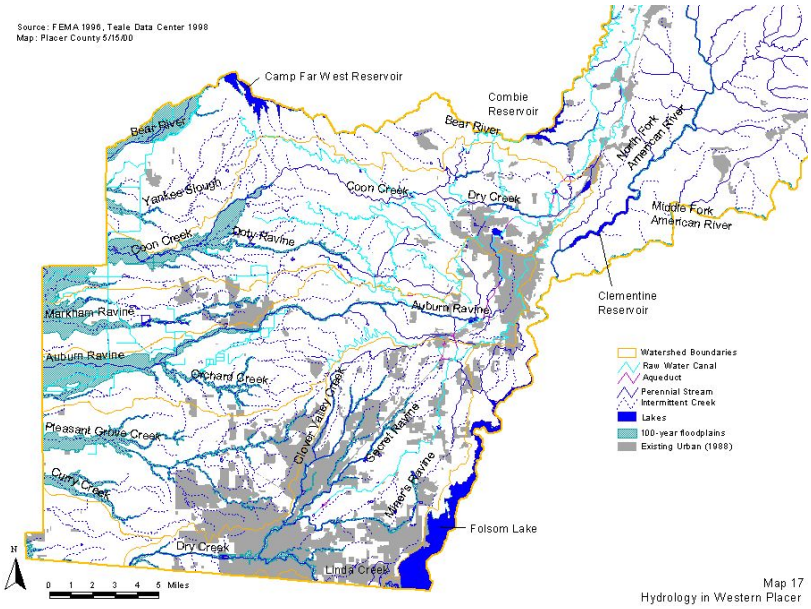
Placer County encompasses multiple rivers, streams, creeks, and associated watersheds. The County is situated in a region that dramatically drops in elevation from the eastern portion (Sierra Nevada) to the western portion, where excess rain on snow can contribute to downstream flooding. Damaging floods in Placer County occur primarily in the developed areas of the county extending westward from Colfax to Sacramento and Sutter Counties. Flood flows generally follow defined stream channels, drainages, and watersheds. Placer County crosses nine watersheds. The watersheds of Placer County include a combined drainage area of approximately 1,515 square miles.

The Watershed System

Although Placer County crosses nine watersheds, there are four main watersheds or areas that are the primary source of flooding within the county. These include the following watersheds as further described in the following paragraphs:

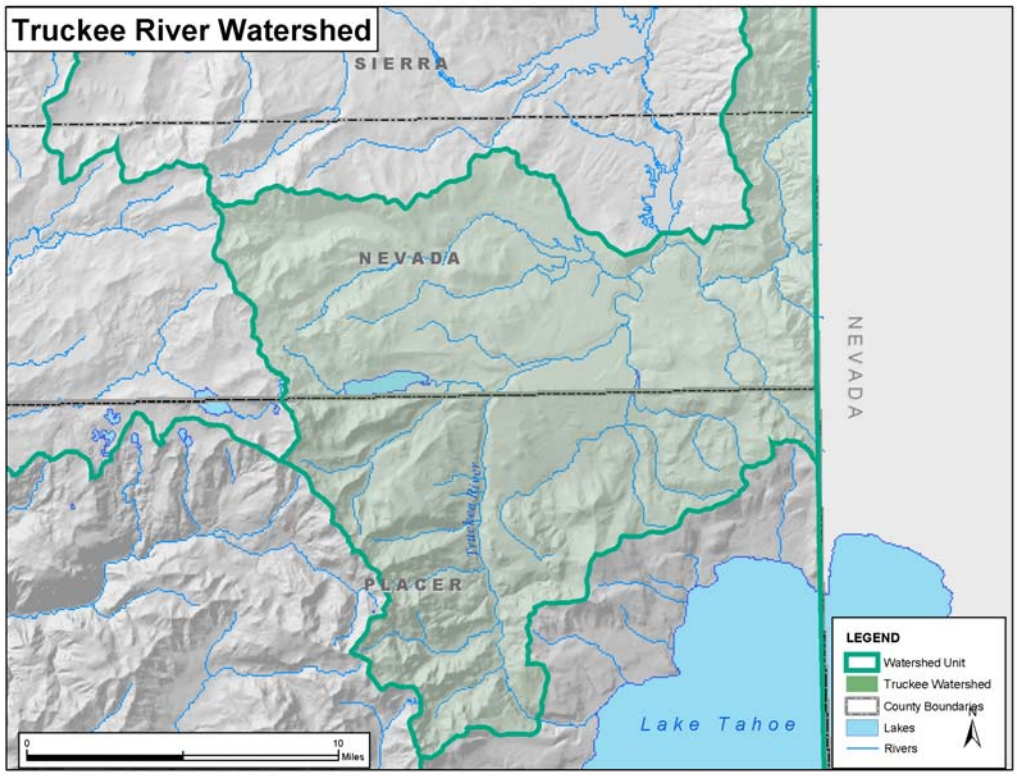
- Dry Creek Watershed
- Cross Canal Watershed
- Auburn/Bowman Area
- Truckee River Watershed

The following map illustrates the hydrology in Western Placer County.



(Source: Placer County Website)

A map of the Truckee River Watershed, located in Eastern Placer, is provided below.



(Map Compilation: AMEC Earth & Environmental; Source Data: CA-OES)

Dry Creek Watershed. Dry Creek watershed encompasses approximately 116 square miles in Placer and Sacramento Counties. In Placer County, the watershed is located in the southwestern portion of the county, and includes the City of Rocklin and Town of Loomis. The headwaters of Dry Creek are located in the upper portions of the Loomis Basin, in the vicinity of Penryn and Newcastle, in unincorporated Placer County, in the Granite Bay area near Folsom Lake, and in Orangevale in Sacramento County. The headwaters are located in the Sierra Nevada foothills at elevations of 900-1200 feet above msl. The mouth of Dry Creek, at its confluence with the Natomas East Main Drainage Canal, is at an elevation of about 30 feet above msl. Major tributaries to Dry Creek include: Antelope Creek, Clover Valley Creek, Secret Ravine, Miners Ravine, Strap Ravine Creek, Linda Creek, and Cirby Creek. Dry Creek drains to Steelhead Creek. Land use in the Dry Creek watershed varies widely, from agricultural, to residential, to commercial. The watershed is located in an area of rapid urbanization and population growth.

Incidences of flooding along Dry Creek and its tributaries are well documented. Floods in the Dry Creek watershed occur from October through April. The major flooding problems within this drainage basin occur where the north and south branches of Dry Creek converge. Flooding occurs when heavy rains and saturated soils cause streams to overflow their banks, flooding property and structures located adjacent to the streams. Streams also back up at culverts and bridges, blocking roads or making them unsafe. Continued development in both the upper and lower reaches of the watershed will likely make flooding problems worse.

According to the 1992 Dry Creek Watershed Flood Control Plan, substantial flood damages will continue to occur under existing conditions. Areas with the most extensive and frequent damages include areas along Miners Ravine in the vicinity of Joe Rodgers Road and upstream of Sierra College Boulevard; Paragon Court near Antelope Creek in Rocklin; areas along Cirby, Linda and Dry Creeks in Roseville; and along Dry Creek in Rio Linda. Some of these same areas are susceptible to flooding from storms as frequent as the 10-year storm. Many of the bridges and culverts in the watershed are inadequate to pass the 100-year event (70 percent). Nearly 50 percent of the stream crossings are inadequate for even the 25-year flood. Based on 1989 land use, structures that will be impacted by the 100-year flood are essentially those that were flooded by the February 1986 flood.

Floods generally caused by a combination of prolonged rainfall leading to saturated soils and a short period of intense precipitation occur from October through April. Dry Creek and its tributaries have an extensive record of historic flood, especially in the Roseville area. According to the 1992 report, damaging floods occurred in December 1955, April 1958, October 1962, December 1964, March 1983, and February 1986. The 1983, 1986 and 1995 floods were the largest and most damaging on record.

Cross Canal Watershed (Auburn Ravine/Coon Creek/Pleasant Grove Creek/Markham Ravine/Curry Creek). This watershed encompasses approximately 69,919.42 acres or 282.96 square kilometers, and includes 6 dams. Auburn Ravine, Markham Ravine, Coon Creek, Pleasant Grove Creek, Curry Creek and their tributaries drain approximately 292 square miles of northwestern and southeastern Sutter County (88 percent in Placer County and 12 percent in Sutter County) and are referred to as the Cross Canal Watershed. The Cross Canal, at the western portion of the watershed carries the combined flow of the creeks to the Sacramento River. The watershed slopes from east to west with elevations ranging from 2,500 feet to 25 feet. The eastern portion of the watershed is located in the foothills of the Sierra Nevada. Stream channels in this area have slopes of several hundred feet per mile. The eastern portion of the watershed is typified by the much flatter land of the Central Valley. Stream channels in this area have slopes of a few feet per mile. The City of Lincoln and portions of the Cities of Auburn, Rocklin, and Roseville are located within the watershed.

An extensive area upstream of the Cross Canal, in eastern Sutter County and western Placer County, is subject to periodic flooding. Major flooding in the watershed occurs as ponding and overland flow over many square miles of land east of the Cross Canal. Flooding also occurs adjacent to tributary streams where channel capacities are exceeded. Inadequately sized road crossings, land leveling, and channelization within the lower portion of the watershed have likely contributed to the frequency and degree of flooding. Future development in the watershed may also contribute to the flooding issue. The affected flooding area appears to be between 10,000 to 30,000 acres including the tributary streams. The Sutter-Placer Watershed Area Study by the Soil Conservation Service estimated approximately 31,000 acres of the watershed would be inundated during a 100-year frequency flood event. Approximately 95 percent of the potentially flooded area is west of Highway 65, in the flatter portion of the watershed. During major flooding, inundation along the individual streams combines upstream of the Cross Canal to form a continuous body of water approximately 10 miles by 3 miles. Several roads in the western

portion of the watershed flood once or more each year on the average (Placer County Water Agency 2001). Several elements contribute to major flooding in the watershed including limited channel capacity; undersized bridges and culverts; high river stages in the Sacramento River; and historical land leveling and channel modifications.

Auburn/Bowman Area. The Auburn/Bowman area is a largely rural area located in the Sierra foothills in Placer County. The area covers approximately 41.5 square miles and is contained in portions of six different drainage basins (or Watersheds): Bear River – 2.1 square miles, Orr Creek – 9.3 square miles, Dry Creek – 15.5 square miles (including Rock Creek – 4.3 square miles), Auburn Ravine – 10.8 square miles (including North Ravine – 4.6 square miles), Mormon Ravine – 1.4 square miles, Dutch Ravine – 1.0 square miles, the American River (North Fork) – 9.8 square miles, and Deadman's Canyon – 1.0 square miles. This area is characterized by relatively steep slopes and moderate relief. Elevations in the area range from approximately 800 feet above msl in the southern portion of the study area to over 2000 feet above msl in upper Dry Creek and Orr Creek watersheds. Overall, most of the Auburn/Bowman area has elevations ranging from 1000 to 1500 feet above msl.

Flooding occurs when heavy rains cause streams to overflow their banks, flooding property and structures located adjacent to the stream. Streams also back up at culverts and bridges, blocking roads or otherwise making them unsafe. Emergency services can also be restricted by the flooded roads. In addition, there are numerous open canals in the study area which can intercept sheet runoff from one area and spill it into another. Excessive spills from these canals may also increase the potential for downstream flooding. According to the 1992, Auburn/Bowman Community Plan Hydrology Study, approximately 70 percent of the bridges and culverts in the watershed are inadequate to pass the 100-year flows for both existing and future conditions, and flooding will occur with the 100-year flood under existing conditions along Dry Creek Road. Specifically, flooding of up to 2 to 3 feet has been known to occur on Dry Creek Road between Dry Creek Road Bridge and Twin Pines Trail Bridge during a major storm event (e.g., March 1986). The flood of 1986 caused the most severe flooding damage to date in the Auburn/Bowman area. In addition to the overtopping of bridges and culverts, at several locations, flooding of structures occurred in the floodplains. Over 60 percent of the stream crossings are inadequate for even the 25-year flood.

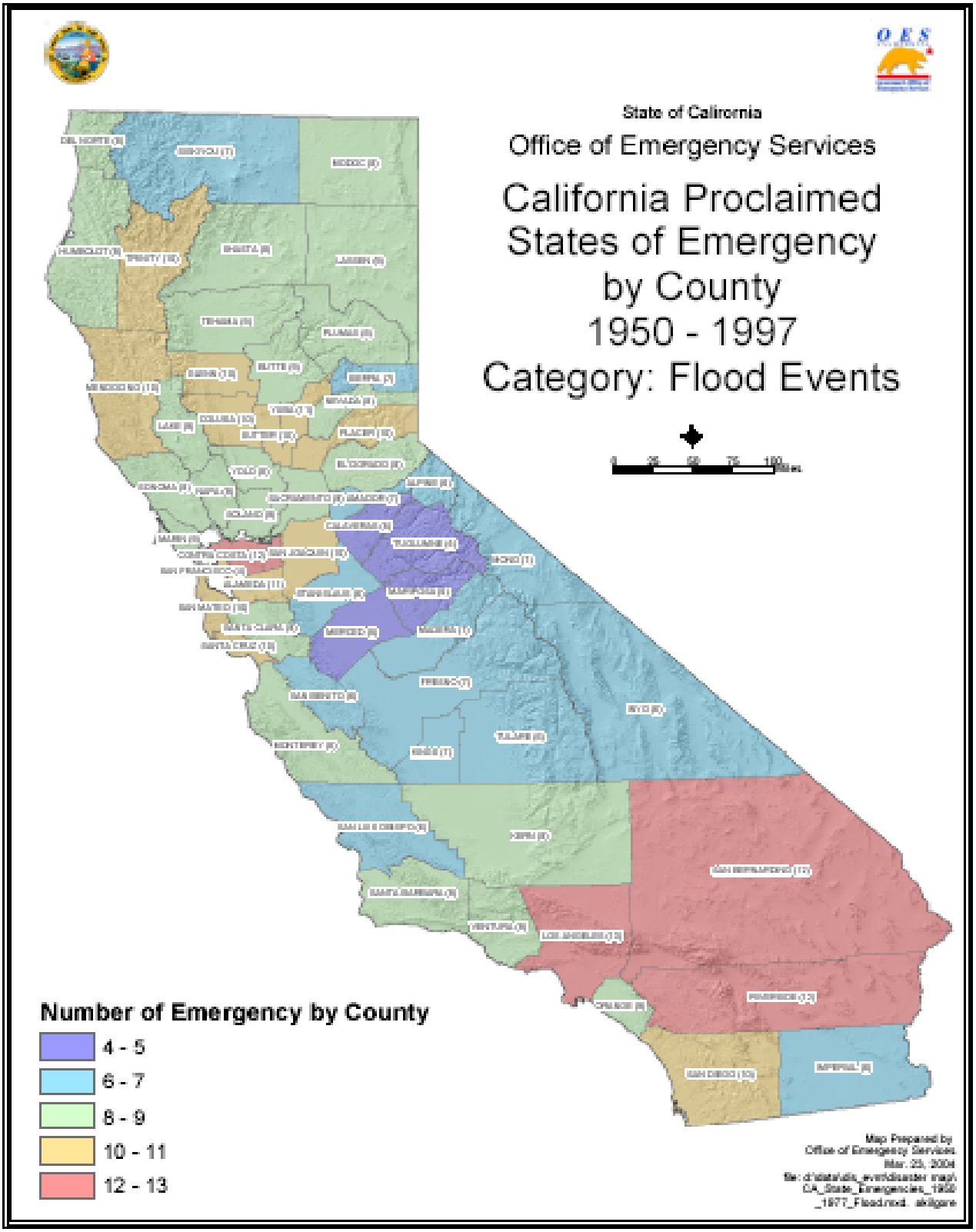
Truckee River Watershed. The Truckee River watershed, with an area of approximately 2,720 square miles, encompasses the entire Lake Tahoe, Truckee River, and Pyramid Lake systems. The major tributaries to the Truckee River in California include: Bear Creek, Squaw Creek, Cabin Creek, Pole Creek, Donner Creek, Trout Creek, Prosser Creek, the Little Truckee River, Gray Creek, and Bronco Creek. Roughly, the middle third of the Truckee River watershed is located within Placer County, in Eastern Sierra Nevada, north of Lake Tahoe. A significant portion of the watershed is above 6,000 ft.

The overflowing and diversion of Squaw Creek (upper Truckee River Basin), is responsible for major flooding events, such as the January floods of 1997, in eastern Placer County. In the more urbanized areas, flood problems are intensified by the increased volume of water that must be carried away by streams. The volume is increased because rooftops of new homes and other

structures, as well as new streets, driveways, parking lots, and other paved areas all decrease the amount of open land available to absorb rainfall and runoff.

Past Occurrences

Historically, portions of Placer County have always been at risk to flooding because of its high annual percentage of rainfall, and the number of watercourses that traverse the County. Flooding events have caused severe damage in the very eastern and very western portions of the County, but are less of a threat within the center of the County. This is likely due to where the population is concentrated within Placer County; the majority live within the incorporated cities in western Placer County and in the Lake Tahoe region in eastern Placer County. According to the Draft California Multi-Hazard Mitigation Plan, Placer County has experienced 10-11 proclaimed states of emergency for flood events between 1950 and 1997 as evidenced in the map on the following page. The state plan indicates that Placer County has an estimated 1,471 Individual Assistance (IA) properties (with 267 of these falling within the 100-year floodplain) and 562 Public Assistance (PA) applicants associated with historic floods. Between, 1955 and 2002, the state plan further indicates that Placer County has experienced nine federally declared storm or flood disasters.



(Source: Draft California Multi-Hazard Mitigation Plan)

The HMPC provided additional information on the following historical flood events in the County.

1852- This was the first big flood to be noted in Western Placer. Mining camps were just beginning to spring up in the Lincoln area, so hardly any structures were built which could be affected.

1860- Rains began during the first week of October and culminated in a big storm March 23-28. Major damage was reported from farms and mines along Coon Creek, Auburn Ravine, and Bear River. Main roads remained impassable for weeks.

1861-62- Lincoln had just been founded as a railroad and stagecoach center. The Lincoln-Folsom railroad was closed. The Auburn Ravine Turnpike was severely damaged and closed. Mining debris caused Bear River to change its channel to the south of its original course.

1875- Floods occurred along Bear River and destroyed the bridge to Grass Valley from Sheridan.

1880- Levees were finally being constructed along Bear River.

1955- Listed on NOAA's website as one of the "top 15 weather/water/climate events", significant and extended heavy rain and wind resulted in flooding throughout coastal and inland regions of northern California. Extensive flooding from small streams overflowing occurred in Placer County suburbs. Calculated damages for all areas affected within the State were 28 fatalities and $1.8 billion in losses.

March 1983 – The March 1983 flood damaged approximately 25 residences along Linda and Cirby Creeks in Roseville. Portions of Royer Park were under water as well as areas in the Sierra Lakes Mobile Home Park. Dry Creek overflowed the Darling Way and Riverside Avenue bridges, disrupting traffic and flooding six businesses along Riverside Avenue.

February 1986 – This flood was classified as an approximate 70-year event.
Placer County was designated a Federal Disaster Area. The flooding caused widespread damage in most of the Dry Creek watershed. Flooding was significant in the Roseville, Rocklin and Loomis areas. Nearly all bridges and culverts were overtopped, with 30 sustaining embankment damage and the crossing at Rocky Ridge Drive washed out. Two bridges over Dry Creek were damaged and street cave-ins occurred at a number of locations. Total damages within Placer County are estimated at 7.5 million; damage estimates specific to the Dry Creek Watershed are not available. One person was killed and 62 homes damaged or destroyed within the watershed based upon applications for disaster assistance. Other sources report around 100 homes flooded with water levels up to five feet above floor levels. "Dozens" of businesses in downtown Roseville were damaged or destroyed. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the county $376,611; no monies were reimbursed through the State.

1992 – Several days of continuous rain followed by a downpour caused Miners Ravine to over flow its banks and caused flooding that resulted in several dramatic rescues of people trapped in homes and vehicles.

January 1995 – This flood was classified as an approximate 100-year event. Placer County was designated a Federal Disaster Area. President Clinton toured the Tina/Elisa Way area of Roseville. The total damages within Placer County were estimated at 8.3 million with 750 damaged or destroyed structures. 4.2 million in damages were estimated for the Roseville area alone. Of the 4.2 million dollars in damages, one million was for road and bridge repairs and two million was for utility repairs. Within the Roseville area of Placer County, 385 homes, businesses, apartments, and mobile homes were damaged or destroyed; 2 Sewage treatment plants were overtopped; and 1 landfill was damaged. Impassable roads caused the closure of most schools. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the county $882,158 and $166,735 was reimbursed through the State.

As a result of the 1995 floods, in the San Juan water district, a creek crossing (bridge- where Carolinda Drive crosses the Miners Ravine Creek) washed out in two separate incidences (January 9th and February or March). The first wash out exposed main 10-inch ACP pipeline and made it vulnerable to high water and swift current. The crossing was rebuilt by the Carolinda Homeowner's Association, and the line went back into service. The second wash out occurred in February or early March, again due to high water and swift currents. This time the pipe was removed and a new bridge was built with the pipeline now being supported by the new bridge. The cost of repairs and replacement was $30,400, of which $27,000 was received through disaster funds.

1996 – Heavy rain and clogged storm drains, caused water to flow into the Cavitt School Gymnasium (Eureka Union School District) in South Placer County. A wood floor was lost. The $85,976 in damages was covered by Emergency Services under a disaster declaration. The drainage system has since been modified.

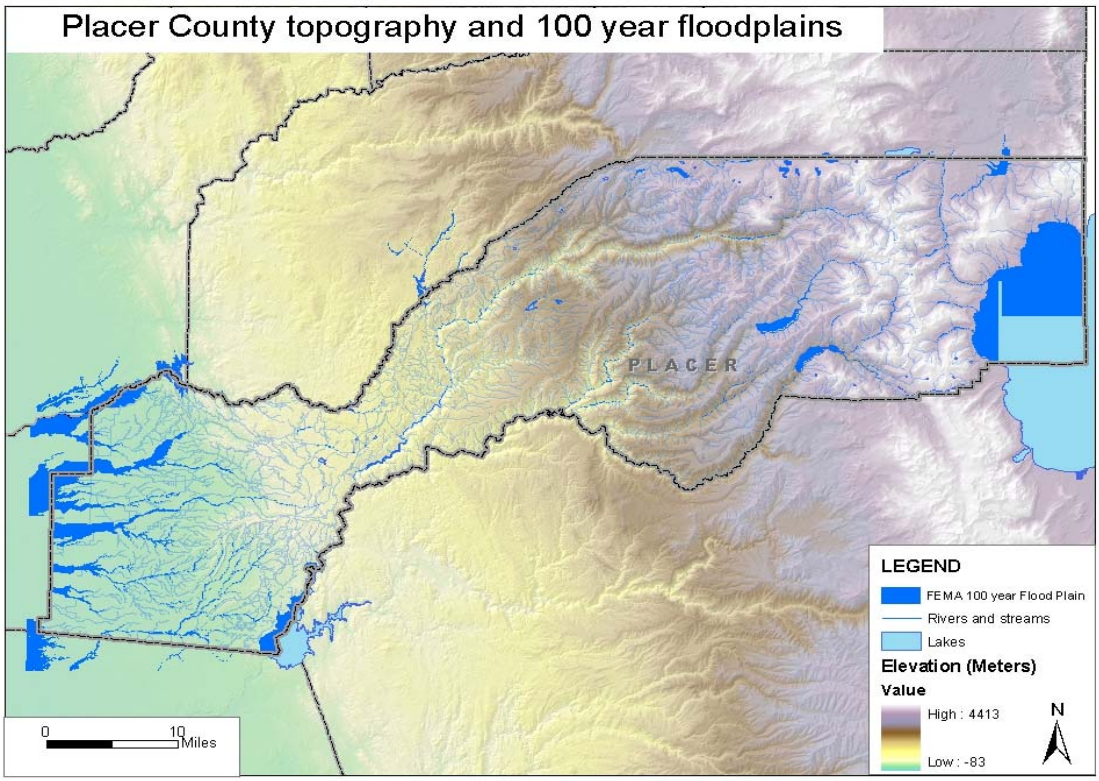
January 1997- A significant amount of rainfall and snowmelt runoff poured out of the Sierra Nevadas from December 30, 1996 to January, 1997. This was a very warm system and rain was falling at the 9,000 foot elevation. An estimated 25 inches of rain and snowmelt runoff occurred during this period on the Squaw Creek Basin (the upper Truckee River Basin in Placer County). This scenario was typical throughout the region and resulted in extensive flooding on the Truckee, Carson, Walker, and Susan Rivers. Consequently, record flooding occurred on much of the Truckee, Carson, and Walker Basins. In Placer County, flooding eroded away mountainsides, breaking sewer, water, and power lines. The south fork of Squaw Creek jumped its bank and burst through the lodge at the Squaw Valley Ski Resort. All bridges across Highway 89 were destroyed or severely damaged. Avalanches closed highway 89 in both directions isolating Squaw Valley from the outside world. Log jams caused the creek to diverge and deposit 3,500 cubic yards of gravel, boulders, logs and debris into the stream channel, piling the material up to six feet deep into homes and condominiums (USDA 1997). Mudslides blocked Squaw Valley Road and almost every other road in the area. In Placer County alone, damage estimates for public property was near $11 million. 137 homes and 22 businesses were damaged

within the County. Total damage to private homes, businesses, agricultural losses, and private roads was near $10 million. Destruction to the Federal Highway System was near $7.7 million. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the county $717,754 and $177,451 was reimbursed through the State.

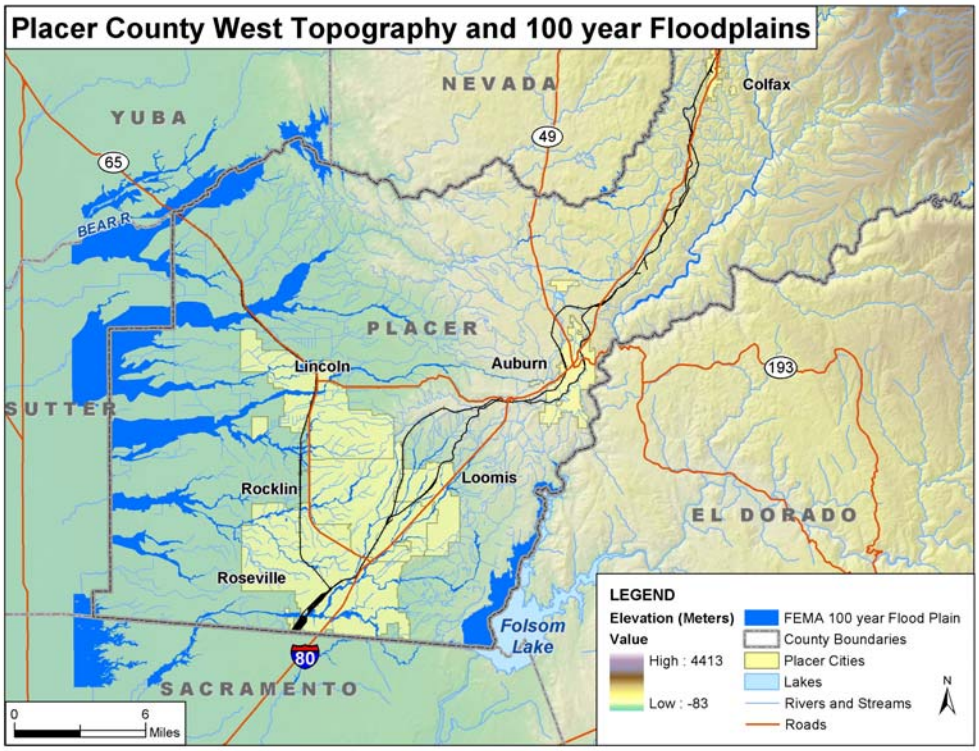
Auburn – Old Town section of Auburn flooded in 1986 and 1996 in an area not located in the mapped floodplain. Federal funding was received as a result of this event.

Likelihood of Future Occurrences

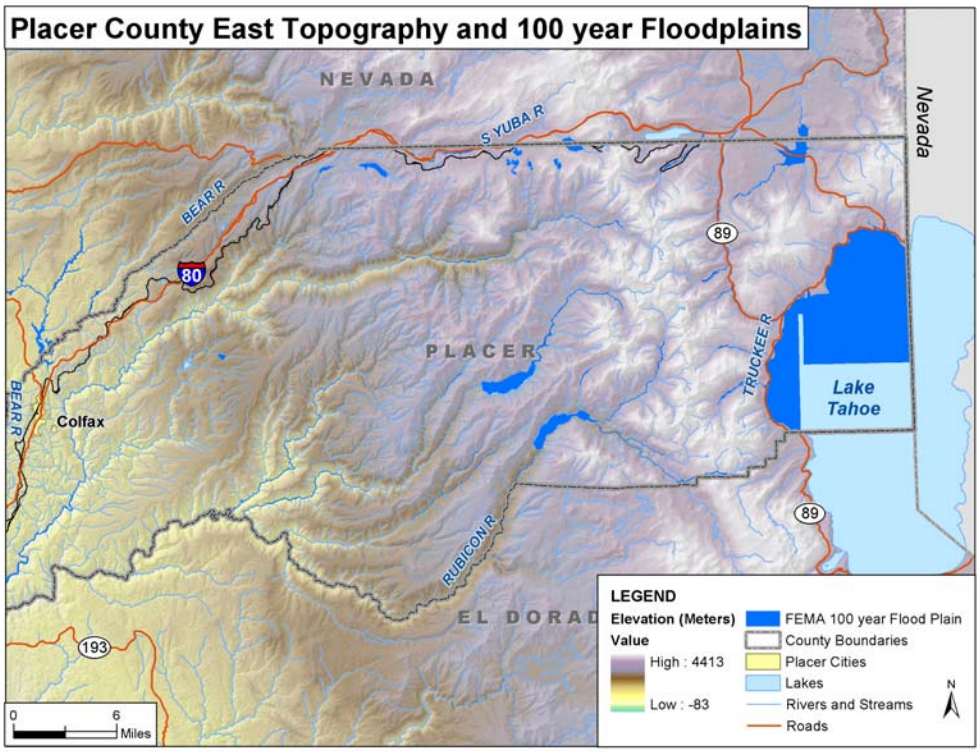
Western Placer County is more likely to experience flooding than the eastern part of the County. This is primarily due to being at a lower elevation and the recipient of runoff from multiple watersheds. With the exception of Colfax, portions of all other incorporated cities in western Placer are least partially located within the 100-year floodplain**.** However, flooding events have historically occurred in both western and eastern Placer. Existing watershed reports confirm that under existing conditions, flooding will continue to occur. The following figures illustrate the topography of the area and existing 100-year floodplains.



(Map Compilation: AMEC Earth & Environmental; Source data: CA-OES and FEMA Q3)



(Map Compilation: AMEC Earth & Environmental; Source data: CA-OES and FEMA Q3)



(Map Compilation: AMEC Earth & Environmental; Source data: CA-OES and FEMA Q3)

Various flood protection measures are either in place or planned to protect Placer County from future flood events. Existing flood protection measures include a comprehensive system of dams, levees, overflow weirs, pumping plants, channel improvements, floodway bypasses, detention and retention structures and other improvements. In addition, both the Placer County Flood Control and Water Conservation District and the City of Roseville maintain a system of ALERT Flood Warning gages, including 28 precipitation gages and 22 stream level gages located throughout the western Placer County that provide real time monitoring information on current flood conditions.

Based on input from the HMPC, in order to maintain or decrease the County's risk from floods, the County should continue to increase their level of flood protection, including carefully planned flood protection measures associated with new developments.

DAM FAILURE

Dams are man-made structures built for a variety of uses including, flood protection, power, agriculture, water supply, and recreation. When dams are constructed for flood protection, they usually are engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If a larger flood occurs, then that structure will be overtopped. Overtopping is the primary cause of earthen dam failure. Failed dams can create floods that are catastrophic to life and property as a result of the tremendous energy of the released water. A catastrophic dam failure could easily overwhelm local response capabilities and require mass evacuations to save lives. Impacts to life safety will depend on the warning time available and the resources to notify and evacuate the public. Major loss of life could result and there would be associated health concerns as well as problems with the identification and burial of the deceased.

Dams typically are constructed of earth, rock, concrete, or mine tailings. Two factors that influence the potential severity of a full or partial dam failure include:

- The amount of water impounded, and
- The density, type, and value of development and infrastructure located downstream.

Dam failures can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding,
- Earthquake,
- Inadequate spillway capacity, resulting in excess overtopping flows,
- Internal erosion caused by embankment or foundation leakage or piping,
- Improper design,
- Improper maintenance,
- Negligent operation, and/or

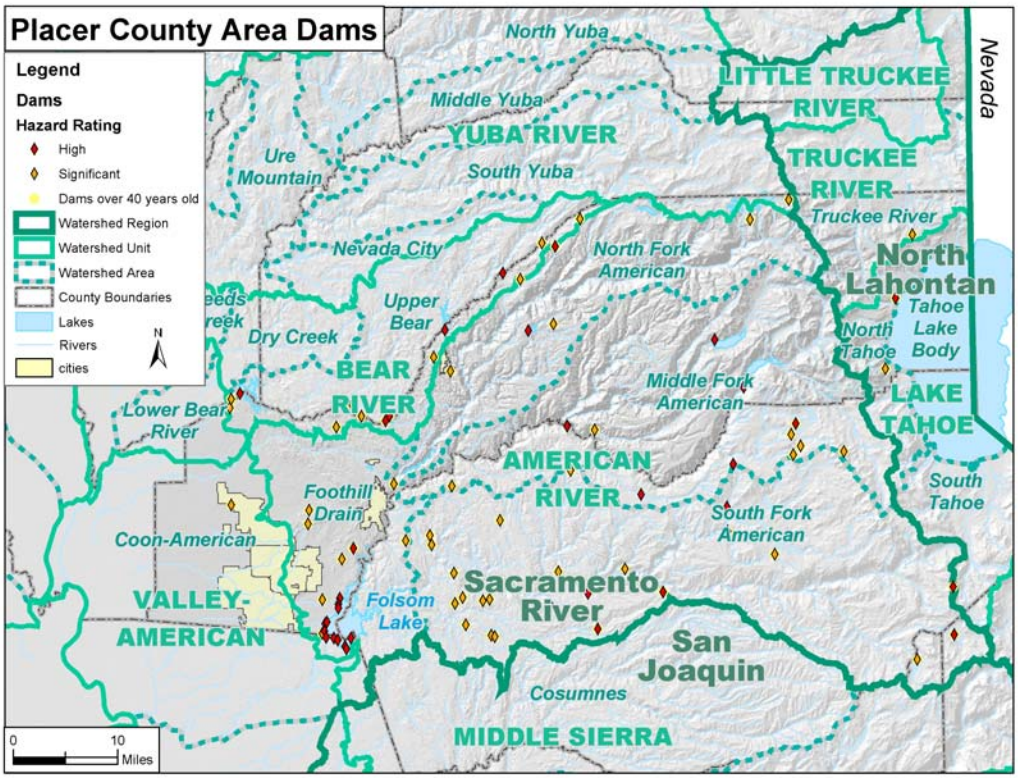
- Failure of upstream dams on the same waterway.

Dams and reservoirs have been built throughout California to supply water for agriculture and domestic use, to allow for flood control, as a source of hydroelectric power, and to serve as recreational facilities. The storage capacities of these reservoirs range from a few thousand acre-feet to five million acre-feet. The water from these reservoirs eventually makes its way to the Pacific Ocean by way of several river systems.

There are several major and minor dams, which, if they fail, may impact the people and resources of Placer County. According to the 1994 Placer County General Plan Background Report, eleven Dams in Placer County are at least 75 feet tall or have a capacity of 10,000 acre-feet of water. Thirty-three smaller dams are located throughout the county. Failure of any one of these dams would flood downstream areas and could cause loss of life and property.

Based on the National Inventory of Dams database provided with FEMA's HAZUS loss estimation software, there are ninety dams rated as "high" or " significant" hazard that could potentially impact Placer County if a failure was to occur. This includes dams that may lie in neighboring counties that drain into Placer County. Thirty-seven of the ninety dams are classified as high hazard. Fifty-three are rated as a significant hazard.

The following map identifies high hazard and significant dams in the Placer County area.



(Map Compilation: AMEC Earth & Environmental; Source data: HAZUS)

Past Occurrences

According to the HMPC, there have been three dam failures in the area:

Hell Hole Dam Failure - In 1964 construction of the Hell Hole dam was underway and the contractor had stopped operations for the winter. A major storm event (rains) occurred during December 1964 causing the Hell Hole Reservoir to fill and since the dam was not completed, it failed sending a considerable amount of water towards Auburn. The water washed out a bridge on Highway 49 over the American River at the confluence of the North and Middle Forks and flooded a quarry. Due to the way the construction contract was worded, the contractor had to rebuild the dam at his own expense. As a result, Placer County incurred no costs related to this event. No claims were filed against PCWA by either the quarry owner or the state for damages.

1986 Auburn Coffer Dam Failure – As a result of area flooding, the Coffer Dam at Auburn breached and partially washed away. The U.S. Bureau of Reclamation had designed the Coffer Dam for a controlled failure by building a soft earthen plug into the dam for this purpose. It appears the dam failed as designed.

August 2004 Ralston Dam Release Gate Break- A broken release gate on Ralston Dam in the middle fork of the American River prompted the National Weather Service to issue a flash flood warning until 1 p.m. in Placer County.

According to the PCWA, the gate near the Ralston Powerhouse malfunctioned at 6 a.m. The sudden release of water from Ralston Reservoir south of Auburn sent a "wall of water three- to four-feet high" down the river. About 800 to 1,000 acre-feet of water were released, with flows peaking between 10-11 a.m. It was expected to reach Folsom Dam by 12 noon. Sheriff's deputies and California Highway officers alerted campers in the Auburn State Recreation Area to move to higher ground. The CHP was monitoring the muddy water as it approached Highway 49. There were no immediate reports of injuries or damage along the river, which is popular with rafters, kayakers and residents fleeing the summer heat.

Likelihood of Future Occurrences

The County is potentially at risk from numerous dams under a variety of ownership and control and of varying ages and conditions. As a result, although infrequent, the potential exists for future dam failures in the Placer County planning area.

LANDSLIDE

Landslides refer to a wide variety of processes that result in the perceptible downward and outward movement of soil, rock, and vegetation under gravitational influence. Although landslides are primarily associated with steep slopes, they may also occur in areas of generally low relief and occur as cut-and-fill failures; river bluff failures, lateral spreading landslides;

collapse of wine-waste piles; failures associated with quarries and open-pit mines. Landslides may be triggered by both natural and human-induced changes in the environment resulting in slope instability.

Past Occurrences

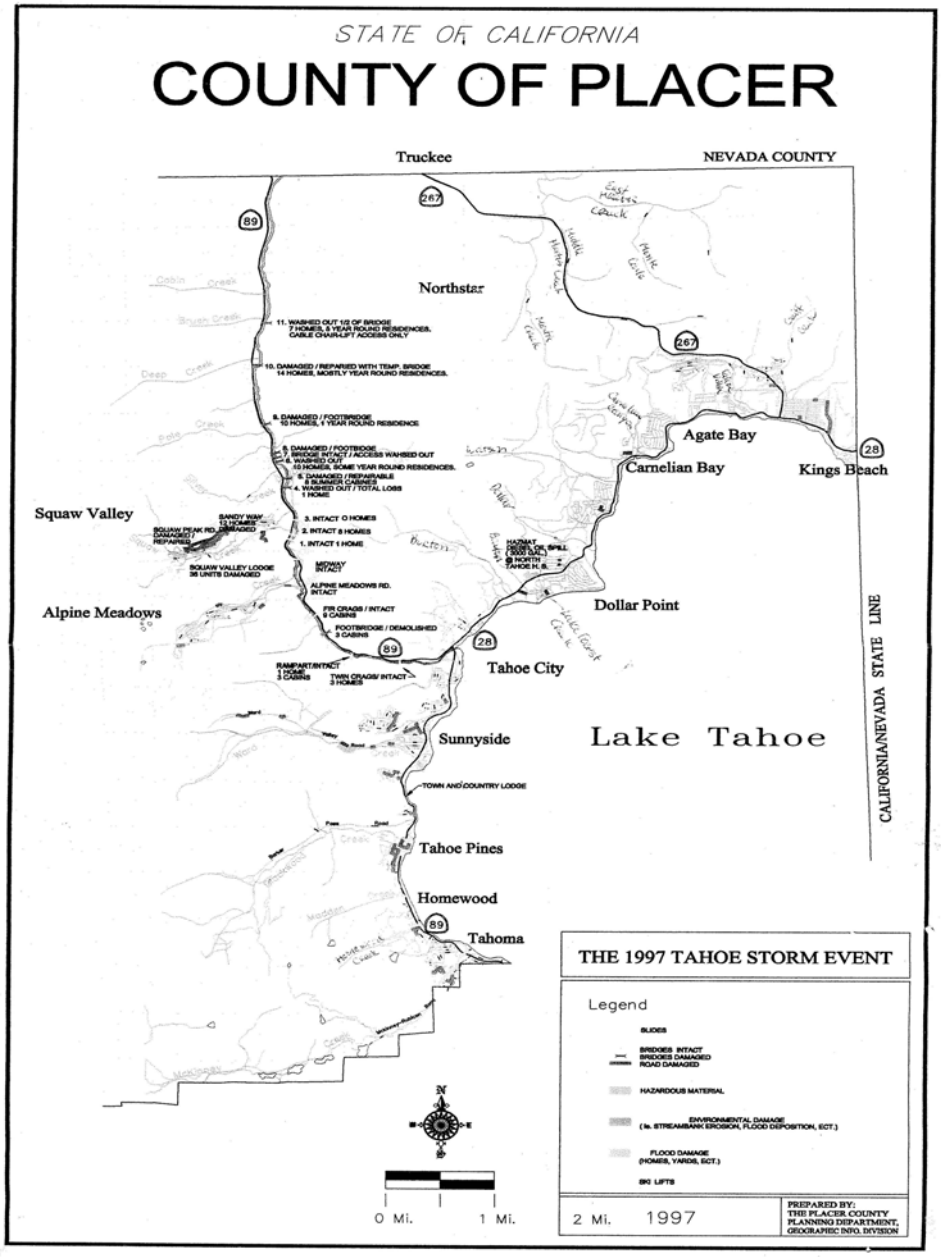
The Draft California Multi-Hazard Mitigation Plan indicates there have been no disaster declarations between 1950 and 1997 associated with landslides in Placer County. According to the Placer Operational Area OES, landslides may occur throughout Eastern Placer County. They tend to occur with the greatest frequency on steep slopes adjacent to transportation routes. Interstate 80 east of Colfax and State Route 49 south of Auburn are frequently affected areas. Information provided by the HMPC included documented landslides in the Tahoe area along Truckee River, Squaw Creek and Bear Creek, associated with the 1997 flood event. The three major landslides were identified as the Wayne Road Landslide, the Sandy Way Landslide, and the Navajo Court Landslide.

Wayne Road Landslide – The Wayne Road Landslide is the most significant of the three landslides. The Wayne Road Landslide is actually the result of two separate failures occurring in separate drainages. The drainages meet just upslope of the impacted area directly west of the intersection of Sandy Way and Wayne Road. Based on information provided by local residents and Placer County personnel, the homes in the area were also impacted by landsliding in 1982 and in 1986. The 1982 event was larger than the 1986 event. Placer County personnel stated that, following the 1986 landslide, several small sedimentation basins were constructed north of Sandy Way in an attempt to contain future slide debris. These sedimentation basins were obliterated by slide debris during the 1997 event. Slide debris consisted of saturated, loose, silty sand and sandy silt with rock ranging in size from gravel to boulders up to 4 feet in diameter. The debris plugged existing culverts and several feet of slide debris was deposited against the sides of several residents.

Sandy Way Landslide – The Sandy Way Landslide occurred approximately one-quarter mile west of the Wayne Road Landslide, originating just west of Squaw Summit Road and deposited significant debris upslope of several residences on Sandy Way.

Navajo Court Landslide – The Navajo Court Landslide originated just east of a 300,000-gallon water storage tank located above the intersection of Navajo Court and Squaw Summit Road. The landslide debris flowed downslope, inundating the intersection of Navajo Court and Squaw Summit Road and plugged two culverts beneath Squaw Summit Road. The channel was rerouted to the west and flowed down both sides of Navajo Court, eroding new gullies on both sides of the road. Debris continued downslope, plugged two culverts beneath Christy Lane and deposited a significant amount of debris in the parking lot behind the post office on Squaw Valley Road.

A map depicting the landslide areas is provided on the following page.



(Source: Placer County Planning Department)

Likelihood of Future Occurrences

Based on observations made by the Placer County Department of Public Works following the 1997 slides, the landslides were classified as debris flows that generally occur in the immediate vicinity of existing drainage swales or steep ravines. Debris flows occur when near surface soil in or near steeply sloping drainage swales becomes saturated during unusually heavy precipitation and begins to flow downslope at a rapid rate. Debris flows can reach speeds of up to 10 feet per second. The source areas of all three debris flows described above were in areas of existing springs. Landsliding has likely occurred numerous times in the past, probably over the

last several hundred, if not thousands of years as evidenced by past deposits exposed in erosion gullies. Although the immediate risk of additional sliding was reduced with colder temperatures, with significant rainfall, additional failures are likely. In addition, volumes of unstable debris remaining in areas of moderate slopes create a high probability of future landsliding in the area. The Placer County Department of Public Works further concluded that landslides will continue to impact the area when heavy precipitation occurs, as they have in the past, and prevention of such events is virtually impossible.

AVALANCHE

Avalanches following significant snowstorms have resulted in fatalities within the County. The vast majority of avalanches occur during and shortly after storms. Avalanches occur when loading of new snow increases stress at a rate faster than strength develops, and the slope fails. Critical stresses develop more quickly on steeper slopes and where deposition of wind-transported snow is common. Historically, they have occurred between the months of January and March, following snowstorms. This hazard generally affects a small number of people, such as snowboarders, skiers, and hikers who venture into backcountry areas during or after winter storms. Roads and highway closures, damaged structures, and destruction of forests are also a direct result of avalanches. The combination of steep slopes, abundant snow, weather, snowpack, and an impetus to cause movement create an avalanching episode. Avalanche hazards exist in eastern Placer County, where combinations of the above criteria occur.

Past Occurrences

Areas where the potential for avalanches to exist are zoned as moderate or high avalanche hazard zones and have been identified using maps available at the Placer County Planning Department. Moderate hazard zones are usually on shallow slopes and located immediately downhill of high zones. These high and moderate zones are located near the Nevada County line, south of Donner Lake and Lake Van Norden, east of Tahoe City, near Twin Peaks and McKinney Bay, and in areas near Squaw Valley, Alpine Meadows, and Sugar Bowl. According to the 2004 Placer Operational Area, Emergency Operations Plan, areas of particular concern include:

- Alpine Meadows, Bear Creek
- Donner Lake (West Shore), Donner Summit, Norden Area
- Lake Tahoe (West Shore), Homewood Area
- Serene Lakes, Onion Creek
- Squaw Valley Area
- Sugar Bowl, Onion Creek
- Truckee River Corridor
- Ward Creek Tract

The following recent avalanche incidents have resulted in fatalities within Placer County:

March 31,1982 – At Alpine Meadows a 30-foot high wall of snow plowed through a ski lodge and other buildings at 80 mph, killing seven people.

February 11, 1998 –Donner Summit backcountry, one fatality - snowboarder.

February 6, 1999 – Donner Summit, one fatality.

February 21, 2001 – Squaw Valley, two fatalities, Class II Avalanche. A storm resulted in 20 inches of snow and winds out of the SSW were at 40-50 miles per hour range with gust up to 60-70 miles per hour.

March 8, 2002 – Sugarbowl Resort, one fatality. A storm hit with 34 inches of snow and winds were up to 100 miles per hour.

January 1, 2004 – Donner Summit near Castle Peak, one fatality.

Likelihood of Future Occurrences

Given the topography and amount of snow falling on an annual basis in Eastern Placer County, avalanches will continue to occur. The loss of life due to an avalanche is usually due to people recreating in remote areas at the wrong time. Avalanche warnings are posted after winter storms; therefore, information is available to reduce the risk of being caught in one. Reoccurrences will most likely continue if people continue to take risks in backcountry areas during the winter months.

WILDFIRE

Wildfire and Urban Wildfire are an ongoing concern for Placer County. Generally, the fire season extends from early spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in air and fuel. These conditions, when combined with high winds and years of drought, increase the potential for wildfire to occur. While the wildfire risk is predominantly associated with Wildland-Urban Interface (WUI) areas, significant wildfires can also occur in heavily populated areas, as was demonstrated by the 2002 Sierra Fire in the Loomis area. WUI is a general term that applies to development interspersed or adjacent to landscapes that support wildland fire. WUI areas have been a major focus of California Department of Forestry and Fire Protection's (CDF) fire management strategy since at least 1972. A fire along this wildland/urban interface can result in major losses of property and structures.

Potential losses from wildfire include: human life, structures and other improvements; natural and cultural resources; the quality and quantity of the water supply; other assets such as timber, range and crop land, and recreational opportunities; and economic losses. Smoke and air pollution from wildfires can be a severe health hazard. In addition, catastrophic wildfire can lead to secondary impacts or losses such as future flooding and landslides during the rainy season. Generally, there are three major factors that sustain wildfires and predict a given area's potential to burn. These factors are fuel, topography, and weather.

- **Fuel –** Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures, such as homes, and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. In addition, "ladder fuels" can spread a ground fire up through brush and into trees, leading to a devastating crown fire, one that burns in the upper canopy and cannot be controlled. The volume of available fuel is described in terms of Fuel Loading. Certain areas in and surrounding Placer County are extremely vulnerable to fires as a result of dense vegetation combined with a growing number of structures being built near and within rural lands. The presence of fine fuels, 1000 hr fuels and needle cast combined with the cumulative effects of previous drought years, heavy vegetation mortality, tree mortality and blowdown across Placer County has added to the fuel loading in the area. Fuel is the only factor that is under human control.

- **Topography -** An area's terrain and land slopes affect its susceptibility to wildfire spread. Both fire intensity and rate of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.

Weather - Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels

that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The greater a wind, the faster a fire will spread, and the more intense it will be. Winds can be significant at times in Placer County. North winds in Placer County are especially conducive to hot, dry conditions, which can lead to "red flag" days indicating extreme fire danger. In addition to wind speed, wind shifts can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. Lightning also ignites wildfires, often in difficult-to reach terrain for firefighters. Related to weather is the issue of recent drought conditions contributing to concerns about wildfire vulnerability. During periods of drought, the threat of wildfire increases.

Factors contributing to the wildfire risk in Placer County include:

- Overstocked forests, severely overgrown vegetation, and lack of defensible space around structures;
- Excessive vegetation along roadsides and hanging over roads, fire engine access, and evacuation routes;
- Conditions such as drought and overstocked forests contribute to increased beetle kill in weakened and stressed trees;
- Narrow and often one lane and/or dead end roads complicating evacuation and emergency response as well as the many subdivisions that have only one means of ingress/egress;
- Inadequate or missing street signs on private roads and house address signs;
- Nature and frequency of lightning ignitions; and
- Increasing population density leading to more ignitions.

All of the above factors indicate a potential for very active to severe fire behavior.

Past Occurrences

Wildfires are of significant concern throughout California. According to the CDF, vegetation fires occur within CDF's jurisdiction on a daily basis; most are controlled and contained early with limited damages. For those ignitions that are not readily contained and become wildfires, damages can be extensive. There are many causes of wildfire from naturally caused lightening fires to human-caused fires linked to activities such as smoking, campfires, equipment use and arson. According to CDF, from 1994 to 1999, over 90 percent of fires in California were attributed to human causes. Further, recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. (http://www.frap.cdf.ca.gov/projects/ignition_regression/_ignit_pop.html.) With population continuing to grow throughout Placer County, the risk from wildfires also continues to grow.

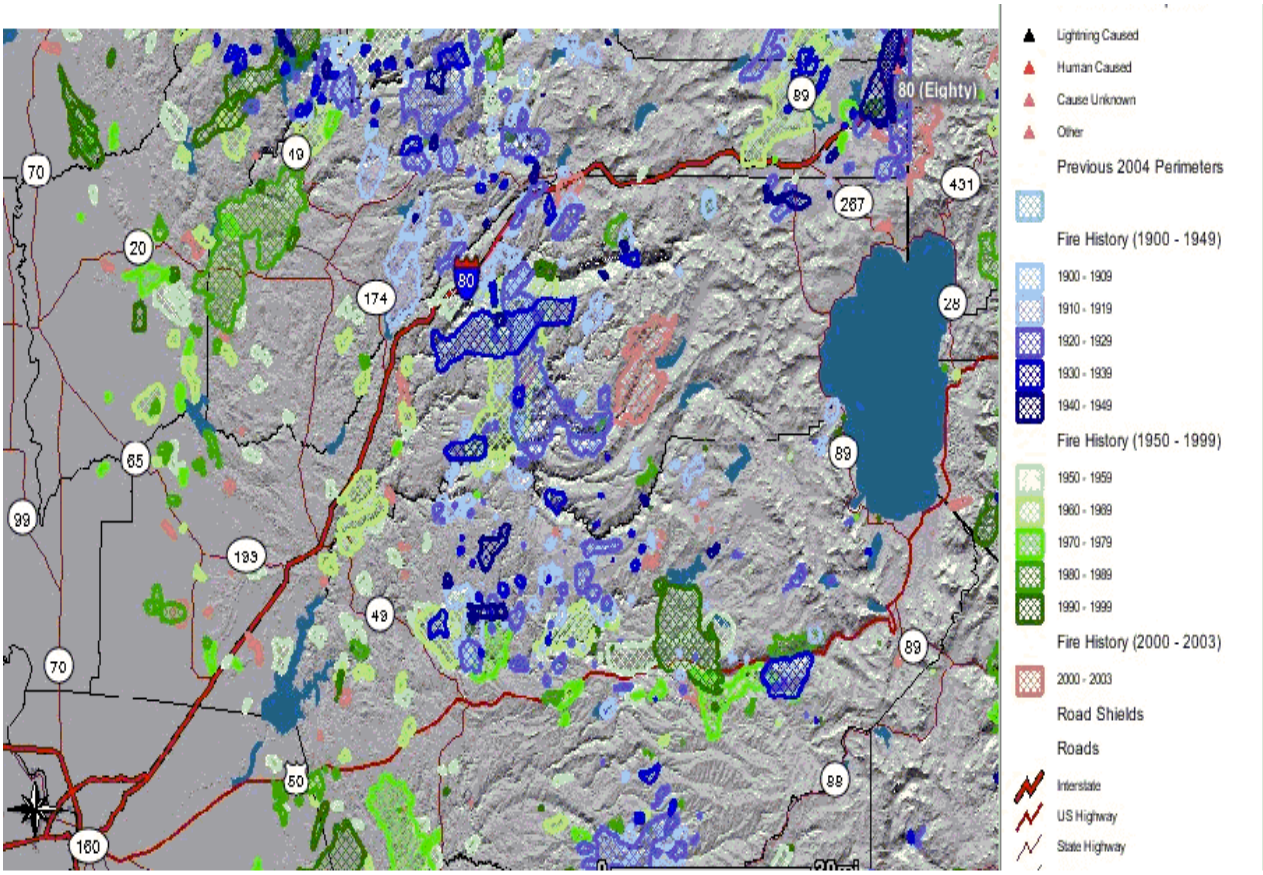
Based on an historical CDF fire database, Placer County has experienced over 149 significant wildfires since 1908. Details are provided in the tables and map provided on the following pages.

Placer County Significant* Fires by Cause and Acres Burned (1908 – 2003)
Summary Table

CAUSE	CAUSE CODE	COUNT	TOTAL ACRES
Lightning	1	9	2,835
Equipment Use	2	4	1,529
Smoking	3	2	534
Campfire	4	2	16,588
Debris	5	2	390
Arson	7	4	645
Miscellaneous*	9	36	75,792
Vehicle	10	3	3,397
Powerline	11	1	284
Unknown/Unidentified	14	86	125,678
Totals		149	227,672

*Definitions of "Significant" and "Miscellaneous" not defined in source document.

Placer County Fire History Map



Source: California Fire Alliance Interactive map website. http://wildfire.cr.usgs.gov/fire_planning/viewer.htm

Placer County Significant Fires by Cause and Acres Burned (1908 – 2003)
Detail Table

FIRES ID	FIRE NAME	ACRES_CALC	AGENCY	CAUSE	YEAR
118		1258	USF	14	1908
119		631	USF	14	1908
120		219	USF	14	1908
143		896	USF	14	1909
172		113	USF	14	1910
174		485	USF	14	1910
175		185	USF	14	1910
176		770	USF	14	1910
177		1533	USF	14	1910
178		260	USF	14	1910
179		2253	USF	14	1910
180		239	USF	14	1910
181		387	USF	14	1910
272		1267	USF	14	1911
453		366	USF	14	1913
454		1272	USF	14	1913
702		1407	USF	9	1916
735		293	USF	14	1916
821	MILLER DIGGINS FIRE	287	USF	14	1917
822	SECTION 28	231	USF	9	1917
831	SECTION 28	1698	USF	9	1917
854		6268	USF	14	1917
855		498	USF	14	1917
856		865	USF	14	1917
1039		1013	USF	14	1918
1048	NORTH WALLACE CANON	9	USF	14	1918
1049	WILD CAT	386	USF	1	1918
1063		178	USF	9	1918
1175		882	USF	14	1919
1176		610	USF	14	1919
1178		1702	USF	14	1919
1179		787	USF	14	1919
1428	PENNSYLVANIA	273	USF	9	1921
1649		189	USF	14	1923
1728		1102	USF	9	1924
1784		1401	USF	14	1924
1785		222	USF	14	1924

FIRES ID	FIRE NAME	ACRES_CALC	AGENCY	CAUSE	YEAR
1786		27876	USF	14	1924
1787		710	USF	14	1924
1788		243	USF	14	1924
1789		105	USF	14	1924
1790		114	USF	14	1924
1792		1769	USF	14	1924
1936	CEMENT HILL	11	USF	9	1925
1939	DEADMAN'S FLAT	2591	USF	9	1925
2031		1671	USF	9	1926
2036		428	USF	9	1926
2037		2640	USF	14	1926
2192		2241	USF	14	1927
2355		259	USF	14	1928
2356		1412	USF	14	1928
2436		107	USF	14	1929
2647	RUBICON	1377	USF	14	1931
2651		52	USF	1	1931
2682		619	USF	14	1931
2683		392	USF	14	1931
2684		3298	USF	14	1931
2906		84	USF	9	1933
2992		678	USF	9	1934
3188		21286	USF	14	1936
3422	RAMSEY CROSSING	25	USF	1	1939
3447		523	USF	14	1939
4224		271	USF	1	1946
4422		129	USF	9	1948
4513		99	USF	9	1949
4514		40	USF	9	1949
4515		125	USF	9	1949
4516		1464	USF	9	1949
4518		342	USF	1	1949
4623	BEACON	407	CDF	14	1950
4778		201	USF	9	1950
4850	EUREKA	221	CDF	14	1951
4855	HALSEY	480	CDF	14	1951
4894	WIZWELL	1049	CDF	14	1951
4962		257	USF	9	1951
5061	DENIZ	297	CDF	14	1952
5156		29	USF	9	1952
5224	MOONEY	257	CDF	14	1953

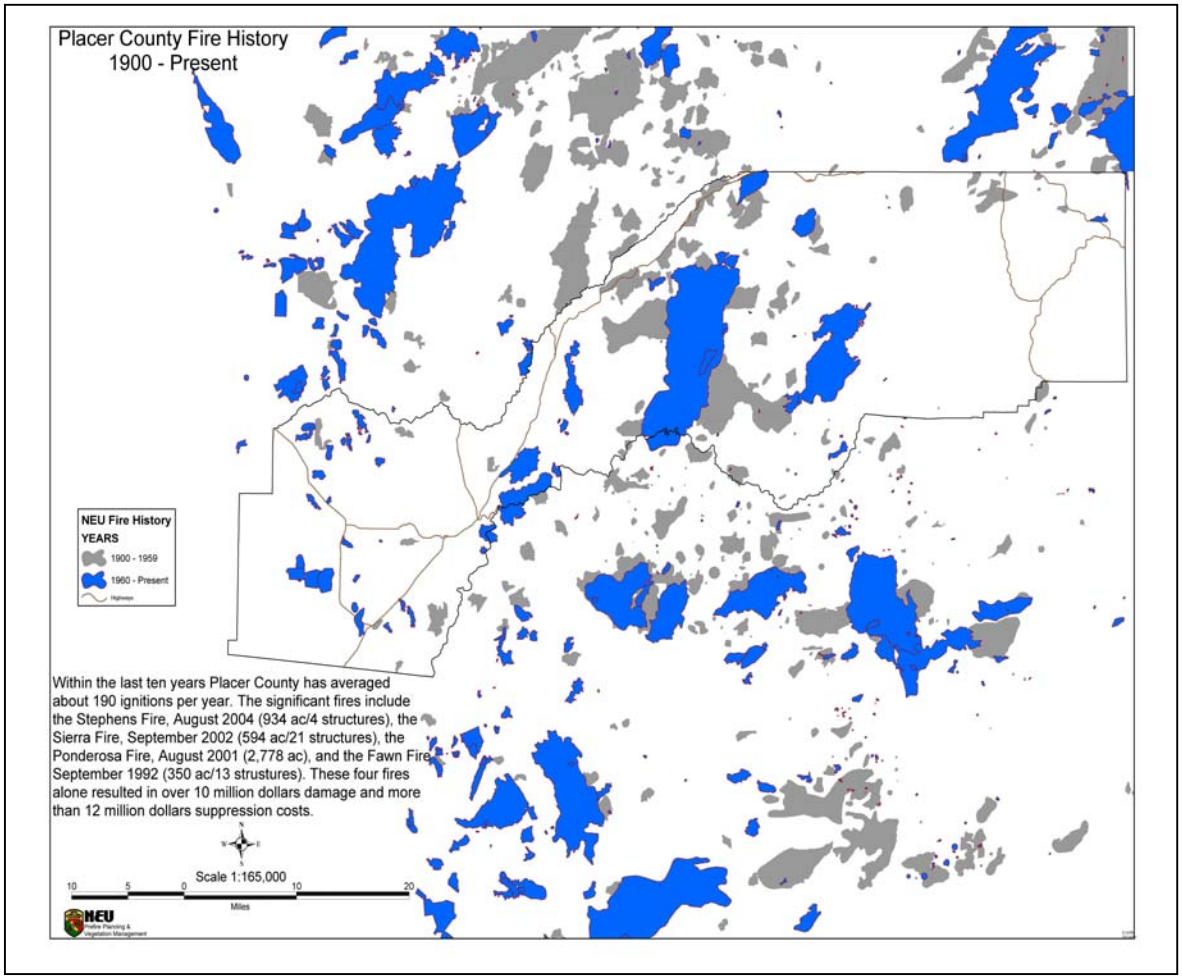
FIRES ID	FIRE NAME	ACRES_CALC	AGENCY	CAUSE	YEAR
5441	OMOHUNDRO	2026	CDF	14	1954
5504		38	USF	9	1954
5562	BROWN BAR CANYON	662	CDF	14	1955
5640		60	USF	9	1955
5731	SAM BABB	316	CDF	14	1956
6037	LIGHTNING #6	551	CDF	14	1958
6192	MADONNA #2	3164	CDF	14	1959
6268		299	USF	9	1959
6404	VOLCANO	2145	CDF	14	1960
6405		19	USF	9	1960
6420		19	USF	9	1960
6465	HOMESTAKE MINE	42598	USF	9	1960
6489	AUBURN	418	CDF	14	1961
6490	AUBURN	672	CDF	14	1961
6494	BILDERBACK	925	CDF	14	1961
6509	GILLIS HILL	953	CDF	14	1961
6510	GREEN VALLEY	526	CDF	14	1961
6674	ROADSIDE #20	102	CDF	14	1962
6846	BREWER	293	CDF	14	1964
6873	PLACER ROADSIDE #51	1730	CDF	14	1964
6877	ROADSIDE #51	3546	CDF	14	1964
6903	HELL HOLE	21	USF	9	1964
6977	APPLEGATE	3529	CDF	14	1965
6986	SPRR #71	268	CDF	14	1965
7475	IOWA HILL	464	CDF	14	1969
7605	JACINTO	385	CDF	14	1970
7610	PONDEROSA	296	CDF	14	1970
7936	SIERRA COLLEGE	188	CDF	14	1972
8779		23	USF	9	1977
9038	ANIMAL	763	CDF	14	1979
9396	DOG BAR	347	CDF	14	1980
9416	ROSEVILLE	236	CDF	14	1980
9699	NADEIC	425	CDF	9	1981
9700	PG&E #5	812	CDF	2	1981
9937	ANDRESSEN	439	CDF	2	1982
10082	NONE	820	CDF	14	1983
10230	CURTIS	876	CDF	14	1984
10417	DOG BAR	186	CDF	3	1985
10431	ROADSIDE 3 4 5 6	1854	CDF	14	1985
10592	ROADSIDE 82	143	CDF	14	1986
10593	ROADSIDE 83	189	CDF	7	1986

FIRES ID	FIRE NAME	ACRES_CALC	AGENCY	CAUSE	YEAR
10594	ROADSIDE 84	65	CDF	14	1986
10636		551	USF	9	1986
10640		2040	USF	14	1986
10738	CONOUCK	183	CDF	2	1987
10833		18	USF	1	1987
10834		891	USF	1	1987
11065		29	USF	9	1988
11237		15	USF	9	1989
11241		9	USF	1	1989
12140		626	USF	9	1995
12188	HELESTER	482	USF	9	1995
13019	DRIVERS	348	CDF	3	2000
13020	AMERICAN	148	CDF	14	2000
13047	DEADWOOD	95	USF	2	2000
13612		243	USF	14	1944
13706	BLUE OAKS	1427	CDF	9	2001
13707	WHITNEY	142	CDF	14	2001
13708	MARTIS	14126	CDF	4	2001
13709	LINCOLN CITY ASST	372	CDF	7	2001
13710	PONDEROSA	2777	CDF	10	2001
13711	GAP-CATNF14107	2462	USF	4	2001
13942	SIERRA	594	CDF	10	2002
13943	PONDEROSA	46	CDF	7	2002
13945	GARDEN	284	CDF	11	2002
14007	STAR	16464	USF	9	2001
14366	SIERRA	26	CDF	10	2003
14367	VALLEY	52	CDF	5	2003
14368	PINES	38	CDF	7	2003
14929	ROYAL	338	USF	5	2003
14935	COD FISH	841	USF	1	2003

Source: California Department of Forestry and Fire Protection 2003 Fire Perimeters GIS coverage.
(The AGENCY attribute in the fires subclass is currently populated with the agency who supplied that particular incident.)

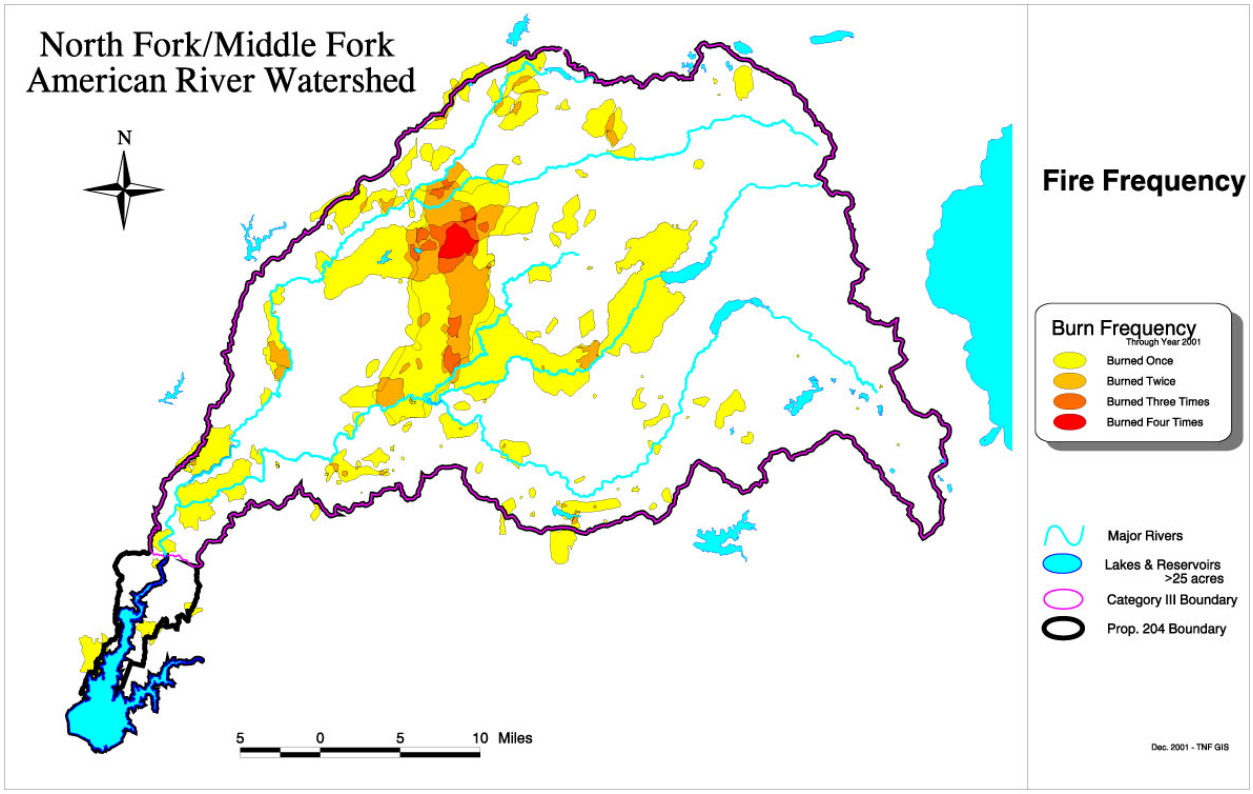
It is important to note, that in addition to the Placer County fire history detailed in the above tables and map, there are numerous smaller fires that occur in the area year after year, many of these a result of "roadside spots" along I-80. These smaller fires also have the ability to quickly get out of hand and become significant fires (e.g., the 2002 Sierra Fire). Also, small fires in acreage can result in large losses. A fire in the Heather Glen area in 2000 was only 10 acres, but resulted in $350,000 in damages because a home was lost.

In addition to the Fire History Map above, CDF has provided a more detailed map below of the history of fires in Placer County and surrounding areas:



(Source: CDF)

Of further interest are areas within the County that have burned multiple times. The following two maps, taken from the American River Watershed Group and the 2000 Lake Tahoe Watershed Assessment document, depict the frequency of burn areas within select areas of the County.



(Source: American River Watershed Group)

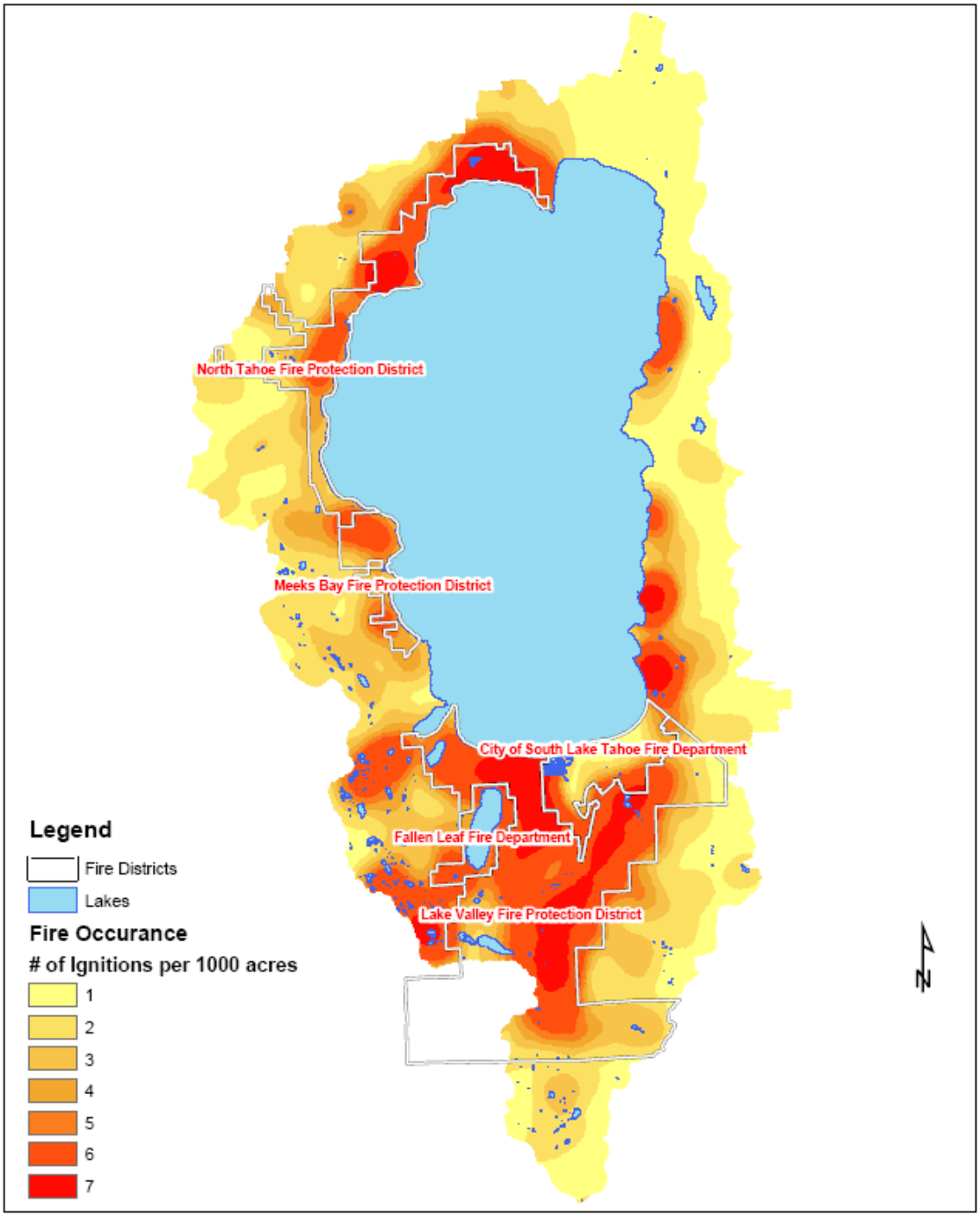


Figure 1. Fire occurance in the Lake Tahoe Basin
(source: Lake Tahoe Watershed Assessment 2000)

The HMPC also provided the following information on historical fires in the County.

1975/1977, Sawmill Fire – The Sawmill Fire and another fire occurred in the area of Cape Horn and Alpine Meadows subdivision, just three miles northeast of Colfax.

1990, Placer County Fire – This fire burned approximately 300 acres of grass, brush, and oaks to burn in the area of Placer Canyon. The fire resulted in evacuations and destroyed several out buildings.

2000, Heather Glen Fire- The Heather Fire caused by sparks from a lost trailer wheel along Interstate 80 destroyed one home and forced a neighborhood evacuation in Applegate. While only ten acres in size, this fire resulted in $350,000 in damage.

August 12-20, 2001, Narrow Gauge Fire – This fire near Colfax burned 30 acres and forced closure of I-80 for about an hour due to dense smoke. This fire, blamed on a catalytic converter, was quickly contained as California Department of Forestry air tankers were already in the area and able to quickly respond.

August 2001, Gap Fire- The Gap Fire near Blue Canyon burned 2,462 acres of forestland and caused the closure of Interstate 80.

August 17-23, 2001, Ponderosa Fire- This fire burned 2,780 acres.

August 25 – September 13, 2001, Star Fire- The Star Fire started in Eldorado National Forest and spread to Tahoe National Forest and burned approximately 16,761 acres.

Star Fire, August 26, 2001. Eldorado National Forest.
Photo Courtesy of USFS.

2001, Martis Fire- This fire east of Truckee burned 20,000 acres; threatened homes; shut down Interstate 80; and damaged railway trestles affecting Amtrak passenger train service. The heavy smoke caused poor air quality and raised health issues for individuals with respiratory problems.

While the Martis Fire itself was not in Placer County, there were significant impacts to the County as a result of this fire. The County also contributed major firefighting assistance.

2002, Sierra Fire- Within the communities of Loomis and Granite Bay approximately 900 acres of grass, brush and oaks burned in the area of Interstate 80, Barton Road, Wells Avenue, Morgan Place, Indian Springs, and Cavitt-Stallman Road. The fire destroyed six structures and threatened two schools. One hundred homes were evacuated, and more than 1,000 homes in both communities were threatened. FEMA provided federal funds to assist in fighting this wildfire.

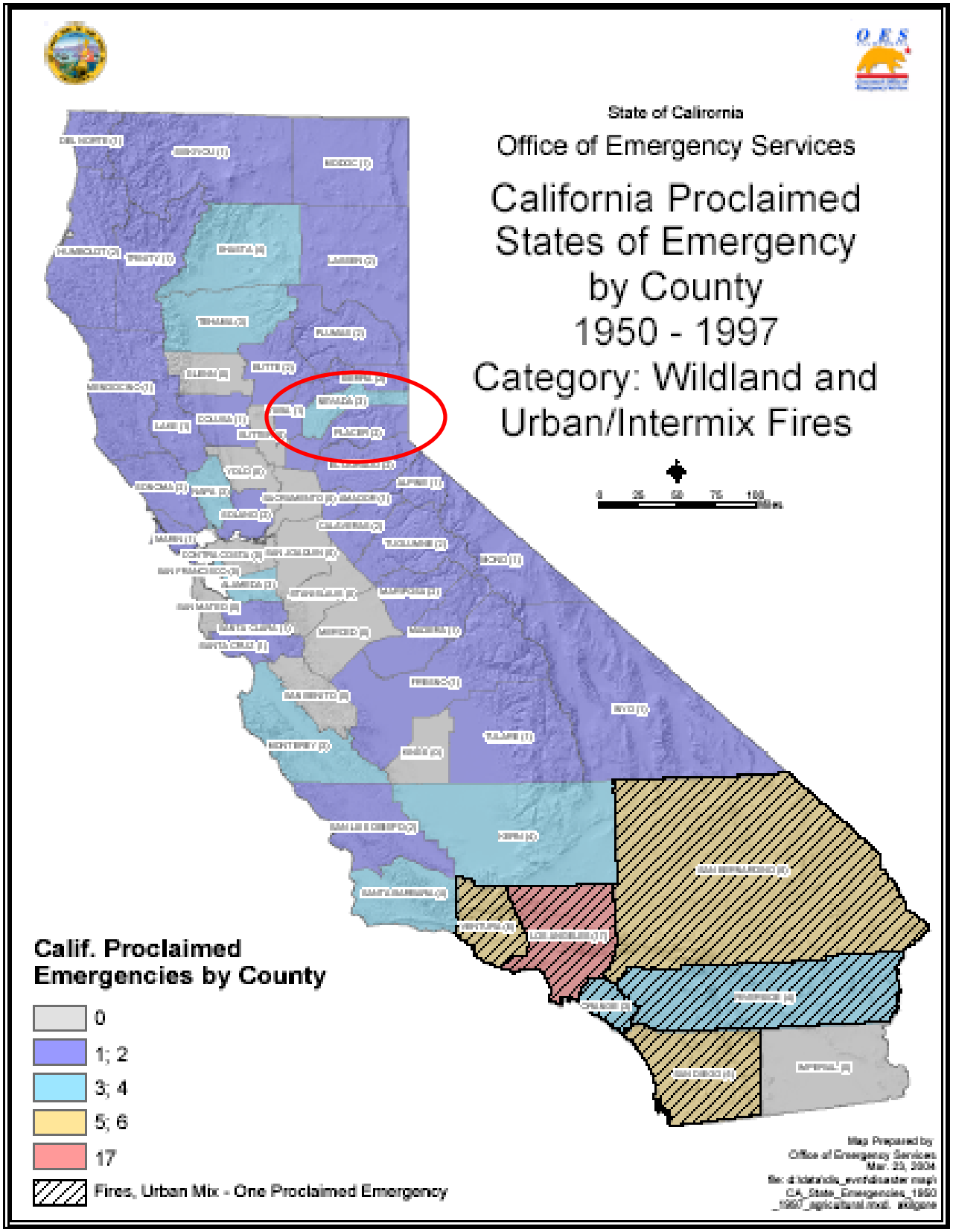
2004, Stevens Fire- The Stevens Fire located at Cape Horn/Iowa Hill near Colfax, was 100 percent contained at 934 acres.

2004, Numerous fires- Numerous fires of varying sizes occurred in Placer County during the 2004 fire season. These include fires caused by equipment sparks, abandoned campfires, arson and undetermined causes.

Stevens Trail Fire. Photos from website: http://yubanet.com/stevenstrail.html; courtesy of Roger Burdick.

Stevens Trail Fire. Photos from website: http://yubanet.com/stevenstrail.shtml; courtesy of Robin Yonash.

Although historically there have been numerous wildfires in Placer County, there have only been two proclaimed states of emergencies for wildfires between 1950 and 1997. This is illustrated in the following map from the Draft California Multi-Hazard Mitigation Plan.


State of California
Office of Emergency Services
California Proclaimed States of Emergency by County 1950 - 1997
Category: Wildland and Urban/Intermix Fires
Calif. Proclaimed Emergencies by County
0
1; 2
3; 4
5; 6
17
Fires, Urban Mix - One Proclaimed Emergency
Map Prepared by
Office of Emergency Services

Likelihood of Future Occurrences

From May to October of each year, Placer County faces a serious wildland fire threat. Most of the County is susceptible to wildland fires. The threat of wildfire and potential losses are constantly increasing as human development and population increases and the Wildland Urban Interface areas expand. Due to its high fuel load and long, dry summers, most of Placer County continues to be at risk from wildfire.

EARTHQUAKE

Placer County lies between two seismically active regions in the western United States. Tectonic stresses associated with the North American-Pacific Plate boundary can generate damaging earthquakes along faults 30 to 100 miles to the west of the County. Extreme eastern Placer County borders the Basin and Range province that entails most of Nevada and western Utah. This area is riddled with active faults that are responsible for and form the boundary between each basin or valley and the neighboring mountain range. "Active" faults, which represent the highest earthquake hazard, are those that have ruptured to the ground surface during the Holocene period (about the last 11,000 years).

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and causes the shaking that is felt during an earthquake. The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Seismologists have developed two scales as seen on the following page to quantify the shaking intensity of an earthquake's effects, which is measured by how an earthquake is felt by humans.

Earthquakes can cause structural damage, injury and loss of life, as well as damage to infrastructure networks such as water, power, communication, and transportation lines. Other damage-causing effects of earthquakes include surface rupture, fissuring, settlement, and permanent horizontal and vertical shifting of the ground. Secondary impacts can include landslides, seiches, liquefaction, and dam failure.

EARTHQUAKE INTENSITIES WITH APPROXIMATE CORRESPONDING MAGNITUDES

MERCALLI INTENSITY	DESCRIPTION	RICHTER MAGNITUDE
I	*INSTRUMENTAL*: detected only by seismographs	3.5
II	*FEEBLE*: noticed only by sensitive people	4.2
III	*SLIGHT*: like the vibrations due to a passing train; felt by people at rest, especially on upper floors	4.3
IV	*MODERATE*: felt by people while walking; rocking of loose objects, including standing houses	4.8
V	*RATHER STRONG*: felt generally; most sleepers are awakened and bells ring	4.9 - 5.4
VI	*STRONG*: trees sway and all suspended objects swing; damage by overturning and falling of loose objects	5.5 - 6.0
VII	*VERY STRONG*: general alarm; walls crack; plaster falls	6.1
VIII	*DESTRUCTIVE*: car drivers seriously disturbed; masonry fissured; chimneys fall; poorly constructed buildings damaged	6.2
IX	*RUINOUS*: some houses collapse where ground begins to crack, and pipes break open	6.9
X	*DISASTROUS*: ground cracks badly; many buildings destroyed and railway lines bent; landslides on steep slopes	7.0 - 7.3
XI	*VERY DISASTROUS*: few buildings remain standing; bridges destroyed; all services (railways, pipes and cables) out of action; great landslides and floods	7.4 - 8.1
XII	*CATASTROPHIC*: total destruction; objects thrown into air; ground rises and falls in waves	> 8.1

(Source: Math/Science Nucleus.Org website)

Past Occurrences

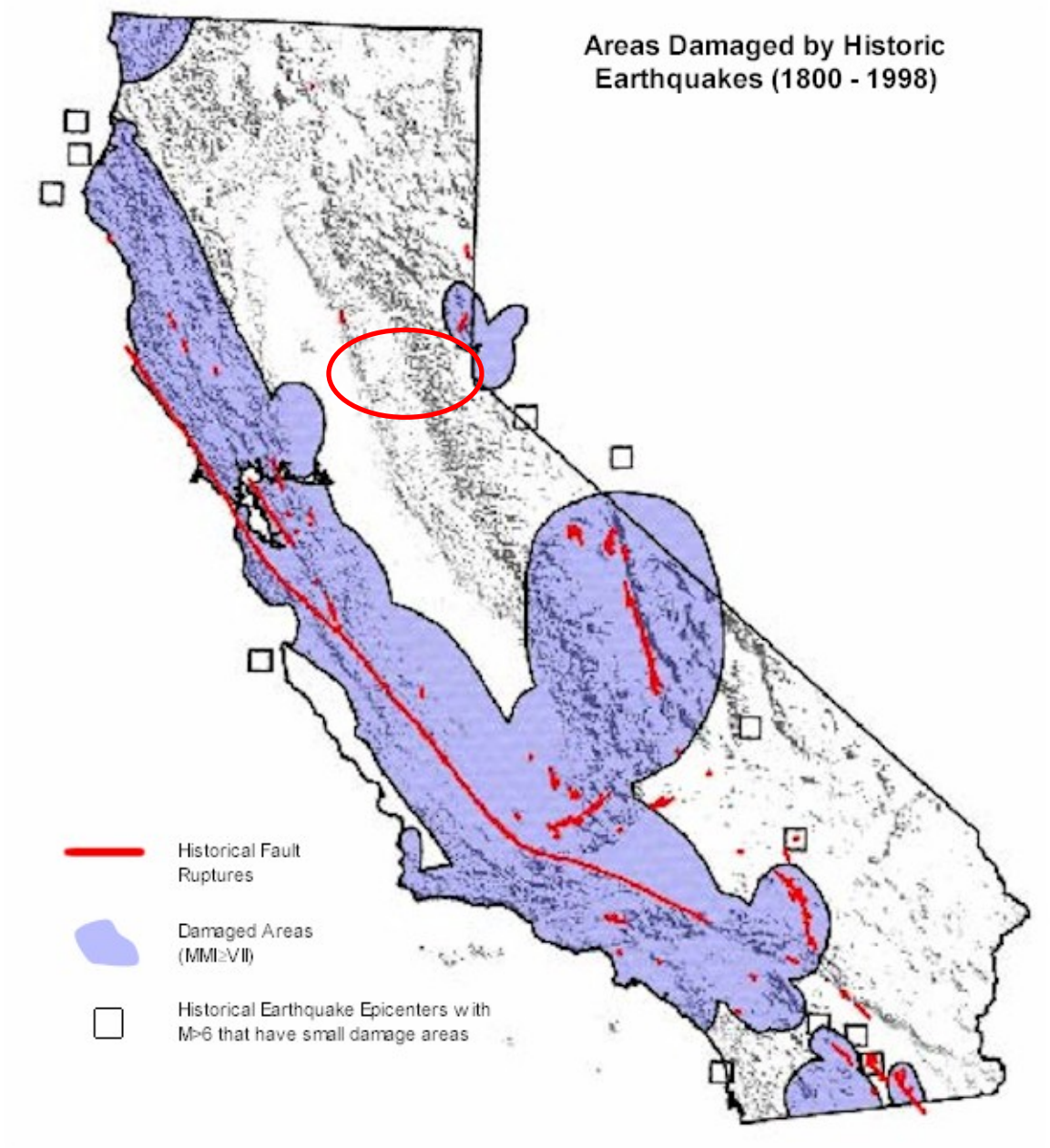
The closest recently active fault in the western Sierra Nevada foothills is the Cleveland Hills fault, which is situated approximately 36 miles northwest of Auburn. This fault was the source of the 1975 Oroville earthquake (Richter Magnitude: 5.7), which was felt strongly in Placer County and neighboring areas. Another potential earthquake source is the Midland Fault Zone on the western side of the Sacramento Valley, where in 1892 an earthquake centered between the cities of Vacaville and Winters caused minor damage in the City of Lincoln.

Placer County itself is traversed by a series of northwest trending-faults that are related to the Sierra Nevada uplift. Although portions of western and eastern Placer County are located in a seismically active region, no known faults actually go through any of the cities or towns. However, the Bear Mountain and the Melones faults are situated approximately three to four miles westerly and easterly from the City of Auburn respectively. It is reported that an estimated 4.0+ Richter magnitude earthquake occurred between Auburn and Folsom in 1908 with an epicenter possibly associated with the Bear Mountain fault. Earthquakes on these faults would have the greatest potential for damaging buildings in Auburn, especially the unreinforced masonry structures in the older part of the city and homes built before 1960 without adequate anchorage of framing and foundations. Similar lower magnitude but nearby earthquakes are capable of producing comparable damages in other Placer County communities.

Additionally, western Placer County may experience ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas fault (source of the 8.0 estimated Richter magnitude San Francisco earthquake that caused damage in Sacramento in 1906, including the State Capitol, the full extent of which was not discovered until the mid-1970s) and the closer Hayward fault have the potential for experiencing major to great events. To the east in Nevada, there are several faults associated with a series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16, 1954 Fairview Peak event (about 100 miles east of Carson City). These events caused no damage in Reno, but there was some damage in Sacramento, probably because of the soft soil conditions. It is not clear if any Placer County communities experienced any damage from these events.

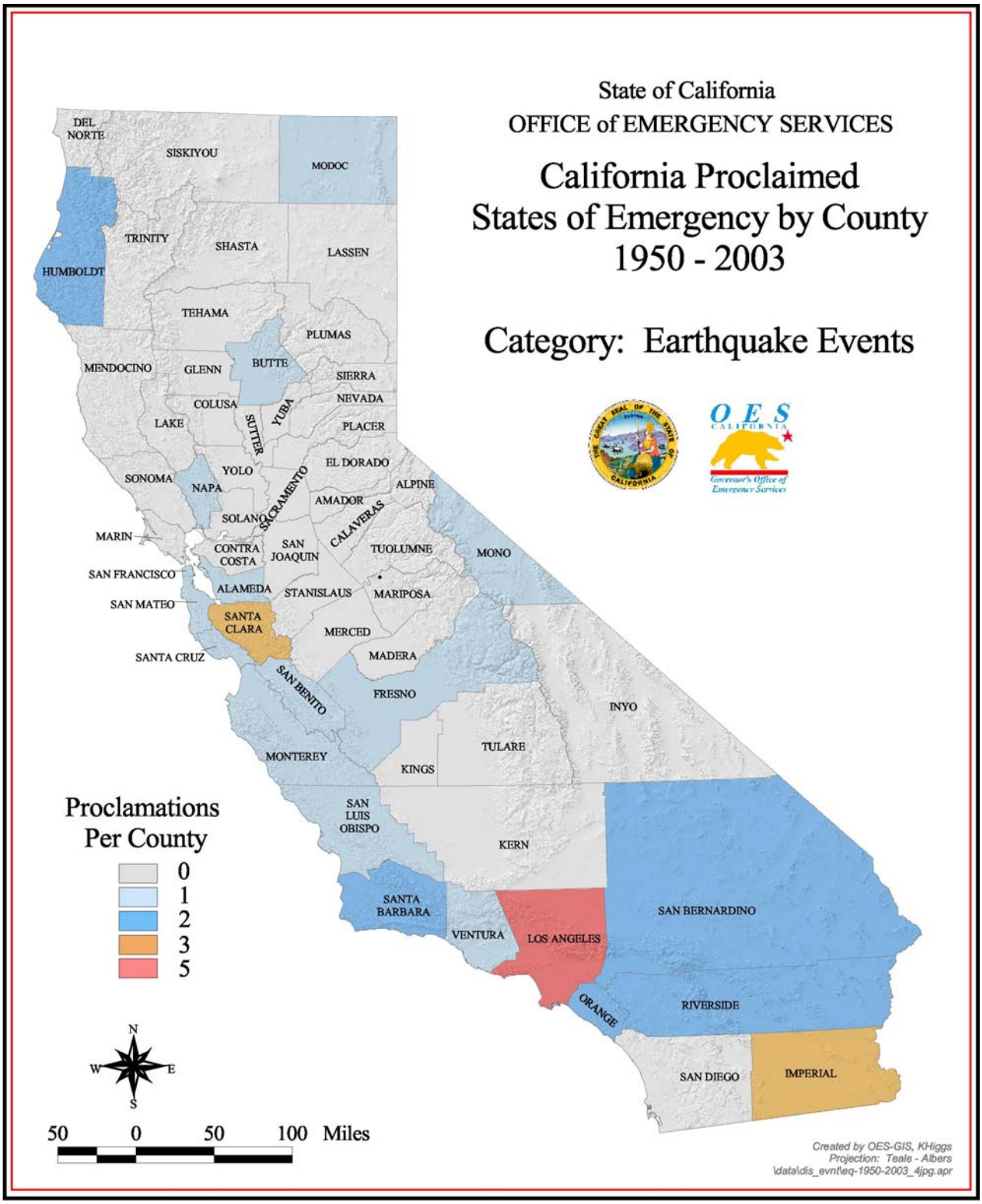
Further analysis using FEMA's HAZUS-MH (nationally applicable loss estimation software) shows that there are several potentially active faults east of the Placer County line in Nevada. The closest faults and estimated maximum earthquakes are the North Tahoe Fault (6.5 estimated maximum magnitude), Incline Village Fault (6.5 estimated maximum magnitude), and the East Tahoe Fault (7.0 estimated maximum magnitude).

The map on the following page obtained from the California Geological Survey's website provides additional historical earthquake information for the Placer County area.



(Source: http://www.consrv.ca.gov/CGS/rghm/psha/ofr9608/index.htm#Faults%20in%20California)

The map on the following page illustrates earthquake proclamations by County between 1950 and 2003. During that period, there were no earthquake proclamations for Placer County.



(Source: State of California Draft Multi-Hazard Mitigation Plan)

Likelihood of Future Earthquake Occurrences

Both the San Andreas fault and the closer Hayward fault have the potential for experiencing major to great events. The US Geological Survey recently (February 2004) estimated that there is a 62 percent probability of at least one 6.7 or greater magnitude earthquake occurring that could cause widespread damage in the greater San Francisco Bay area before 2032.

Another potential source for earthquakes in Placer are the faults associated with western edge of the Central Valley, recently defined as the Coast Range Central Valley (CRCV) boundary thrust fault system. Various documents define portions of this little known system as the Midland Fault Zone or the Dunnigan Hills fault where, as noted above, the 1892 Vacaville-Winters earthquake occurred. A southern part of the CRCV system may have been the source of the very damaging 1983 Coalinga earthquake.

The Foothill Fault Zone, a complex series of northwest trending-faults that are related to the Sierra Nevada uplift, and whose activity also is little understood, runs from about Oroville in the north to east of Fresno in the south. This was the source of Oroville's 1975 earthquake (and an earlier event in the 1940s), and subsequent research led to the identification and naming of the zone and questions about the site and design of the proposed Auburn Dam. Earthquakes on nearby fault segments in the zone could be the source of ground shaking in the Placer County area.

The City of Auburn's Safety Element notes, "there is a high potential that the area will be subject to at least moderate earthquake shaking one or more times over the next century." It states further (and as noted above), "The closest identified 'potentially active' faults…are the Bear Mountain and the Melones Faults," which are situated approximately three to four miles westerly and easterly from Auburn.

The results of recently announced (2000) earthquake scenarios based on research associated with historic fault movement and recent (2004) volcanic activity in the greater Lake Tahoe area provides improved knowledge of the mountain-building processes involved and the potential effects of events generated by earthquakes centered beneath or in the vicinity of the lake. However, this information does not necessarily indicate that the area's earthquake hazard is greater than previously understood.

It is known that large (estimated magnitude 7+) earthquakes have occurred historically beneath Lake Tahoe, which is part of the Basin and Range Extensional Province and is characterized by normal faulting on the north and to the west. University of Nevada and Japanese researchers confirmed the existence of the potential hazard affecting lakeside communities in California and Nevada. Using three scenarios, the researchers found that run-up from seiche waves (tsunami-like waves occurring in enclosed bodies of water) caused by earthquakes would be capable of damaging buildings and utilities, particularly if they are accompanied by the subsidence of shoreline areas also due to the shaking.

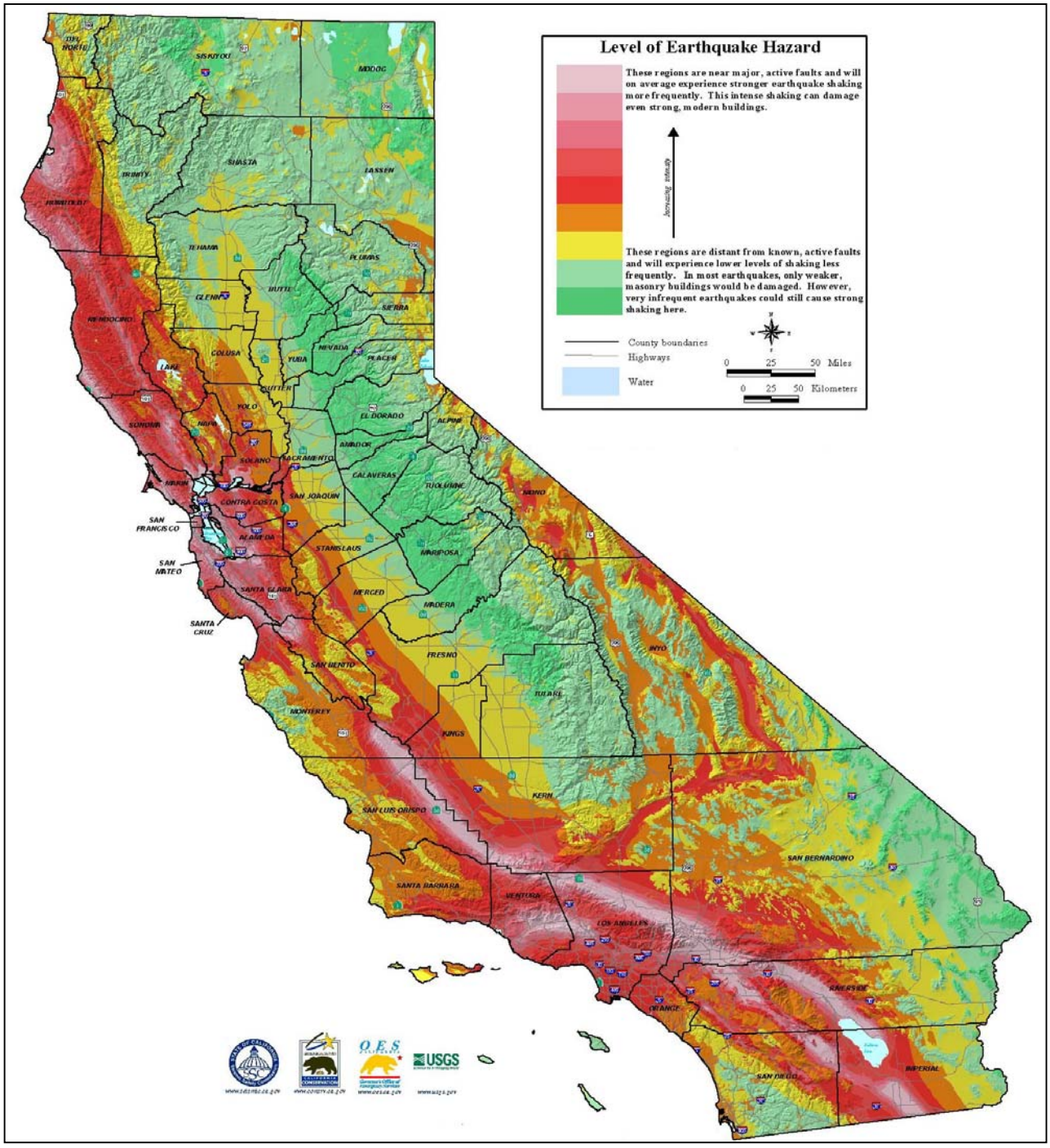
Volcanic magma (molten rock) migrating about 20 miles below the surface of the Sierra Nevada mountains caused a swarm of about 1,600 small earthquakes in late 2003 and early 2004. The 20

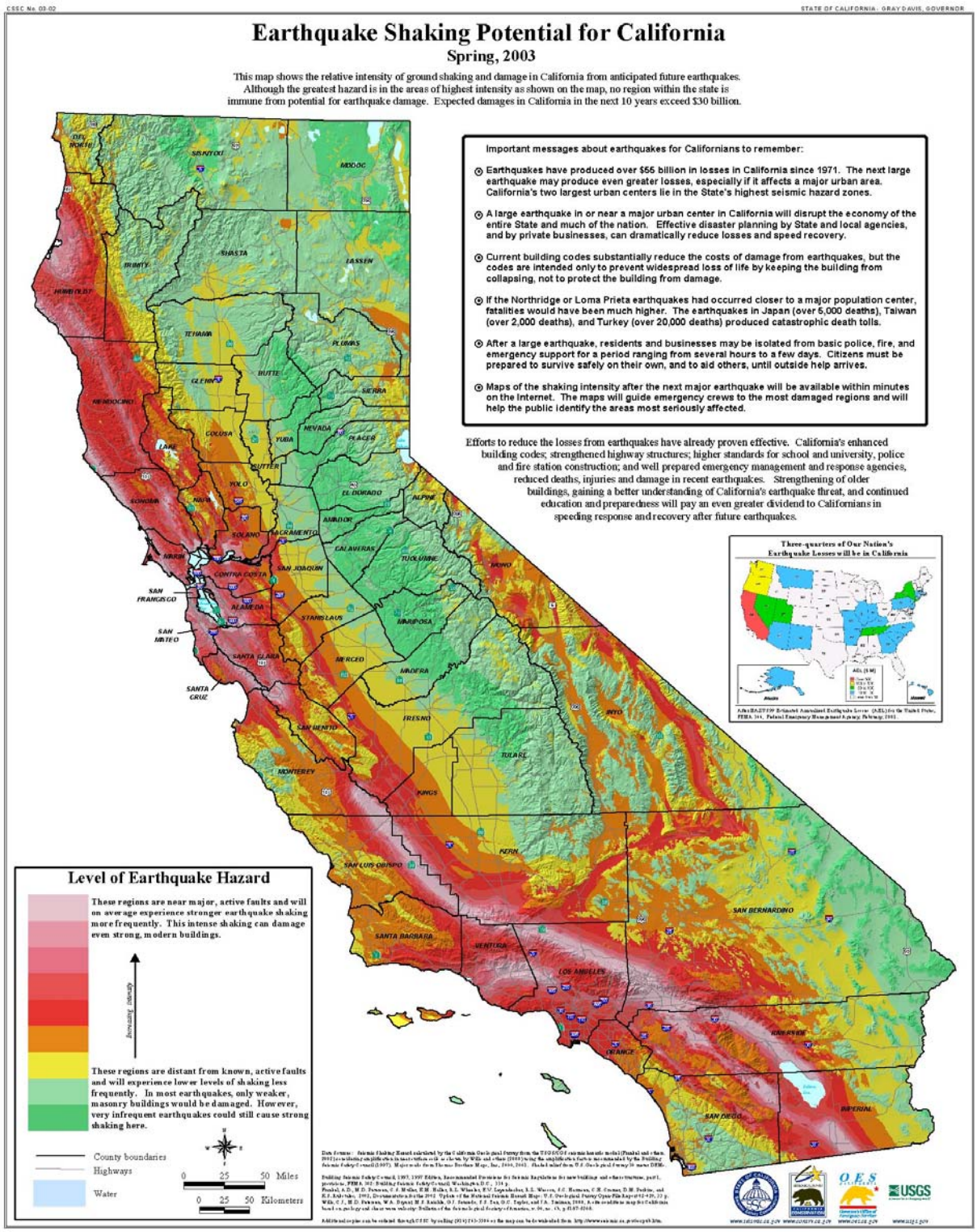
mile depth is about twice as deep as earthquakes caused by normal faulting in the region measured during the last 30 years. Yet, these events are reminders that the Sierra Nevada range is relatively young and is moving to the northwest at a rate of about 12 to 14 millimeters a year.

The 1992 Petrolia (coastal Humboldt County) earthquake, while not felt in Placer County, increased concern about how amplified long period motions from possible major events much closer to Placer County, such as could occur on the San Andreas fault or the Hayward fault, might reach damaging levels and affect Placer County.

The California Geological Survey's Probabilistic Seismic Hazard Map of California depicts the shaking level that has a 10 percent chance of being exceeded over a period of 50 years (an annual probability of 1 in 475 of being exceed each year).

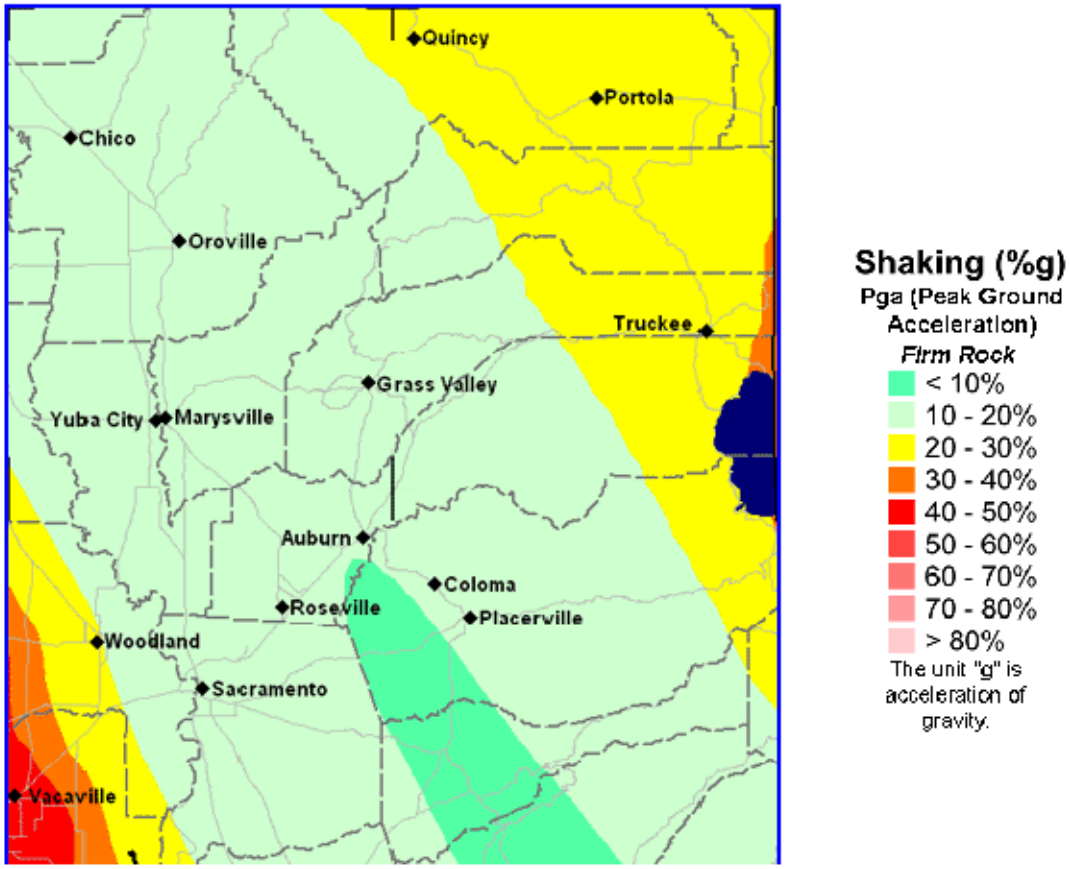
Seismic hazard zone maps and earthquake fault zone maps are used to identify where such hazards are more likely to occur based on analyses of faults, soils, topography, groundwater, and the potential for earthquake shaking sufficiently strong to trigger landslide and liquefaction. The maps from the Draft California Multi-Hazard Mitigation Plan on the following page shows the various levels of earthquake hazards in California. ShakeMaps, that show the distribution of earthquake shaking, help identify potential vulnerabilities to earthquake hazards. From various sources, the other two maps that follow provide additional information on the shaking potential in Placer County.


Level of Earthquake Hazard
These regions are near major, active faults and will on average experience stronger earthquake shaking more frequently. This intense shaking can damage even strong, modern buildings.
Increasing intensity
These regions are distant from known, active faults and will experience lower levels of shaking less frequently. In most earthquakes, only weaker, masonry buildings would be damaged. However, very infrequent earthquakes could still cause strong shaking here.
County boundaries
Highways
Water
0 25 50 Miles
0 25 50 Kilometers
SISKIYOU
MODOC
SHASTA
LASSEN
TRINITY
HUMBOLDT
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
COLUSA
NEVADA
YUBA
PLACER
LAKE
SUTTER
YOLO
EL DORADO
ALPINE
SONOMA
NAPA
AMADOR
SOLANO
SACRAMENTO
CALAVERAS
TUOLUMNE
MARIN
CONTRA COSTA
SAN JOAQUIN
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SAN MATEO
SANTA CLARA
MERCED
MADERA
SANTA CRUZ
INYO
SAN BENITO
FRESNO
TULARE
MONTEREY
KINGS
KERN
SAN LUIS OBISPO
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL
USGS


CSSC No. 03-02
STATE OF CALIFORNIA - GRAY DAVIS, GOVERNOR
Earthquake Shaking Potential for California
Spring, 2003
This map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Although the greatest hazard is in the areas of highest intensity as shown on the map, no region within the state is immune from potential for earthquake damage. Expected damages in California in the next 10 years exceed $30 billion.
Important messages about earthquakes for Californians to remember:
Earthquakes have produced over $55 billion in losses in California since 1971. The next large earthquake may produce even greater losses, especially if it affects a major urban area. California's two largest urban centers lie in the State's highest seismic hazard zones.
A large earthquake in or near a major urban center in California will disrupt the economy of the entire State and much of the nation. Effective disaster planning by State and local agencies, and by private businesses, can dramatically reduce losses and speed recovery.
Current building codes substantially reduce the costs of damage from earthquakes, but the codes are intended only to prevent widespread loss of life by keeping the building from collapsing, not to protect the building from damage.
If the Northridge or Loma Prieta earthquakes had occurred closer to a major population center, fatalities would have been much higher. The earthquakes in Japan (over 5,000 deaths), Taiwan (over 2,000 deaths), and Turkey (over 20,000 deaths) produced catastrophic death tolls.
After a large earthquake, residents and businesses may be isolated from basic police, fire, and emergency support for a period ranging from several hours to a few days. Citizens must be prepared to survive safely on their own, and to aid others, until outside help arrives.
Maps of the shaking intensity after the next major earthquake will be available within minutes on the Internet. The maps will guide emergency crews to the most damaged regions and will help the public identify the areas most seriously affected.
Efforts to reduce the losses from earthquakes have already proven effective. California's enhanced building codes; strengthened highway structures; higher standards for school and university, police and fire station construction; and well prepared emergency management and response agencies, reduced deaths, injuries and damage in recent earthquakes. Strengthening of older buildings, gaining a better understanding of California's earthquake threat, and continued education and preparedness will pay an even greater dividend to Californians in speeding response and recovery after future earthquakes.
Three-quarters of Our Nation's Earthquake Losses will be in California
Level of Earthquake Hazard
These regions are near major, active faults and will on average experience stronger earthquake shaking more frequently. This intense shaking can damage even strong, modern buildings.
Increasing intensity
These regions are distant from known, active faults and will experience lower levels of shaking less frequently. In most earthquakes, only weaker, masonry buildings would be damaged. However, very infrequent earthquakes could still cause strong shaking here.
County boundaries
Highways
Water
0 25 50 Miles
0 25 50 Kilometers
DEL NORTE
SISKIYOU
MODOC
SHASTA
LASSEN
TRINITY
HUMBOLDT
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
COLUSA
YUBA
NEVADA
PLACER
LAKE
SUTTER
YOLO
EL DORADO
ALPINE
SONOMA
NAPA
AMADOR
SOLANO
SACRAMENTO
CALAVERAS
TUOLUMNE
MARIN
CONTRA COSTA
SAN JOAQUIN
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SAN MATEO
SANTA CLARA
MERCED
MADERA
SANTA CRUZ
FRESNO
INYO
SAN BENITO
TULARE
MONTEREY
KINGS
KERN
SAN LUIS OBISPO
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL
USGS

Interactive Ground Motion Map - Centered on 121° W (Longitude); 39° N (Latitude)

Peak Ground Acceleration - 10% of being exceeded in 50 years



(Source: http://www.consrv.ca.gov/CGS/rghm/pshamap/psha12139.html)

VOLCANO

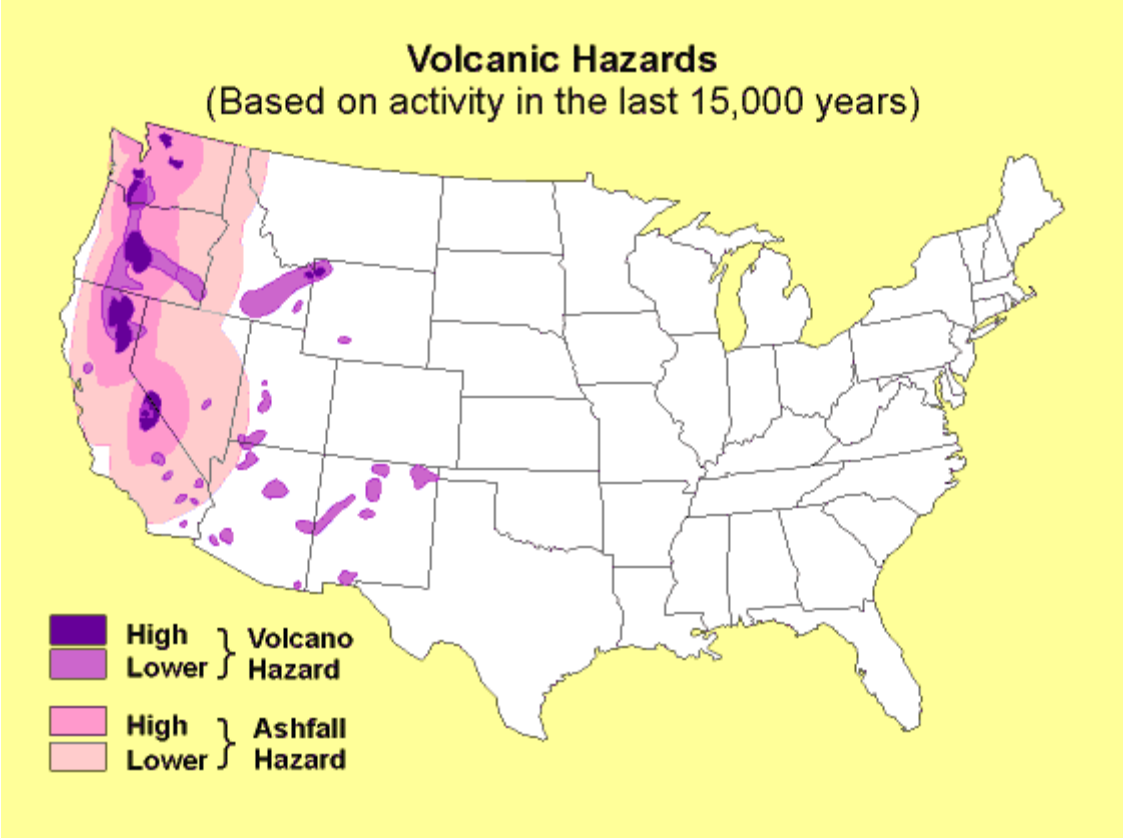
The Draft California Multi-Hazard Mitigation Plan identifies volcanoes as one of the hazards adversely impacting the state. Of the approximately 20 volcanoes in the state, only a few are active and pose a threat. Of these, Long Valley Caldera and Lassen Peak (see map that follows) are the closest to Placer County. Populations living near volcanoes are most vulnerable to volcanic eruptions and lava flows, although volcanic ash can travel and affect populations many miles away.

Past Occurrences

The HMPC was unable to find any evidence of volcanic activity within Placer County.

Likelihood of Future Occurrences

Placer County is most susceptible to ash fall from the two closest active volcanoes, Long Valley Caldera and Lassen Peak. The map on the following page illustrates volcanic hazards based on activity in the last 15,000 years. Areas in blue or purple show regions at greater or lesser risk of local volcanic activity, including lava flows, ashfall, lahars (volcanic mudflows), and debris avalanches. Areas in pink show regions at risk of receiving five or more centimeters of ashfall from large or very large explosive eruptions, originating at the volcanic centers shown in blue. An eruption from Lassen Peak has the potential to adversely impact Placer County with ash.



(Source: http://www.usgs.gov/themes/map2.html)

AGRICULTURAL HAZARD

Before its rapid population growth in the 1970s and 1980s, Placer County was known as an agricultural and timber-producing county. Agriculture and timber production are still important sectors of the County's economy; however, manufacturing, recreation, and service industries have increased in economic importance. Agricultural production in Placer County primarily is field crops and fruit and nut crops. According to the 2002 Crop report, the 2001 total gross value of agricultural products in the County was $75,036,970. The total gross value for 2002 is $76,278,600, representing an increase of $1,241,630. This report reflects the gross value of agricultural products and not the net income growers receive.

Rice was the leading crop in 2002 with a gross value of $15,383,800. This is an increase of $1,499,000 in gross value over 2001, which was due to an increase in planted acreage from 14,298 acres in 2001 to 15,500 acres in 2002. Following rice in total value were nursery products at $15,080,000; cattle and calf operations at $12,150,000; timber production at $9,722,900; and chickens with a gross value of $6,507,000.

According to the HMPC, agricultural losses occur on an annual basis throughout the County and are usually associated with severe weather events. According to the Draft California Multi-

Hazard Mitigation Plan, the primary causes of agricultural disasters in California are associated with drought, freeze, and insect infestations.

Past Occurrences

The Draft state Multi-Hazard Mitigation Plan indicates that Placer County has not experienced any federal agricultural disaster proclamations between 1950 and 1997. The plan also looks at drought, freeze and insect disaster proclamations as indicative of potential loss to crops and provides the following Federal disaster declaration data for Placer County:

- one disaster proclamation for drought between 1950 and 1997
- zero disaster declarations for freeze between January 1991 and December 2003
- zero disaster declarations for insect infestations between 1950 and 2004

Although, there has only been one federally declared disaster declarations (i.e., drought) associated with Agricultural losses in Placer County, other information collected by the HMPC on Agricultural Losses include those identified in the following table. This table indicates that although not warranting Federal disaster status, significant agricultural losses occur in Placer County. Some of these may be duplicative of those appearing in other sections of this document; but the focus here is on those disasters as a result of agricultural losses.

AGRICULTURAL DISASTER REQUESTS

Year	Timeframe	Cause	Location	Acres	Loss	Source
1995	Feb-Mar	Wind, rain, flooding	Newcastle - Roseville	700	$35,000	CDFA Press Release
2001	Throughout 2001	Drought	Entire county included in disaster designation	*	*	State OES Ltr. To BOS for Disaster Designation Announcement
2001	May-Sept	Extreme fires & drought	State of Nevada disaster declaration and Placer included as a contiguous county.	*	*	State OES Ltr. To BOS for Disaster Designation Announcement
2001		Drought	Countywide	*	*	Livestock compensation program signup
2002			Countywide	*	*	Livestock compensation program signup
2003	Mar-May	Excessive rain & Wheat Strip Rust	Countywide	*	*	State OES Ltr. To BOS for Disaster Designation Announcement
2003	July-Aug	Extreme heat & unseasonable rainfall	Entire county included in disaster designation	*	*	State OES Ltr. To BOS for Disaster Designation Announcement
2003	Aug-Sept	Unseasonable rainfall	Entire county included in disaster designation	*	*	State OES Ltr. To BOS for Disaster Designation Announcement
2003	Aug-Oct	Series of adverse weather conditons	Western Placer County	46.5	$100,487	Calif. Ag Comm. Disaster Report & Governor's request to USDA
2003	June-Nov	Late rains	Countywide	98.75	$203,351	Calif. Ag Comm. Disaster Report

* State OES letter to BOS announcing Disaster Designation and deadline for filing a claim application. No information as to number of growers who filed or dollar amount involved.

Other agricultural disaster requests include those SBA declarations set forth on page 22.

Likelihood of Future Occurrences

As long as severe weather events continue to be an ongoing concern to Placer County, the potential for agricultural losses remain.

HUMAN HEALTH HAZARD

The impact to human health that wildlife, and more notably, insects, can have upon an area is substantial.

West Nile Virus

A recent natural hazard to affect California is the West Nile Virus (WNV). Mosquitoes transmit this potentially deadly disease to livestock and humans alike. WNV first struck the northern hemisphere in Queens, N.Y., in 1999 and killed four people. In 2003, all 50 states warned of an outbreak from any of the 30 mosquito species known to carry it. From 62 severe cases in 1999, confirmed human cases of the virus spread to 39 states in 2002, and killed 284 people. Less than one percent of those infected develop severe illness. People over 50 years of age appear to be at high risk for the severe aspects of the disease.

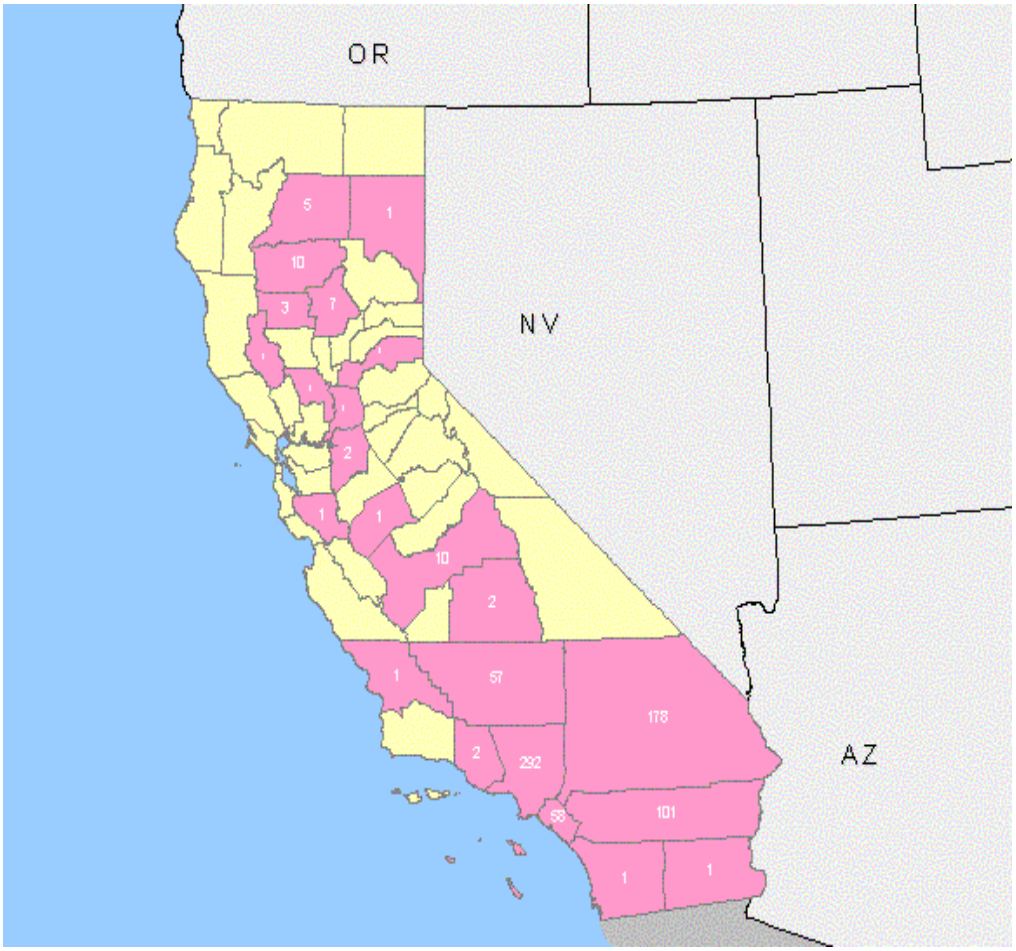
Placer County recognizes the potential for WNV to occur within the County and has initiated a public outreach campaign. The Placer West Nile Virus task force has prepared for the possible arrival of WNV the last two years through focused efforts on reducing the mosquito population and educating the public. In 2004, the voters approved extending the Mosquito Abatement District to cover the entire County.

Past Occurrences

WNV was detected on a very limited basis in horses and humans in California in 2003. San Diego County reported 1 veterinary case; Imperial County and Riverside County each reported one human case. According to the California West Nile Virus Surveillance Information Center sponsored by the California Department of Health Services, as of November 2, 2004, a total of 737 human WNV infections have been reported in 23 counties in the State.

By July of 2004, WNV had arrived in Placer County. A dead western scrub jay bird discovered July 22 in Auburn tested positive for the disease. As of November 8, 2004, the California West Nile Virus Surveillance Information Center reported the virus being detected in one human, 47 birds, 26 horses, and three mosquito pools within Placer County. The first human case of WNV in Placer County was diagnosed the week of September 27, 2004. The 56-year old male patient was recovering from meningitis in a local hospital.

The current WNV (last updated 11/08/04) map for California showing number of human cases by county is provided on the following page.



(Source: http://westnilemaps.usgs.gov/ca_human.html)

Likelihood of Future Occurrences

The state will continue their surveillance for the disease in 2005. Based on nationwide trends, the second year is often more severe than the first year. The agricultural nature of much of Placer County combined with the enormous potential for standing water to be present in the area, puts Placer County at future risk of WNV.

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4.2 Vulnerability Assessment

As the second part of the Risk Assessment process, the HMPC conducted a Vulnerability Assessment to describe the impact that each hazard identified in the preceding section would have upon the Placer County Planning Area. This Vulnerability Assessment includes an identification of assets at risk and an estimate of associated losses.

Within the Placer County Planning Area, in addition to the county, there are five jurisdictions and numerous districts participating on the HMPC and providing valuable data and insight into this plan. Much of the land is also owned by various Federal Agencies. While different in their jurisdictional boundaries, as well as in their form and function, they all provide a role with respect to not only monitoring and responding to external events, but also in preparing for disaster and undertaking mitigation initiatives.

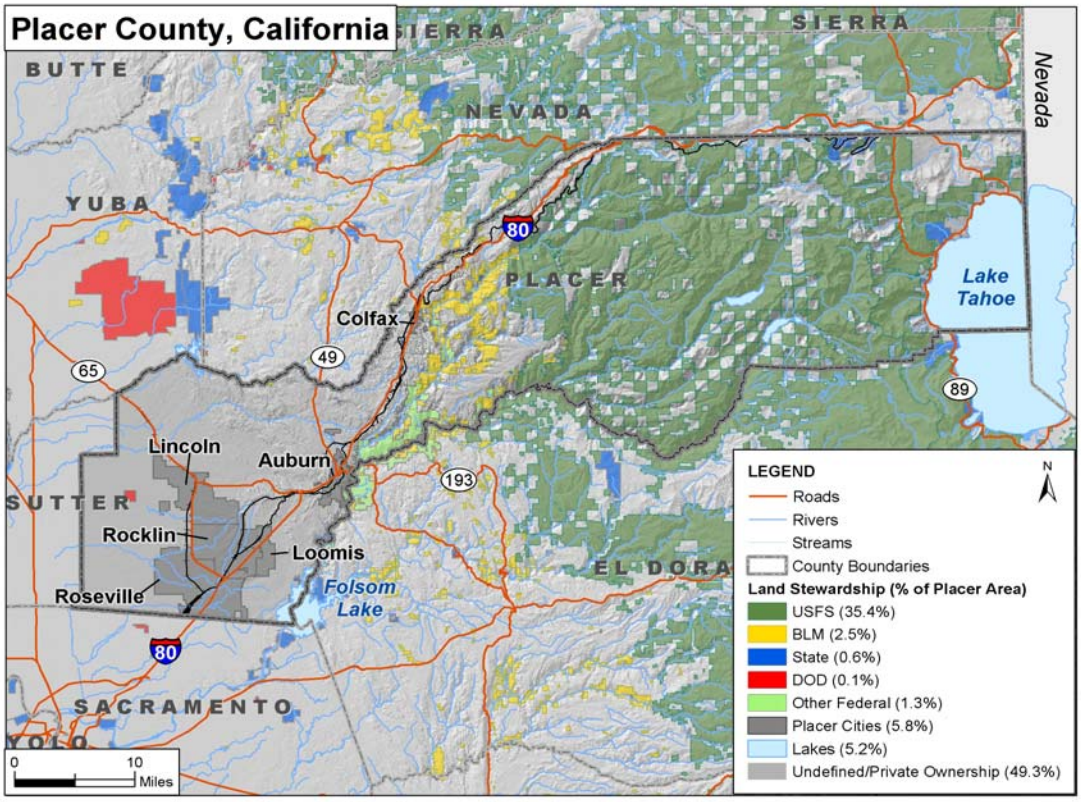
It is important to recognize the unique fabric of the Placer County community. It is the "patchwork quilt" of partnerships often referred to as the over-riding hazard mitigation strategy. Any effective mitigation strategy must encompass the participation of the communities forming the partnership. A prime example of the critical nature of this partnership and patchwork quilt is the roles of each community and district in Flood Protection. The following table and map details the land ownership of the community partnership.

PLACER COUNTY LAND IN CITIES, TOWNS, AND UNINCORPORATED AREA

Jurisdiction	Population	Square Miles
City of Auburn	12,462	7.5
City of Colfax	1,496	1.3
City of Lincoln	11,205	18.3
Town of Loomis	6,260	7.3
City of Rocklin	36,330	21
City of Roseville	79.921	31
Unincorporated Area	100,725	1414.7
Totals	**248,399**	**1,501.1**

(Source: U.S. Census Bureau, 2000)

LAND OWNERSHIP MAP



(Source: AMEC Earth & Environmental)

TOTAL VULNERABILITY AND VALUES AT RISK

As a starting point for analyzing the Planning Area's vulnerability to identified hazards, the HMPC utilized a variety of data to define a baseline against which all disaster impacts could be compared. If a catastrophic disaster were to occur in the Planning Area, the following information describes significant assets at risk in the County. Data used in this baseline assessment included:

- Assessor Data – value of County's building infrastructure inventory
- Critical Facility Inventory
- Cultural and Natural Resource Inventory
- Development Trends

Assessor Data

The following data obtained by the Placer County Assessor's office is based on the Certified Roll Values for 2004 (for Secured Property). The data should be used as a guideline to overall values in the County, as the information has some limitations. The most significant limitation is created by proposition 13. Instead of adjusting property values annually, the values are not adjusted or assessed until a property transfer occurs. As a result, overall value information is likely low and does not reflect current market value of properties within the County. Another data issue is that information by property type includes the value associated with vacant lands. In the event of a disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss. However, the values associated with vacant land is generally no greater than two to three percent of the property type category and often less than one percent of the total values. The total 2004 Certified Roll Values for Placer County are provided in the following tables.

CITY OF AUBURN
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	4,944	961,861,685
Commercial	481	167,050,896
Industrial	34	10,419,736
Agricultural	31	765,138
Total Value	**5,494**	**1,142,840,470**

CITY OF COLFAX
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	701	90,073,829
Commercial	119	24,574,567
Industrial	26	16,714,795
Agricultural	4	0
Total Value	**850**	**131,363,191**

CITY OF LINCOLN
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	12,399	2,732,063,066
Commercial	228	116,791,234
Industrial	111	135,273,364
Agricultural	22	1,050,703
Total Value	**12,762**	**2,985,366,902**

TOWN OF LOOMIS
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	2,455	429,682,878
Commercial	177	55,663,456
Industrial	114	39,179,914
Agricultural	38	2,749,550
Total Value	**2784**	**527,275,798**

CITY OF ROCKLIN
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	15,817	4,126,607,948
Commercial	544	578,156,919
Industrial	168	271,511,507
Agricultural	52	1,998,662
Total Value	**16,581**	**4,978,275,036**

UNINCORPORATED PLACER COUNTY
2004 Certified Roll Values

Property Type	Units	Net Value
Residential	63,123	14,413,059,662
Commercial	2,274	1,173,408,885
Industrial	501	359,703,076
Agricultural	2,208	338,334,684
Total Value	**68,106**	**16,284,506,307**

Critical Facility Inventory

Of significant concern with respect to any disaster event is the location of critical facilities within the county. Volume II of the Background Report to the Placer County General Plan, 1994 defines critical facilities as: "Those services and facilities necessary during a major emergency." This definition was refined by separating out three categories of critical facilities.

Class 1 facilities include those facilities that contribute to command, control, communications and computer capabilities associated with managing an incident from initial response through recovery. Class 1 facilities include:

- Primary and alternate EOCs
- All Dispatch Centers
    - Sheriff Auburn
    - Sheriff Tahoe

    - CHP Sacramento
    - CHP Truckee
    - CDF Grass Valley
    - Roseville City
    - Rocklin City
    - Lincoln City
    - Auburn City
- Emergency Services Communication Infrastructure
- Primary and Alternate Computer Information Systems Infrastructure
- Sutter Roseville Hospital Control Facility
- Major transportation corridors

Class 2 facilities include those facilities that house Emergency Services capabilities. Class 2 facilities include:

- All Police Stations
    - Roseville
    - Rocklin
    - Lincoln
    - Auburn
- All CHP Stations
    - Newcastle
    - Dutch Flat
    - Truckee
- All Fire Stations
- All Hospitals
    - Sutter Auburn Faith
    - Kaiser Roseville
    - Sutter Roseville
    - Tahoe Truckee
- All National Guard Armories
- Coast Guard Facilities in Tahoe
- Airports
    - Lincoln
    - Auburn
    - Blue Canyon
    - Truckee

Class 3 facilities would be those facilities that enable key utilities and can be used as evacuation centers/shelters/mass prophylaxis sites etc. Class 3 facilities include:

- All schools
- Water treatment plants
- Power generation infrastructure
- Fuel pipelines

- Fiber-optic lines
- Sewage infrastructure
- Fair Grounds in Auburn and in Roseville
- Memorial Halls
- Park Facilities

Cultural and Natural Resource Inventory

In evaluating the vulnerability of a given area to disaster, it is important to inventory the cultural and natural resources specific to that area. Cultural and Natural Resources are important to identify pre-disaster for four reasons:

- First, the community may decide that these sites are worthy of a greater degree of protection than currently exists, due to their unique and irreplaceable nature;

- Second, should these resources be impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher;

- Third, the rules for repair, reconstruction, restoration, rehabilitation and/or replacement usually differ from the norm; and

- Fourth, Natural Resources, such as wetlands and riparian habitat, can have beneficial functions that contribute to the reduction of flood levels and damage.

Cultural Resources

To inventory the County's cultural resources, the HMPC collected information from the state and federal Historic Preservation District Registers. The National Register Information System includes the following sites:

Resource Name	Address	City	Listed	Multiple
Colfax Freight Depot	7 Main St.	Colfax	1999-12-17	
Colfax Passenger Depot	Main St. and Railroad Ave.	Colfax	1999-01-15	
Dutch Flat Historic District	Main and Stockton Sts.	Dutch Flat	1973-03-28	
Griffith House	7325 English Colony Way	Penryn	1978-12-19	
Griffith Quarry	Taylor Rd.	Penryn	1977-10-20	
Haman House	424 Oak St.	Roseville	1976-11-17	
Lake Tahoe Dam	SR 89 at Truckee River	Tahoe City	1981-03-25	Newlands Reclamation TR
Lincoln Public Library	590 Fifth Street	Lincoln	1990-12-10	California Carnegie Libraries MPS

Resource Name	Address	City	Listed	Multiple
Michigan Bluff--Last Chance Trail	From Michigan Bluff NE to Last Chance	Michigan Bluff	1992-06-26	
Newcastle Portuguese Hall	Taylor Road	Newcastle	1982-03-25	
Old Auburn Historic District	Roughly bounded by Maple, Commercial, Court, Washington, Spring, and Sacramento Sts.	Auburn	1970-12-29	
Outlet Gates and Gatekeeper's Cabin	U.S. 89 at mouth of Truckee River	Tahoe City	1972-12-13	
Stevens Trail	Roughly bounded Iowa Hill, canyon of North fork Of American R., until at Secret Ravine, top of ridge of Colfax	Colfax	2002-11-20	
Strap Ravine Nisenan Maidu Indian Site	Address Restricted	Roseville	1973-01-08	
Summit Soda Springs	SE of Soda Springs	Soda Springs	1978-12-15	
Watson Log Cabin	560 N. Lake Blvd	Tahoe City	1979-08-24	
Woman's Club of Lincoln	499 E St.	Lincoln	2001-05-30	

The California State Historical Landmarks in Placer County include the following:

- **NO. 397 TOWN OF DUTCH FLAT (Location**: NE corner of Main and Stockton Sts, Dutch Flat)
- **NO. 398 YANKEE JIM'S (Location**: SE corner of Colfax Foresthill and Springs Garden Rds, 3.0 mi NE of Forest Hill)
- **NO. 399 TOWN OF FOREST HILL (Location**: 24540 Main St, Forest Hill)
- **NO. 400 VIRGINIATOWN (Location**: 4725 Virginiatown Rd, 0.2 mi SE of Fowler and Virginiatown Rds, 7 mi NW of Newcastle)
- **NO. 401 IOWA HILL (Location**: 0.1 mi SW of post office on Iowa Hill Rd, Iowa Hill
- **NO. 402 TOWN OF MICHIGAN BLUFF (Location**: Intersection of Gorman Ranch and Auburn -Foresthill Rds, Michigan Bluff)
- **NO. 403 EMIGRANT GAP (Location**: Emigrant Gap Vista Pt, Interstate 80 (P.M. 55.5 Westbound), Emigrant Gap)
- **NO. 404 CITY OF AUBURN (Location**: SW corner of Maple St and Lincoln Way, Auburn)
- **NO. 405 TOWN OF GOLD RUN (Location**: NW corner of I-80 and Magra Rd, plaque across the street from post office, Gold Run)

- **NO. 463 OPHIR (**Location: SW corner of Lozanos and Bald Hill Rds, 3 mi W of Auburn)

- **NO. 585 PIONEER EXPRESS TRAIL (Location**: Folsom Lake State Recreation Area, Beals Point unit, 0.3 mi N on levee, plaque on riding trail, Folsom)

- **NO. 724 PIONEER SKI AREA OF AMERICA, SQUAW VALLEY (Location**: Adjacent to Lobby Entrance of Cable Car Building at base of mountain, Squaw Valley)

- **NO. 780-1 FIRST TRANSCONTINENTAL RAILROAD-ROSEVILLE (Location**: Old Town Roseville, S.E. corner of Church St & Washington Blvd, Roseville)

- **NO. 780-2 FIRST TRANSCONTINENTAL RAILROAD-ROCKLIN (Location**: SE corner of Rocklin Rd and First St, Rocklin)

- **NO. 780-3 FIRST TRANSCONTINENTAL RAILROAD-NEWCASTLE (Location**: SW corner of Main and Page Sts, Newcastle)

- **NO. 780-4 FIRST TRANSCONTINENTAL RAILROAD-AUBURN (Location**: 639 Lincoln Way, Auburn)

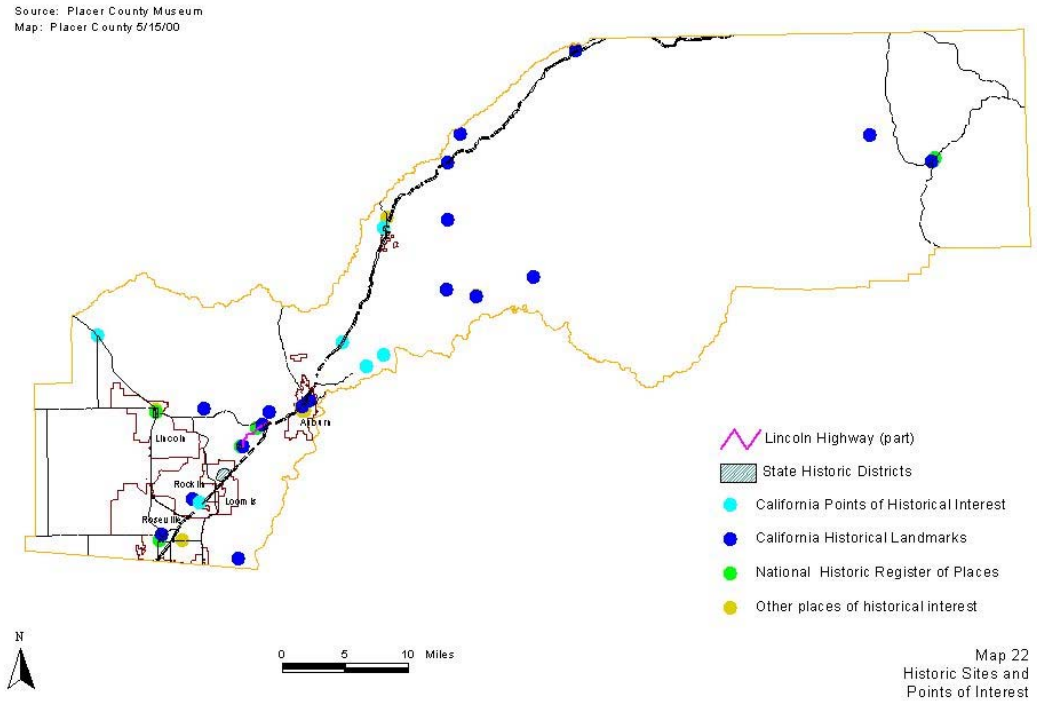
- **NO. 780-5 FIRST TRANSCONTINENTAL RAILROAD-COLFAX (Location**: Grass Valley Street and Railroad Tracks in Railroad Park, Colfax)

- **NO. 797 LAKE TAHOE OUTLET GATES (Location**: 73 N Lake Blvd (Hwy 89), at SW corner of Truckee River Bridge, Tahoe City)

- **NO. 799-2 OVERLAND EMIGRANT TRAIL (Location**: Big Bend Ranger Station, 2008 Hampshire Rocks Rd (old Hwy 40), 8 mi W of Soda Springs)

- **NO. 885 GRIFFITH QUARRY (Location**: SE corner of Taylor and Rock Springs Rds, Penryn)

The following map illustrates the mapped locations of cultural resources within Placer County.



(Source: Placer County Website)

Natural Resources

For purposes of this plan, natural resources include threatened and endangered species and wetlands.

Threatened and Endangered Species. To further evaluate the County's vulnerability in the event of a disaster, it is important to inventory key natural resources such as threatened and endangered species.

Endangered Species means any species of fish, plant life, or wildlife, which is in danger of extinction throughout all or a significant part of its range and is protected by law.

Threatened Species means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and protected by law.

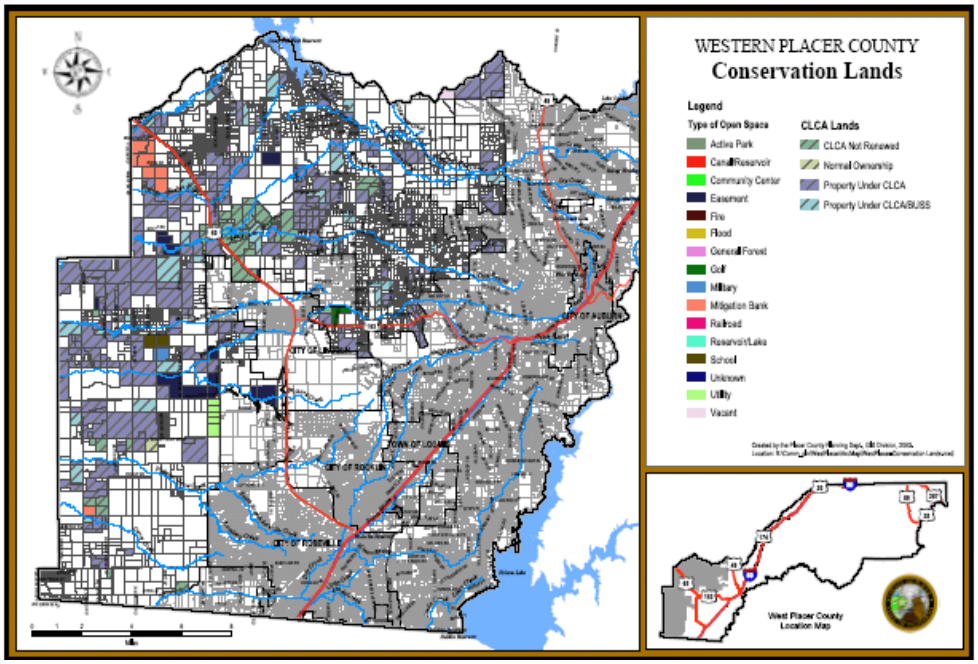
Special Concern means any species about which problems of status or distribution are suspected, but not documented. Many animal species listed as Special Concern are protected under other state and federal laws addressing hunting, fishing, collecting, and harvesting.

The State of California, Department of Fish and Game, identifies the following numbers of State and federally listed endangered, threatened, and rare plants of California.

State and Federally Listed Endangered, Threatened, and Rare Plants of California

Designation	Totals
State-listed endangered	131
State-listed threatened	22
State-listed rare	67
State candidate for listing	1
Federally listed endangered	138
Federally listed threatened	47
Federally proposed endangered	0
Federally proposed threatened	0
Both State and Federally listed	123

In addition, the Placer Legacy Open Space and Agricultural Conservation Program Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP) has developed a Species List for Placer County as part of Phase 1 of their overall program. Through this program, it is the goal of the County to obtain regulatory coverage for these species through the approval of an HCP/NCCP. The HCP/NCCP will address the requirements of the state and federal Endangered Species Acts and will require coordination between the County and the U.S. Fish and Wildlife Service, the National Marine Fisheries Service and the State Department of Fish and Game. A map showing the boundaries of the Phase I area is provided below. A draft species list generated in December 2000 and revised on August 22, 2001 is also provided below.



(Source: Placer County Website)

PLACER COUNTY SPECIES LIST

Class 1	**Federal**	**State**
Bogg's Lake Hedge-hyssop *(Gratiola heterosepala)*	-	E
Vernal pool fairy shrimp *(Branchinecta lynchi)*	T	-
Vernal pool tadpole shrimp *(Lepidurus packardi)*	E	-
Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*		T
Central Valley steelhead *(Oncorhynchus mykiss)*	T*	
Swainson's Hawk *(Buteo swainsoni)*	-	T
Bald Eagle (wintering) (*Haliaeetus leucocephalus*	T	E
American peregrine falcon (wintering) *(Falco peregrinus anatum)*		E
California black rail *(Laterallus jamaicensis)*		T
Bank swallow (nesting) *(Riparia riparia)*		T
Class 1a		
Central Valley Fall/Late Fall-run Chinook salmon *(Oncorhynchus tshawytscha)*	C	
Class 1b		
Foothill yellow-legged frog *(Rana boylii)*	SC	SSC
California burrowing owl *(Athene cunicularia)*	SC	SSC
Class 2	**Status Federal/State**	**Reason for Protection**
Sacramento Winter-run Chinook salmon *(Oncorhynchus tshawytscha)*	E/-	Overlap with other salmonids
Central Valley Spring run Chinook salmon *(Oncorhynchus tshawytscha)*	T/-	Overlap with other salmonids

California red-legged frog *(Rana aurora draytoni)*	T/SSC	Wetland-associated
Giant garter snake *(Thamnophis gigas)*	T/T	Wetland-associated
Yellow-billed cuckoo *(Coccyzus americanus)*		Riparian focus species
California tiger salamander *(Ambystoma californiense)*	C/SSC	Overlap with vernal pool crustaceans
Class 3	**Status Federal/State**	**Reason for Protection**
Dwarf downingia *(Downingia pusilla*	- / - , CNPS-2	Overlap with vernal pool crustaceans
Legenere *(Legenere limosa)*	SC/ -, CNPS-1B	Overlap with vernal pool crustaceans
Ahart's dwarf rush *(Juncus leiospermus var. ahartii)*	SC/ -, CNPS-1B	Overlap with vernal pool crustaceans
Red Bluff dwarf rush *(Juncus leiospermus var. leiospermus)*	- / -, CNPS-1B	Overlap with vernal pool crustaceans
California linderiella *(Linderiella occidentalis)*	- / -	Overlap with vernal pool crustaceans
Western spadefoot toad *(Scaphiopus hammondii)*	SC/SSC	Overlap with vernal pool crustaceans
Northwestern pond turtle *(Clemmes marmorata marmorata)*	SC/SSC	Wetland-associated
Northern harrier (nesting) *(Circus cyaneus)*	- /SSC	Overlap with Swainson's Hawk
Ferruginous hawk (wintering) *(Buteo regalis)*	SC/SSC	Overlap with Swainson's Hawk
Rough-legged hawk (wintering) *(Buteo lagopus)*	- / -	Overlap with Swainson's Hawk
Yellow warbler (nesting) *(Dendroica petechia)*	- /SSC	
Yellow-breasted chat (nesting) *(Icteria virens)*	- /SSC	Riparian focal species
+Modesto song sparrow *(Melospiza melodia mailliardi)*	- /SSC	Riparian focal species
Grasshopper sparrow *(Ammodramus savannarum)*	- /SSC	

Chipping sparrow *(Spizella passerina)*	- / -	Oak woodland focal species
Tricolored blackbird (nesting) *(Agelaius tricolor)*	SC/SSC	Wetland-associated species
Loggerhead Shrike (*Lanius ludovicianus)*	SSC	Oak woodland and woodland riparian species
Cooper's Hawk *(Accipitercooperii)*	SSC	Grasslands species

Definition of Classes:

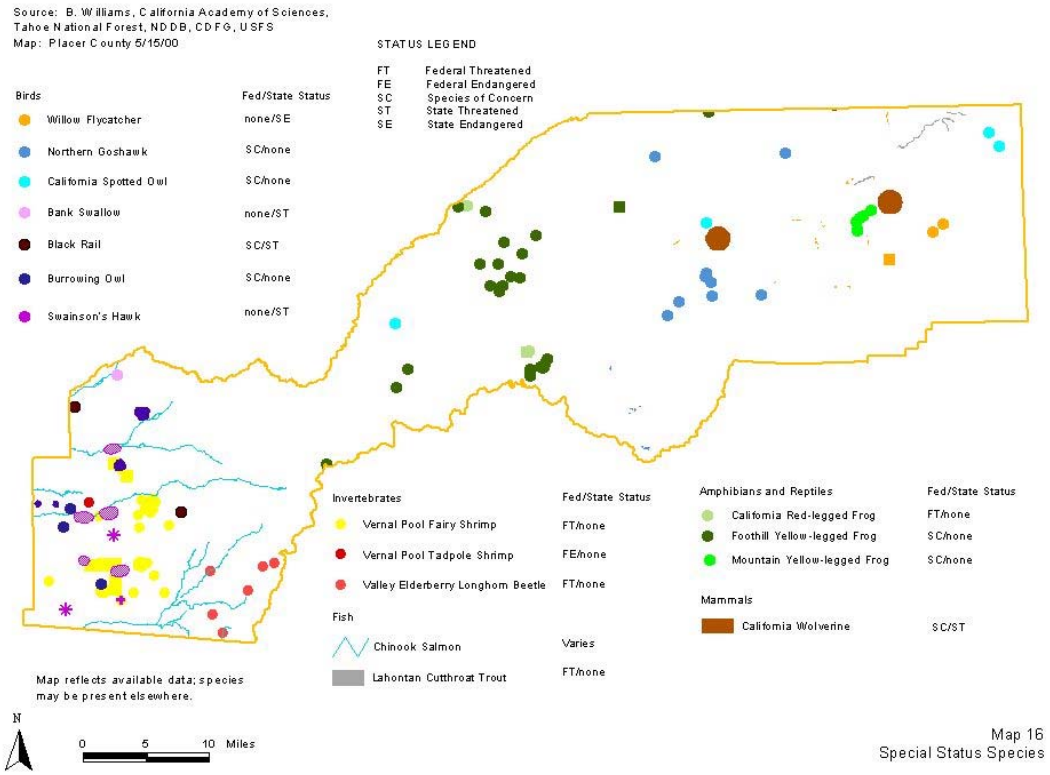
Class 1 – State/Federal Listed Species Known to Occur in Placer County
Class 1a – State/Federal Candidate Species Known to Occur in Placer County
Class 1b – State/Federal Agency Priority Species Known to Occur in Placer County
Class 2 – State/Federal Listed Species that Could Potentially Occur in Placer County
Class 3 – Other Special-Status Species Known to Occur in Placer County

DEFINITIONS OF LEGAL AND PROTECTED STATUS

Federal:	E =	Listed as Endangered under the federal Endangered Species Act
	T =	Listed as Threatened under the federal Endangered Species Act
	C =	Candidate for listing as Threatened or Endangered
	SC =	Species of Concern; species for which existing information indicates it may warrant listing but for which substantial information to support a proposed rule is lacking
	* =	All perennial streams in western Placer County have been declared Critical Habitat for Central Valley Steelhead
	- =	No legal or protected federal status
State:	E =	Listed as Endangered under the California Endangered Species Act
	T =	Listed as Threatened under the California Endangered Species Act
	SSC =	Species of Special Concern; included on the California Department of Fish and Game's lists of declining and vulnerable amphibians, reptiles, birds, and mammals of California
	- =	No legal or protected California status
CNPS:	1B =	California Native Plant Society, List 1B; rare, threatened, or endangered in California and elsewhere
	2 =	List 2; rare, threatened, or endangered in California but more common elsewhere

The following map illustrates locations of mapped Threatened and Endangered species within Placer County.

PLACER COUNTY SPECIAL STATUS SPECIES

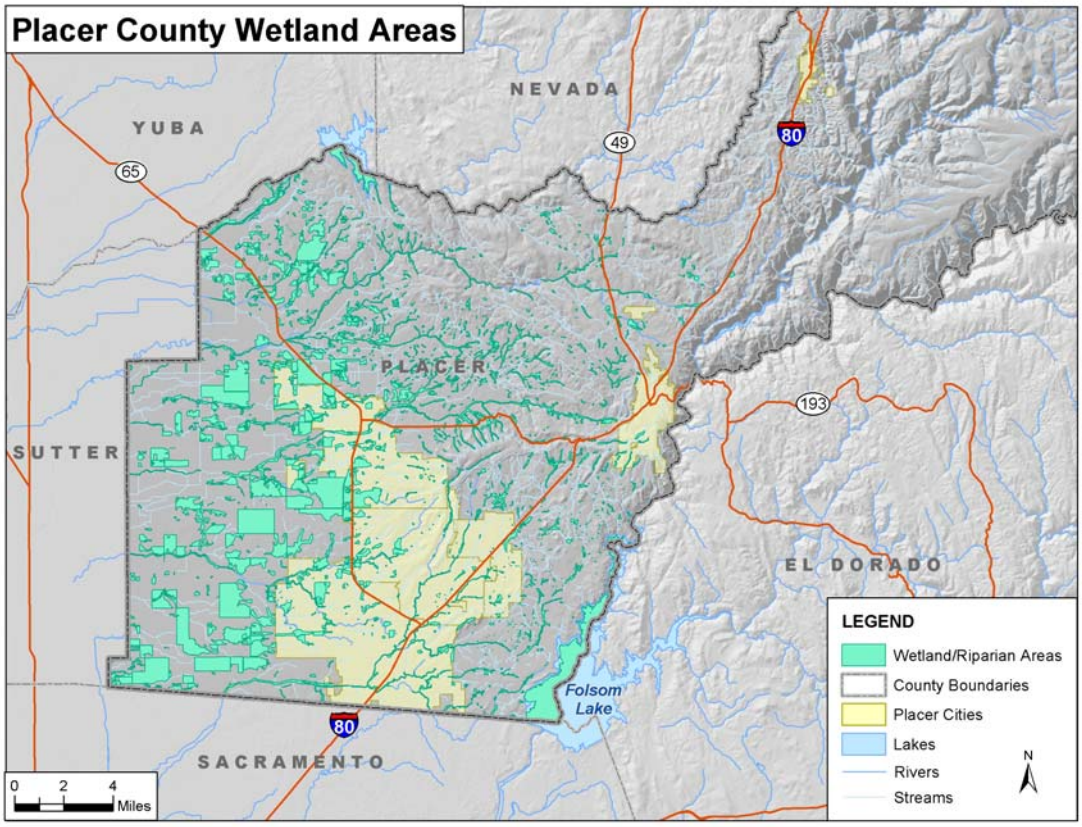


(Source: Placer County Website)

Wetlands. Wetlands in Placer County are also an important and legally protected resource. Wetland communities play a vital role in groundwater recharge, water quality protection, and provide habitat for dependent plant and wildlife species. A variety of wetlands occur in Placer County, and activities that affect these wetlands may require special permitting under Section 404 of the Federal Clean Water Act.

In Placer County, areas that have a high potential to meet the regulatory definition of wetlands under section 404 of the Clean Water Act (CWA) are vernal pools, alkali meadow and seeps, wet meadows, fresh emergent wetlands, and portions of montane riparian and mixed riparian forests. In addition to these wetlands defined by section 404 of the Clean Water Act, substantial wetland habitat values or other ecological benefits may be associated with functional wetlands.

The mapped wetlands in Placer County are provided on the following page.



(Map Compilation: AMEC Earth & Environmental; Source data: Placer County GIS)

Development Trends

According to the 2004 Placer County Economic and Demographic Profile, the County has experienced substantial growth over the last 14 years. The following sections taken from this report illustrate recent and projected growth and development trends in the County.

In 2000, Placer County had a population of 248,399, an increase of approximately 44 percent over 1990. Relatively strong population growth continued in Placer County between 1999 and 2003 with a growth rate of nearly 16 percent. The rate of growth in Placer County continues to exceed that of the state, the Bay Area, and the Greater Sacramento Area. Many of the cities in Placer County have also experienced high population growth rates, with Lincoln and Rocklin seeing growth rates well above the County's overall growth. Only two cities have demonstrated negative population growth between 1999 and 2003—Auburn and Loomis. Population trends in Placer County have placed the County second among all counties in the state for growth between 2002 and 2003. Three cities in the County are among the top 30 in the state including Lincoln (second highest growth in the state), Roseville, and Rocklin. The table that follows contains the 1990 and 1999 through 2003 populations for the county, selected regions, cities and the unincorporated area.

POPULATION

Area	1990 (Actual)	1999 (Estimate)	2000 (Actual)	2001 (Estimate)	2002 (Estimate)	2003 (Estimate)	1999-2003 (Percent Change)
California	29,758,213	33,140,000	33,871,648	34,367,000	35,000,000	35,591,000	7.4%
Bay Area	6,020,147	6,658,500	6,783,760	6,867,200	6,936,700	6,994,500	5.0%
Greater Sacramento Area	1,603,863	1,878,100	1,936,006	1,974,500	2,029,900	2,078,500	10.7%
Placer County	172,796	238,300	248,399	255,100	265,700	275,600	15.7%
Cities in Placer County:							
Auburn	10,653	12,700	12,462	12,400	12,300	12,250	-3.5%
Colfax	1,306	1,500	1,496	1,530	1,650	1,710	14.0%
Lincoln	7,248	9,600	11,205	13,850	17,750	20,550	114.1%
Loomis	5,705	6,375	6,260	6,225	6,175	6,175	-3.1%
Rocklin	18,806	32,250	36,330	38,250	41,250	43,600	35.2%
Roseville	44,685	76,700	79,921	82,200	85,800	90,700	18.3%
Unincorporated County	84,393	99,200	100,725	100,700	100,800	100,600	1.4%

Sacramento Regional Research Institute, December 2003
Data Source: US Census Bureau, 1990 & 2000 Census
California Department of Finance
Association of Bay Area Governments (ABAG)

Projections show that the rate of growth in Placer County is expected to increase by almost 60 percent between 2000 and 2020. Similar to the more recent trends, Placer's population growth is expected to exceed the rates of the state, the Bay Area, and the Greater Sacramento Area. Lincoln, the fastest growing city in the county between 1999 and 2003, is also expected to have the greatest growth in Placer County between 2000 and 2020 with a growth rate of approximately 405 percent. The following table shows the 2000 population and the projected populations for 2005, 2010, 2015, and 2020 for the county, selected regions, cities and the unincorporated area.

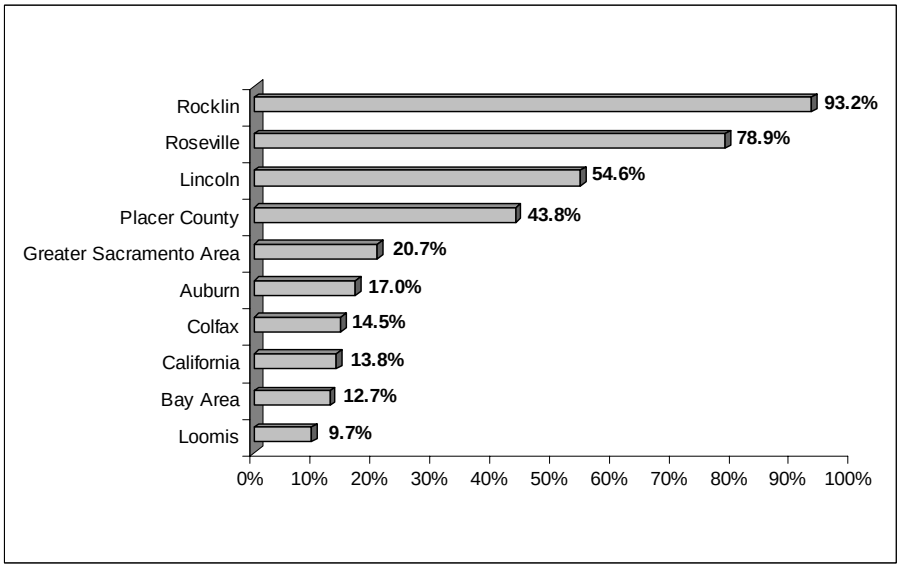
POPULATION PROJECTIONS

Area	2000 (Actual)	2005 (Projected)	2010 (Projected)	2015 (Projected)	2020 (Projected)	2000-2020 (Percent Change)
California	33,871,648	37,473,500	40,262,400	42,711,200	45,821,900	35.3%
Bay Area	6,783,760	7,193,900	7,513,800	7,772,200	8,014,100	18.1%
Greater Sacramento Area	1,936,006	2,117,788	2,340,297	2,549,370	2,696,205	39.3%
Placer County	248,399	292,640	336,805	376,240	396,785	59.7%
Cities in Placer County:						
Auburn	12,462	13,000	14,090	15,180	16,240	30.3%
Colfax	1,496	1,820	2,065	2,370	2,670	78.5%
Lincoln	11,205	26,060	38,350	54,370	56,575	404.9%
Loomis	6,260	6,770	8,400	9,310	9,830	57.0%
Rocklin	36,330	44,100	50,700	58,470	68,870	89.6%
Roseville	79,921	100,000	109,160	109,460	109,360	36.8%
Unincorporated County	100,725	100,890	114,040	127,080	137,240	36.3%

Sacramento Regional Research Institute, December 2003
Data Source: California Department of Finance
Sacramento Area Council of Governments (SACOG)
Association of Bay Area Governments (ABAG)

The figure on the following page shows the 1990 to 2000 population growth rates for California, the Greater Sacramento Area, Placer County, and selected cities in the county. Between 1990 and 2000, Placer County grew by approximately 44 percent. Over this time period, Rocklin was the fastest growing city in Placer County with a growth rate of close to 93 percent. Roseville, with a 79 percent population growth rate, was the second fastest growing city. Lincoln, which has seen the highest recent population growth rates, experienced the third largest growth rate over the decade between 1990 and 2000 with 55 percent growth.

POPULATION GROWTH RATES BETWEEN 1990 AND 2000



Sacramento Regional Research Institute, December 2003
Data Source: U.S. Census Bureau, 1990 & 2000 Census

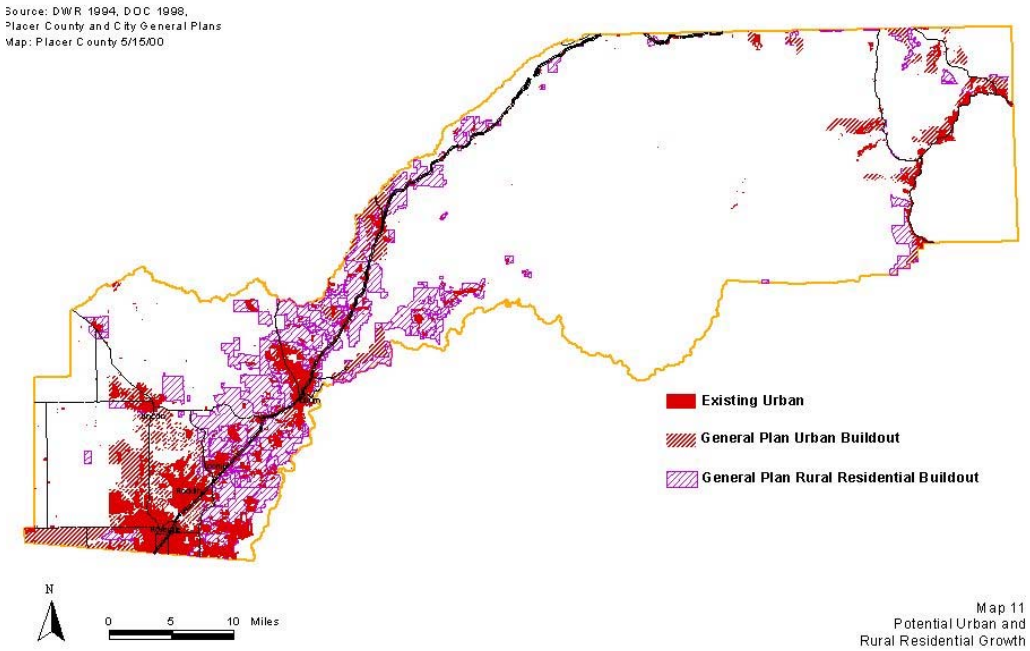
The figure below outlines the population change in the main regions of Placer County - the Valley (Roseville, Rocklin, Lincoln, Granite Bay, and Sheridan); Gold Country (Auburn, Colfax, and Foresthill); and High Country (Kings Beach, Tahoe City, Soda Springs, and Blue Canyon). The Valley region experienced a 61 percent population increase between 1990 and 2000 while Gold Country and High Country had much lower growth rates at 10 and 6 percents, respectively.

POPULATION CHANGES IN THE REGIONS OF PLACER COUNTY

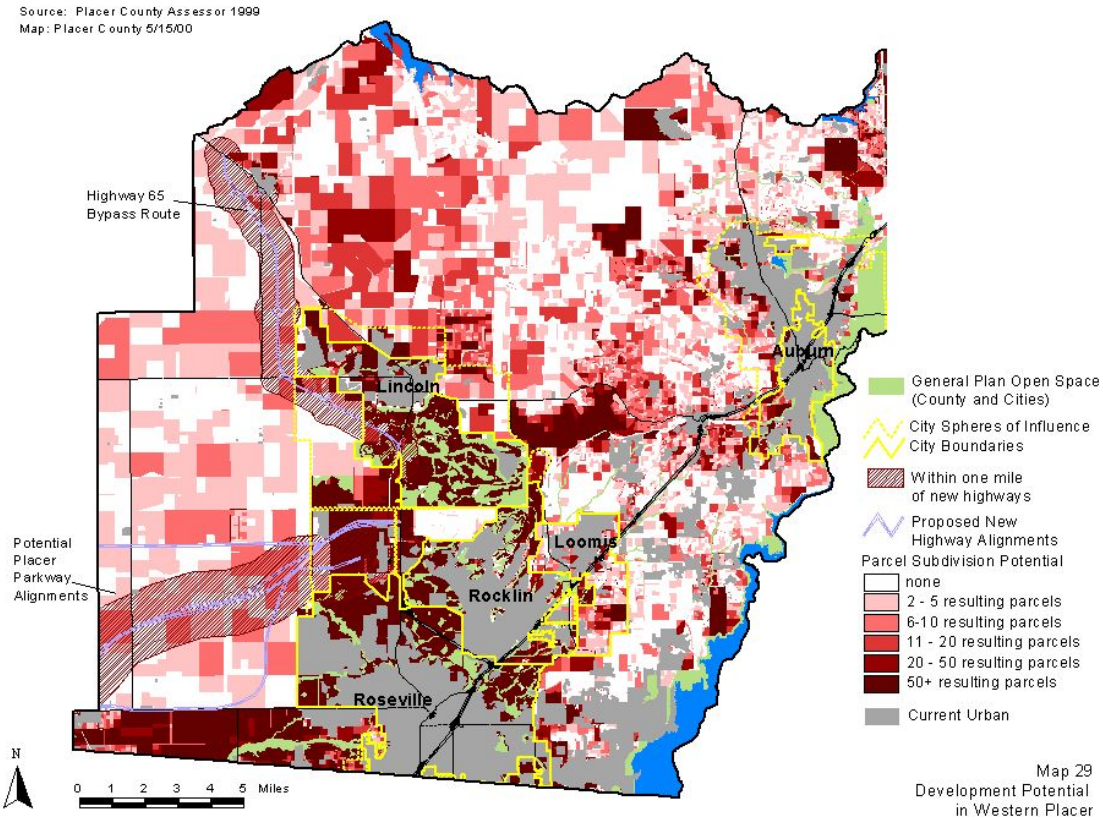
Area	***1990***	***2000***	***Percent Change 1990-2000***
The Valley	90,576	145,591	60.7%
Gold Country	36,989	40,609	9.8%
High Country	14,362	15,275	6.4%

Sacramento Regional Research Institute, December 2003
Data Source: Sacramento Area Council of Governments (SACOG)

The following maps obtained from the Placer County website illustrate the development potential for the County.



(Source: Placer County Website)



(Source: Placer County Website)

VULNERABILITY OF PLACER COUNTY FROM SPECIFIC HAZARDS

Community vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances the numbers and types of buildings subject to the identified hazard can be counted and their values tabulated. Further, other information can be collected, such as the location of critical community facilities (e.g., a fire station), historic structures, and valued natural resources (e.g., an identified wetland or endangered species habitat) that are within the specific hazard area. Together, this information portrays the impact, or *vulnerability*, of that area to that hazard.

It is important to note that these values can sometimes be refined one step further, with regard to the percent of probable impact. For example, when a flood occurs, seldom does the event cause the total destruction of an area. In fact, we know from NFIP insurance claims, that a flood with an average depth of 2-feet above the ground, is likely to cause approximately 20 percent damage to structures in the aggregate (those with basements, no basements, and second stories). Thus, if the 100-year flood were estimated to be 2-feet deep, a more accurate description of flood vulnerability would be a one percent annual chance of incurring a loss of 20 percent of the values tabulated in the 100-year floodplain --- and this is without the additional impacts of damage to infrastructure and economic disruption. This allows a community to measure the cost-effectiveness of alternative mitigation projects under consideration. The benefits of a mitigation project are the future losses avoided --- or, in this example, that portion of the value of the one percent annual chance of 20 percent damage that is protected by the project.

Identified Hazard Risk Areas: Flood, Dam Failure, Wildfires

The HMPC identified three hazards within the Planning Area where specific geographical hazard areas have been defined: flood, dam failure, and wildfires. For these three hazard areas, the HMPC has inventoried the following for each community, to the extent feasible, as a means of quantifying the vulnerability within the identified hazard areas:

- General hazard-related impacts, including impacts to life, safety and health;
- Values at Risk (i.e., Types, numbers, and value of land and improvements);
- Insurance coverage, Claims paid, and Repetitive losses;
- Identification of Critical Facilities at risk;
- Identification of Cultural and Natural Resources at risk;
- Overall Community Impact; and
- Development trends within the identified hazard area.

The Sections that follow present the vulnerability analysis for the Placer County and for each of the five incorporated communities participating in this Plan.

VULNERABILITY TO FLOODS

Flooding is a significant problem in Placer County. The risk potential or likelihood of a flood event occurring in the county increases with the annual onset of heavy rains from November through March. Much of the historical growth in the County occurred adjacent to streams, resulting in significant damages to property, losses from disruption of community activities, and potential loss of life when the streams overflow. Additional development in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff. Other problems connected with stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

NFIP/CRS Program

Placer County joined the NFIP on 04/18/1983 and entered the CRS program 10/1/1991. The current rating is a Class 6; last assigned on 10/01/2001. The Class 6 rating allows for a 20 percent discount on flood insurance for parcels located within the 100-year mapped floodplain and a 10 percent discount for those parcels located outside of the mapped floodplain. Roseville is the only other communities within Placer County that participates in the CRS program, with a current rating of 5.

The following table and identifies the existing FIRM maps for Unincorporated Placer County.

UNINCORPORATED PLACER COUNTY: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0025F	06/08/1998
06061C0050F	06/08/1998
06061C0057F	06/08/1998
06061C0059F	06/08/1998
06061C0067F	06/08/1998
06061C0069F	06/08/1998
06061C0075F	06/08/1998
06061C0100F	06/08/1998
06061C0125F	06/08/1998
06061C0150F	06/08/1998
06061C0175F	06/08/1998
06061C0182F	06/08/1998
06061C0184F	06/08/1998
06061C0200F	06/08/1998
06061C0203F	06/08/1998
06061C0211F	06/08/1998
06061C0225F	06/08/1998
06061C0250F	06/08/1998
06061C0275F	06/08/1998
06061C0286F	06/08/1998
06061C0288F	06/08/1998
06061C0300F	06/08/1998
06061C0325F	06/08/1998
06061C0350F	06/08/1998
06061C0375F	06/08/1998

Map Number	Effective Date
06061C0382F	06/08/1998
06061C0394F	06/08/1998
06061C0400F	06/08/1998
06061C0401F	06/08/1998
06061C0402F	06/08/1998
06061C0403F	06/08/1998
06061C0404F	06/08/1998
06061C0409F	06/08/1998
06061C0411F	06/08/1998
06061C0412F	06/08/1998
06061C0413F	06/08/1998
06061C0414F	06/08/1998
06061C0416F	06/08/1998
06061C0417G	11/21/2001
06061C0418F	06/08/1998
06061C0	11/21/2001
06061C0419G	11/21/2001
06061C0425G	06/08/1998
06061C0426F	06/08/1998
06061C0428F	06/08/1998
06061C0450F	06/08/1998
06061C0457F	06/08/1998
06061C0459F	06/08/1998
06061C0475F	06/08/1998
06061C0476F	11/21/2001
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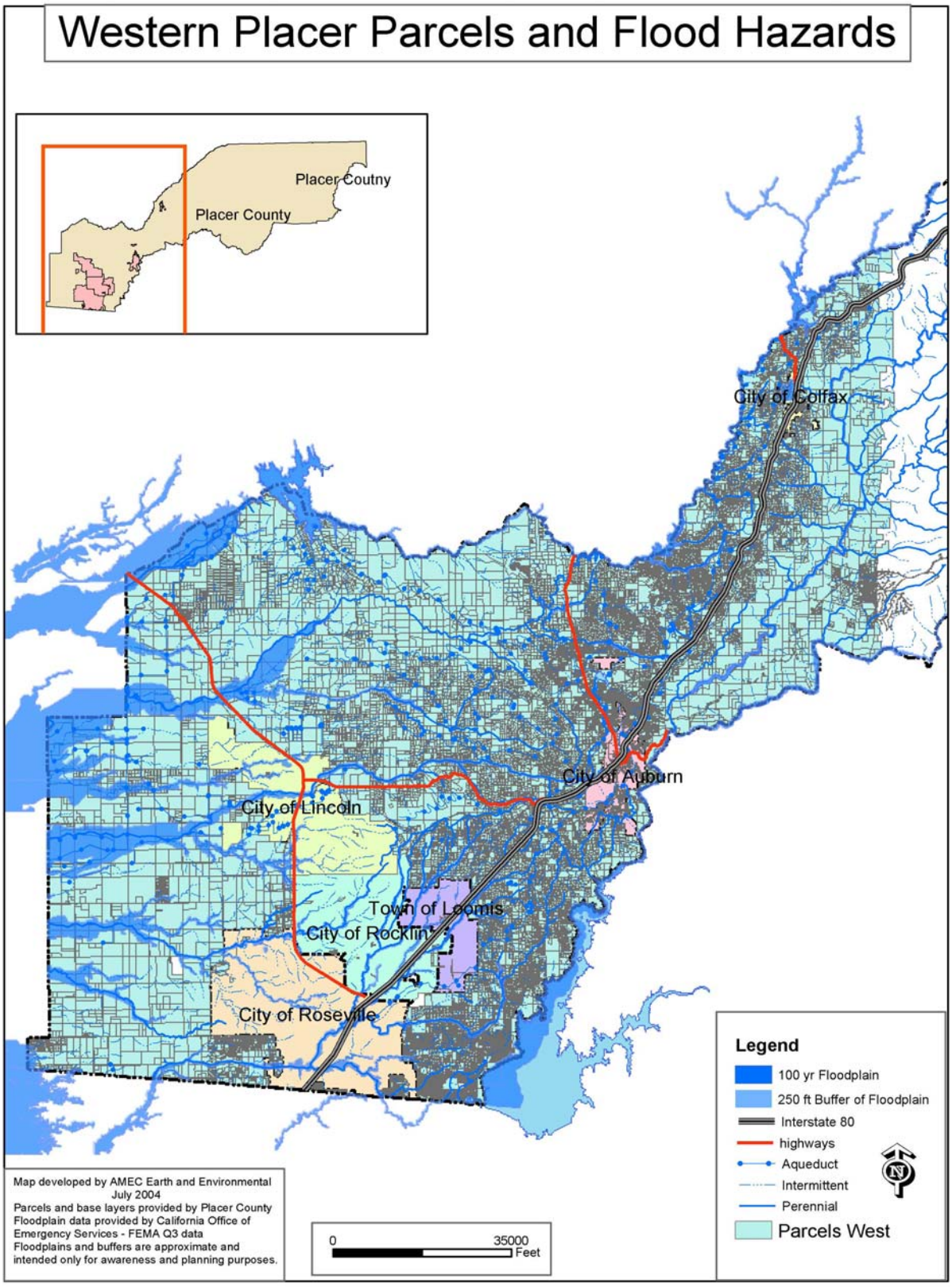
06061C0478F	11/21/2001
06061C0479G	11/21/2001
06061C0481G	11/21/2001
06061C0482G	11/21/2001
06061C0483G	06/08/1998
06061C0487F	06/08/1998
06061C0500F	11/21/2001
06061CINDO	11/21/2001

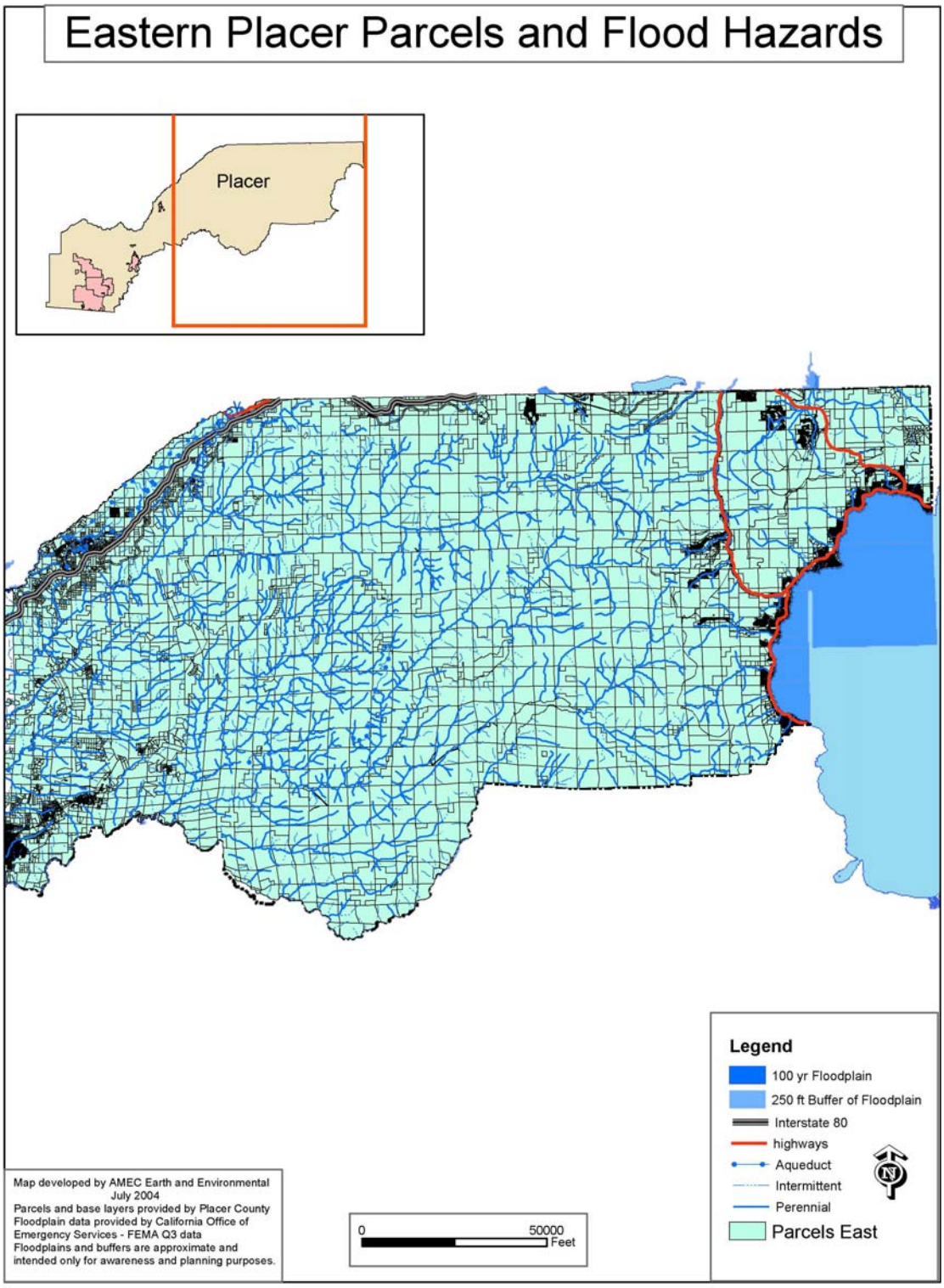
Values at Risk

The HMPC used GIS to model and quantify the potential flood losses to Placer County within the mapped floodplain areas using FEMA's Q3 100-year floodplain data and overlaying the information on Placer County's GIS parcel layers.

Specifically, the methodology involved intersecting parcels with the current FEMA Q3 100-year floodplain data (with a 250 foot uncertainty buffer). A 250 foot buffer on the 100-year floodplain is recommended when using this data in risk assessments to allow for uncertainty. A list of parcels that intersected the floodplain was generated. All parcels that touched the floodplain are included in the result. This file was linked with the assessor's data to quantify the value of property that potentially lies in a floodplain. For unincorporated Placer County, the County was divided into west and east segments. The west segment includes the parcels near Colfax to the western County line. The east segment contains the remaining portion of the County east to the California State Boundary. The following two maps show the floodplain, the 250-foot floodplain buffer and parcels for western and eastern Unincorporated Placer County.



(Map Compilation: AMEC Earth & Environmental/ Source Data: Placer County GIS/FEMA Q3)



(Map Compilation: AMEC Earth & Environmental/ Source Data: Placer County GIS/FEMA Q3)

The following two tables provides the values of parcels at risk for each of the Flood Hazard areas identified in the above maps for the unincorporated portions of western and eastern Placer County. Due to limitations of available data, there was no way to determine the number of parcels with improvements versus those parcels consisting of just vacant land.

UNINCORPORATED PLACER COUNTY EAST:
100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Residential	3246	1,108,216,150
Commercial	353	127,814,547
Industrial	28	10,854,440
Agricultural	220	5,067,754
Total: Unincorporated Placer East	**3,847**	**1,251,952,891**

UNINCORPORATED PLACER COUNTY WEST:
100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Residential	2266	462,092,906
Commercial	109	10,941,585
Industrial	91	54,270,306
Agricultural	575	164,859,048
Total: Unincorporated Placer West	**3041**	**692,163,845**

The values of identified parcels at risk for the areas located within the 100-year floodplain for all of Placer County is summarized in the table below. The valuation details for the incorporated communities are discussed in the Community Element sections included at the end of this Section.

PLACER COUNTY VALUES AT RISK:
100-YEAR FLOODPLAIN VALUES AT RISK

Community	Parcel Count	Net Value
Unincorporated Placer East	3847	1,251,952,891
Unincorporated Placer West	3041	692,163,845
Auburn	7	230,067
Lincoln	677	174,733,285
Loomis	465	94,724,523
Rocklin	2415	942,719,239
Total: All Placer County	**10,452**	**3,156,523,850**

In addition to the parcel information above, the Draft California Multi-Hazard Mitigation Plan estimates that 3.3 percent (or 8,221 people) of the total County population (of 248,399) reside within the 100-year flood plain.

Insurance Coverage, Claims Paid, and Repetitive Losses

NFIP Insurance data indicates that as of August 31, 2004 there are 1,053 flood insurance policies in Placer County, of which 518 are in unincorporated Placer County and the remaining 590 policies in the other incorporated cities. There have been 594 historical claims for flood losses totaling $14,835,582 in the County. Of these, 187 claims for $3,793,073 were within the unincorporated areas of the county; the remaining 357 claims for $10,559,970 occurring in the incorporated areas. Again this data raise the question of how many of the 6,888 parcels following within the 100-year floodplain are improved parcels in order to better determine the possible exposure of uninsured parcels.

Repetitive loss (RL) refers to those properties insured by the NFIP that received a claim payment greater than $1000 twice in any ten-year period since the community joined the program (or 1978). Repetitive damage refers to those properties damaged more than once from a flood event, whether or not the property is located in a floodplain or carries NFIP insurance. This Section focuses on the RL properties in the County.

According to the Draft California Multi-Hazard Mitigation Plan, historically there are 51 RL properties within the County. Of those, 16 are within the unincorporated areas; 27 were within the City of Roseville; and the remaining 8 within the other incorporated communities. In the past ten years alone, the state plan shows Placer County with a total of 38 losses associated with the16 RL properties, with building and contents payments totaling $1,480,370.49. According to the Placer County Certified Floodplain Manager, the County has presently reduced the number of RL properties in the unincorporated County from 16 to 3 and Roseville has reduced their 27 RL properties to 3. Of the 8 remaining historical RL properties, it is unknown how many remain.

Critical Facilities at Risk

As described earlier, critical facilities are located throughout the County. Placer County does not have a current mapped inventory of these facilities; therefore, the HMPC was unable to conduct an accurate analysis of critical facilities located within the mapped floodplain areas.

Cultural and Natural Resources at Risk

Placer County has substantial cultural and natural resources located throughout the County as previously described. However, the County does not currently have this information readily available in GIS format to support further analysis of identified cultural and natural resources located within the mapped floodplain areas.

Overall Community Impact

The overall impact to the community from a devastating flood includes:

- Potential for loss of life and disruption of infrastructure;
- Commercial and residential structural damage;
- Damages to road/bridges resulting in loss of mobility;
- Possible damage/loss of sewer and drinking water treatment plants;
- Significant economic impact (jobs, sales, tax revenue) upon the community with the loss of commercial structures;
- Negative impact upon commercial and residential property values;
- Damage to churches would severely impact the social fabric of the community;
- Damage to schools would severely impact the entire school system, with significant disruption to families and teachers as temporary facilities and relocations would be likely; and
- Major flooding within the community would have a significant impact on the overall mental health of the community.

Development Trends

With the exception of the Truckee River Watershed, most notable for the 1997 floods, flooding and drainage issues in eastern Placer County are generally not substantial due to well-defined, deeply incised, channels and steep channel slopes with limited potential for significant development. Therefore, the greatest concern is the flood issue in western Placer County. It is western Placer that is also seeing the greatest increase in population and development.

According to the Placer County General Plan, 2004, and various watershed studies, the Dry Creek Watershed (which includes the Town of Loomis and the City of Rocklin) is located in western Placer in an area of rapid urbanization and population growth. The Cross Canal Watershed (which includes the City of Lincoln and portions of the Cities of Auburn, Rocklin, and Roseville) in western Placer, made up of five subwatersheds, varies with respect to existing build-out, from areas with almost nonexistent development to larger pockets of fairly well developed areas. The Auburn/Bowman area is a largely rural area located in the Sierra Foothills of Placer.

As previously described in this Section, the western portion of Placer (also known as “The Valley”) has seen significant development over the last 14 years. The population alone increased by 60.7 percent in The Valley area from 1990 to 2000. Development is also occurring to meet the increased population demands. Growth projections for the area are significant. Increased stormwater runoff (which is a significant contributor to flooding problems) is a major issue with respect to new development. As a result, without proper mitigation efforts, all three major watersheds/drainage areas, Dry Creek, Cross Canal, and Auburn/Bowman area are likely subject to increased flooding due to additional development in and around the County.

VULNERABILITY TO DAM FAILURES

Dam failure flooding can occur as the result of partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. The National Inventory of Dams database provided with HAZUS was used to identify dams that could potentially impact Placer County. This includes dams (identified on the map in the Hazard ID section) that may lie in neighboring counties that drain into Placer County. The area roughly includes the entire American River, Upper Bear River, and North Tahoe watersheds and portions of the Truckee River watershed.

Based on information in the dams database there are 90 dams rated as "high" or "significant" hazard that could potentially impact Placer County should a failure occur. The failure of a dam with a high hazard rating could result in loss of life and property. A significant hazard dam failure would impact property. 37 of the 90 dams are classified as high hazard. 53 are rated as a significant hazard.

According to the 1994 Placer County General Plan Background Report, only four dams within Placer County are considered to have the potential to threaten more than 100 persons. The most significant inundation hazard is associated with Folsom Dikes 5 & 6. Folsom Lake Dikes 5 & 6 could threaten 25,352 people in an inundation area that extends generally along Linda Creek, Cirby Creek, and Dry Creek within the City of Roseville and into Sacramento County as far as Elverta and Rio Linda, and possibly could cause failure of the levees of the Natomas East Main Drainage Canal.

Lake Tahoe Dam, located at the outlet of the lake on the Truckee River, could threaten 1,000 people but is expected to be contained generally within the Truckee River floodway to Nevada County and beyond.

Camp Far West Dam could threaten 470 people along the Bear River southwest to Sheridan and could inundate Sate Highway 65, numerous local roads, and the Southern Pacific Railroad tracks.

Lake Combie Dam, also on the Bear River, could threaten 200 people downstream to Camp Far West Reservoir and could inundate State Highway 49.

Other major reservoirs in Placer County have the potential to threaten 100 or fewer persons. The most significant inundation hazard of these reservoirs is associated with Lake Valley Dam.

Lake Valley Dam built in 1911 and owned by Pacific Gas and Electric (PG&E) is located on the North Fork American River. A failure of this dam could threaten up to 100 persons in an inundation area that would include the PG&E Lodgepole Campground and small developments along the North Fork of the American River. Failure of the dam could cause the North Fork Dam to spill an estimated 32,200 cubic feet per second.

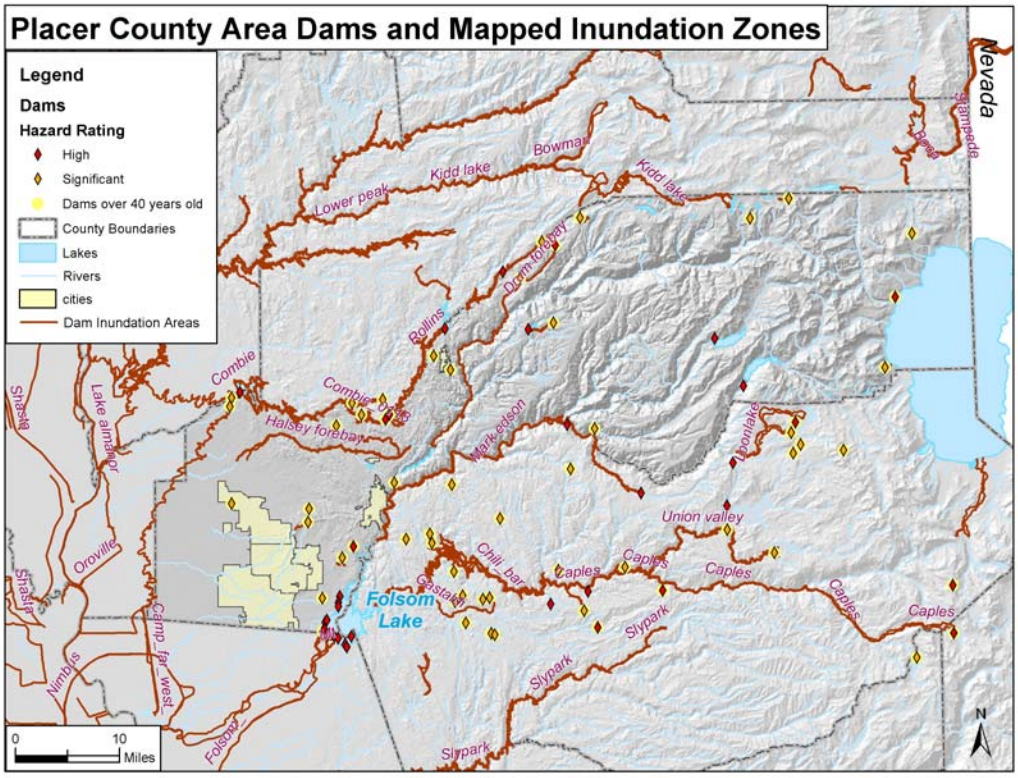
North Fork Dam built in 1939 by the Corps of Engineers dams the North Fork American River and forms Lake Clementine. This dam would not threaten persons unless recreationists were in the vicinity at the time of dam failure.

French Meadows Dam could threaten an estimated 20 persons and could inundate French Meadows Road and Highway 49 on the North Fork of the American River.

Sugar Pine Dam, built in 1981 and owned by Foresthill Public Utility District, dams North Shirttail Creek. A failure of this dam would not threaten persons unless recreationists were in the vicinity at the time of dam failure. Iowa Hill Road, Shirtail Canyon Road, and Yankee Jim's Road could all be inundated.

In addition, Rollins Reservoir Dam on the Bear River in Nevada County and Stumpy Meadows Dam on Pilot Hill Creek above the Rubicon River and the Middle Fork of the American River in El Dorado County could affect Placer County and could threaten 100-200 people.

Inundation maps prepared by Dam Owners are on file with the county, and for national security purposes, can only be accessed by those that can demonstrate a need-to-know to the Placer County OES. The Placer County OES has also developed an evacuation plan that specifies emergency procedures for evacuation, control, and re-entry of areas at risk for possible dam inundation. For general planning purposes only, the following figure illustrates a Dam Inundation map generated using the GIS data from HAZUS software and CA-OES.



(Map Compilation: AMEC Earth & Environmental; Data Source: HAZUS)

Values at Risk

As the map above does not reflect the actual inundation maps on file for each of the dams and a dam failure can range from a small, uncontrolled release to a catastrophic failure, no further analyses were done with respect to potential values at risk in the inundation zones. However, based on this planning level analysis, the mapped inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would primarily be those areas located along streams and drainages.

Critical Facilities at Risk

As described earlier, critical facilities are located throughout the County. Placer County does not have a current mapped inventory of these facilities; therefore, the HMPC was unable to conduct an accurate analysis of critical facilities located within the dam inundation areas.

Cultural and Natural Resources at Risk

Placer County has substantial cultural and natural resources located throughout the County as previously described. However, the County does not currently have this information readily available in GIS format to support further analysis of identified cultural and natural resources located within the dam inundation areas.

Overall Community Impact

The overall impact to the community from a dam failure includes those previously identified for flood events. The biggest difference is that a catastrophic dam failure has the potential to result in a much greater loss of life and destruction to property and infrastructure due to the lack of early warning and potential speed of onset.

Development Trends

Given that the dam inundation maps show flooding in existing stream and floodplain areas, the development trends for this hazard are likely similar to those identified for flooding.

VULNERABILITY TO WILDFIRES

Risk and vulnerability to the Placer County planning area from wildfire is of significant concern. High fuel loads (from dense vegetation) in Placer County, along with geographical and topographical features of the area, create the potential for both natural and human-caused fires resulting in loss of life and property. These factors combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic high wind conditions can result in frequent and sometimes catastrophic fires. Even the relatively flat, highly urbanized western portion of the County is not immune, as was shown by

the 2002 Sierra Fire and 2004 Wells Fire near Loomis. During the May to October fire season, the dry vegetation and hot and often windy weather combined with the high-density population results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire.

The Draft Community Wildfire Protection Plan for the California Portion of the Lake Tahoe Basin, indicates that the area is highly susceptible to a large, crown-type fire due to historical forest management practices and the nature of existing fuel conditions. The plan estimates that the Basin lower montane forests have four times the density of tress and upper montane forests have twice the density of trees when compared to forest conditions prior to 1870. In addition, current forest stands exhibit a 70 percent higher disease incidence and a five percent greater mortality than remnant old growth stands in the basin. According to this community plan, recent estimates indicate that if a fire escaped initial control, at least 50 percent of the burned area would probably occur as a crown fire, with overstory tree mortality exceeding 50 percent. Further, locations that exhibit pronounced levels of drought-, insect-, and pathogen-related mortality would increase fire line construction times and reduce suppression effectiveness.

As required by federal Law creating the National Fire Plan, CDF generated a list of communities at risk for wildfire. Specifically, the intent was to evaluate the risk to a given area from fire escaping off federal lands. Three main factors were used to determine wildland fire threat in the WUI areas of California. These include, 1) Ranking fuel hazards, 2) Assessing the probability of fire, and 3) Defining areas of suitable housing density that could create wildland-urban interface fire protection strategy situations. The preliminary criteria and methodology for evaluating wildfire risk to communities is published in the Federal Register, January 4, 2001, Volume 66, Number 3. The communities in Placer County and the identified risk to these communities from fire escaping off federal lands are listed in the following table.

PLACER COUNTY COMMUNITIES AT RISK OF WILDFIRE

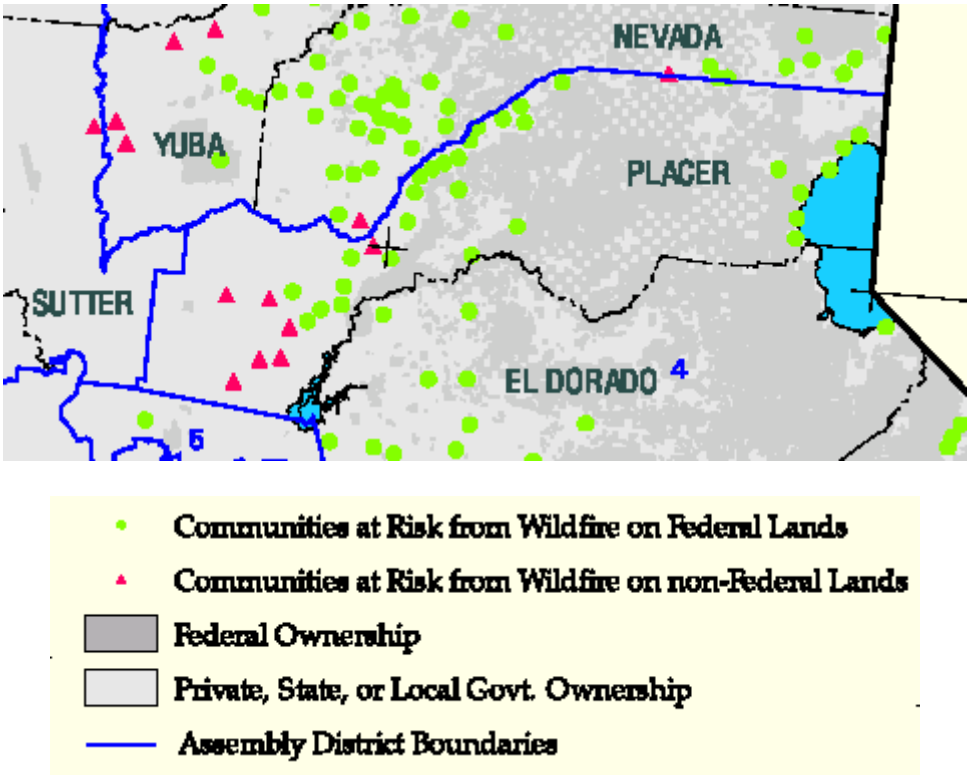
	PLACE NAME	COUNTY NAME	FED THREAT	HAZARD LEVEL
18	Alpine Meadows (Rampart)	PLACER	F	3
19	Alta	PLACER	F	3
55	Auburn	PLACER	F	3
68	Baxter	PLACER	F	3
98	Big Bend	PLACER	F	3
133	Bowman	PLACER	F	3
184	Cape Horn	PLACER	F	3
193	Carnelian Bay	PLACER	F	3
197	Casa Loma	PLACER	F	3
224	Christian Valley (Nielsburg)	PLACER	F	3
243	Colfax	PLACER	F	3
311	Dollar Point	PLACER	~~F~~	~~3~~
328	Dutch Flat	PLACER	F	3
353	Emigrant Gap	PLACER	F	3
387	Foresthill	PLACER	F	3
431	Gold Hill	PLACER	F	3
432	Gold Run	PLACER	F	3

	PLACE NAME	COUNTY NAME	FED THREAT	HAZARD LEVEL
478	Heather Glen - Applegate	PLACER	F	3
498	Homewood	PLACER	F	3
525	Iowa Hill	PLACER	F	3
561	Kings Beach	PLACER	F	3
628	Lincoln	PLACER		3
650	Loomis	PLACER		3
670	Magra	PLACER	F	3
695	Meadow Vista	PLACER		3
702	Michigan Bluff	PLACER	F	3
765	Newcastle	PLACER	F	3
774	North Auburn	PLACER	F	3
807	Ophir	PLACER	F	3
846	Penryn	PLACER		3
943	Rocklin	PLACER		3
953	Roseville	PLACER		3
1016	Secret Town	PLACER	F	3
1021	Shady Glen	PLACER	F	3
1068	Squaw Valley	PLACER	F	3
1086	Sunnyside-Tahoe City	PLACER	F	3
1097	Tahoe Pines	PLACER	F	3
1098	Tahoe Vista	PLACER	F	3
1132	Truckee	NEVADA & PLACER	F	3
1142	Twin Pines - Weimar	PLACER	F	3
1173	Virginiatown	PLACER		3

40 = number of communities
F indicates "in the vicinity of Federal lands"
3 is the maximum hazard level rating

(Source: California Fire Alliance, www.cafirealliance.org)

The map that follows, published in 2004 by CDF, show those communities designated as at risk from wildfire within Placer County and surrounding counties.



(Source: California Department of Forestry and Fire Protection 2004)

The HMPC has also recommended the following communities to be added to the list of Communities at Risk in Placer County:

PLACER COUNTY COMMUNITIES AT RISK OF WILDFIRE
HMPC RECOMMENDED ADDITIONS

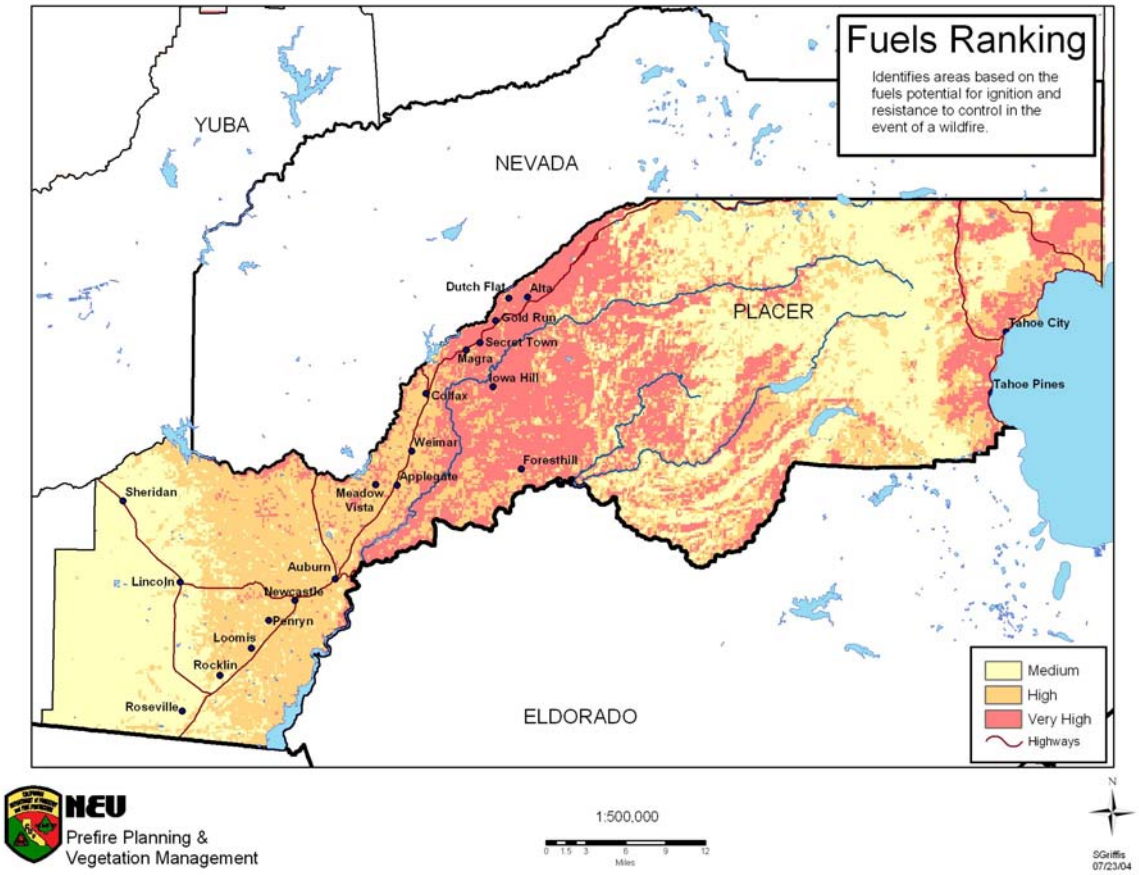
PLACE NAME	COUNTY NAME	FED THREAT	HAZARD LEVEL
Andover	Placer	TNF	3
Blue Canyon	**Placer**	**TNF**	**3**
Cisco	Placer	TNF	3
Cisco Grove	Placer	TNF	3
Eder	Placer	TNF	3
Granite Bay	**Placer**	**BLM**	**3**
Horseshoe Bar	Placer	BLM	3
Nyack	Placer	TNF	3
Sheridan	**Placer**		**2**
Todd Valley	**Placer**	**BLM/TNF/ENF**	**3**

NOTE: **Bolded** entries are major communities

In addition, CDF, in conjunction with CA-OES, has created a Fuels Ranking Map for Placer County to identify those areas at greatest risk from wildfire. This Fuels Ranking Map was created using various risk factors such as weather, topography and fuel loads.

Specifically, the methodology used in developing this map considered the following: **1)** development of a detailed surface fuel mapping model by assessing the vegetative composition and structure information (using vegetation data from a variety of sources) to produce a fine-grained portrayal of surface fuel conditions. This method also considers changes in surface fuel characteristics that result from past fires, and to account for fuel changes as burned areas re-grow;
2) consideration of additional crown and ladder fuel characteristics to the surface fuel model to account for the relative abundance of these fuels. This assists in understanding the probability that torching and crown fire would occur if the stand were subjected to a wildfire under adverse environmental conditions;
3) a hazard ranking by quad 81st (i.e., uses 450 acre cells formed from a 9-by-9 partitioning of 7.5 min quad sheets as the minimum unit for spatial analysis) is applied to portray hazard in terms of moderate, high or very high hazard. This aspect of the model also includes an analysis of fire behavior under six slope classes and combines this information with the fuel model to derive the associated hazard ranking. Total fire hazard includes not only hazard posed by surface fire, but also hazard posed by involvement of canopy fuels; and
4) nce the hazard ranking is determined as above, CDF field staff will validate the hazard ranking by comparing the quad 81st hazard rank with field knowledge of actual conditions.

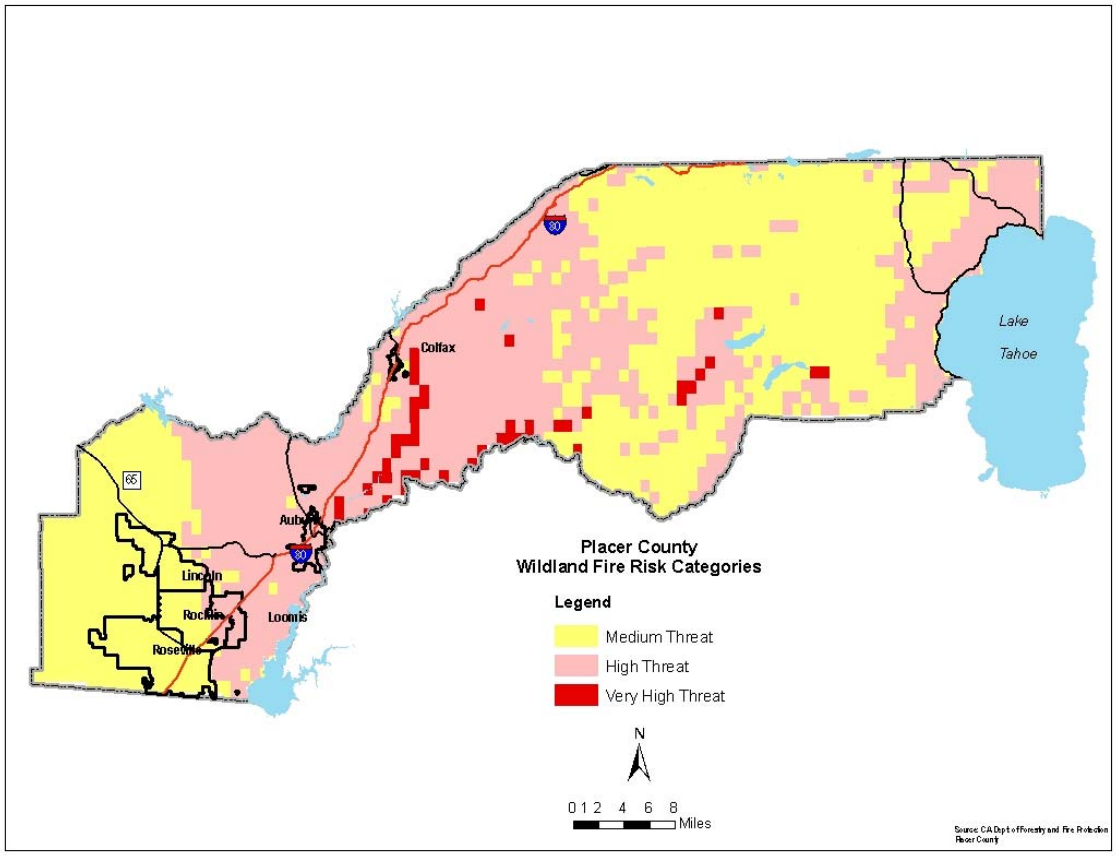
Unlike, the Communities at Risk determination previously described, which looks at risk from fire escaping off federal lands, this analysis looks at the risk of fire occurring in a given area, based on conditions specific to that area. The Fuels Ranking map is provided on the following page.



(Source: CDF)

Utilizing this Fuels Ranking Map, the HMPC created a Wildland Fire Risk Map by overlaying the Fuel's map on the Placer County GIS parcel layer in order to quantify potential losses from fire.

Based on this analysis, the County's risk to Wildland fires ranges from Medium, to High to a Very High Threat. Due to its rugged terrain, highly flammable timber and brush-covered lands, combined with long dry summers, a large portion of Placer County has been designated high to very high risk. The far western portion of the County; however, is relatively flat with lighter fuel loading and is consequently designated as a medium risk. The Wildland Fire Risk map is provided on the following page.



(Source: CDF/Placer County GIS)

Values at Risk

Using the Wildland Fire Risk Map, the HMPC conducted additional analyses to determine values of identified parcels at risk. GIS was used to model and quantify the potential wildfire losses to Placer County by generating a list of parcels that intersected each of the risk categories and then linking the parcel data with the assessor's data to quantify the value of property that potentially lies within each identified risk category.

The results are included in the following two tables. The first table includes data for unincorporated Placer County. The second table summarizes total values at risk for Wildfire Risk Categories for all of Placer County. The valuation details for the incorporated communities are discussed in the Community Element sections included at the end of this Section.

UNINCORPORATED PLACER COUNTY: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	16,999	4,213,417,037	51,428	11,451,944,156	579	29,812,338
Commercial	884	588,533,812	2,270	962,560,024	1	115,878
Industrial	366	371,191,011	358	123,092,993	12	2,150,604
Agricultural	2,668	722,903,360	2,261	193,352,921	32	2,150,604
Misc.	1	0	1	545,700	0	0
Total	**20,918**	**5,896,045,220**	**56,318**	**12,731,495,794**	**624**	**32,279,213**

PLACER COUNTY: TOTAL VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Community	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Unincorp. Placer	20,918	5,896,045,220	56,318	12,731,495,794	624	32,279,213
Auburn	0	0	5,983	1,247,244,272	5	785,044
Colfax	2	0	917	147,951,738	0	0
Lincoln	11,098	3,611,496,636	17	43,949,110	0	0
Loomis	0	0	2,971	641,694,081	0	0
Rocklin	15,394	5,116,047,853	1,962	758,610,013	0	0
Total: All Placer	**46,692**	**14,623,589,709**	**68,168**	**15,570,945,008**	**629**	**33,064,257**

Critical Facilities at Risk

As described earlier, critical facilities are located throughout the County. Placer County does not have a current mapped inventory of these facilities; therefore, the HMPC was unable to conduct an accurate analysis of critical facilities located within the wildfire hazard areas.

Cultural and Natural Resources at Risk

Placer County has substantial cultural and natural resources located throughout the County as previously described. However, the County does not currently have this information readily available in GIS format to support further analysis of identified cultural and natural resources located within the wildfire hazard areas.

In addition to previously identified wetlands and threatened and endangered species, there are other natural resources at risk when wildland-urban interface fires occur. The first is the watershed and ecosystem losses that occur from wildland fires. The second is the timber and ground cover assets that make up the life style and some commercial aspects of living in the area. The last is the aesthetic value of the area. Major fires that result in visible damage detract from that value. Tourism is a major attraction in Placer County. Because many Placer County communities border Tahoe National Forest, the issues of watershed, forest products, wildlife, and recreation tourism are all critical elements to the County and surrounding areas and are all at risk from wildfire hazards.

Overall Community Impact

The overall impact to the community from a wildfire includes:

- Potential for injury and loss of life;
- Commercial and residential structural damage;
- Impact on the water quality of watersheds located within the county;
- Impact to natural resource habitats and other resources such as timber;
- Loss of water, power, roads, phones, and transportation could impact ability to sustain life for those with certain medical conditions;
- Significant economic impact (jobs, sales, tax revenue) upon the community with the loss of commercial structures;
- Negative impact upon commercial and residential property values;
- The loss of churches would severely impact the social fabric of the community;
- The loss of schools would severely impact the entire school system, with significant disruption to families and teachers as temporary facilities and relocations would be likely; and
- Major wildland fires within the community would have a significant impact on the overall mental health of the community.

Development Trends

Population growth and development in Placer County is on the rise. Much of this growth is occurring in previously undeveloped wildland interface areas. As long as the County continues to expand into these areas, the County's vulnerability to wildfires will increase proportionately.

Other Identified Hazards: Severe Weather, Landslides, Avalanches, Earthquakes, Volcanoes, Agricultural Disasters, West Nile Virus

For the other hazards identified in the Hazard Identification section, information is available where the potential impacts can be developed or inferred, although it is not tied to a county-specific location. For these other identified hazards, the entire County is at risk. In some cases, certain hazard characteristics suggest varying degrees of risk within different areas of Placer County. For example:

- In earthquakes, certain soils are more susceptible to shaking than others, and certain types of building construction are more likely to sustain damage than others. Thus, in areas with higher concentrations of these types of soils or these types of buildings, greater damages can be expected. Any area that included *both* risky soils and vulnerable construction would be most likely to incur the greatest level of damage and disruption.

- West Nile Virus is spread through mosquito bites. Thus, people and livestock frequenting areas with the greatest concentration of mosquitoes, and during the times of greatest concentration, are most likely to become infected. Areas with standing water are

where mosquitoes breed, and therefore are an area of higher risk. Standing water can be found along the river and creek areas of the County as well as in swimming pools, ponds, birdbaths, ditches, and old spare tires – so the risk areas could be in many locations and in differing concentrations.

VULNERABILITY TO SEVERE WEATHER

The severe weather evaluated as part of this risk assessment included: Heavy Rains/Thunderstorms/Wind/Lightning; Fog; Snow; Tornadoes; and Drought.

Heavy Rains/Thunderstorms/Wind/Lightning

Looking at historical hazard data for Placer County, severe weather is an annual occurrence in Placer County; damages and disaster declarations related to severe weather events have occurred and will continue to occur in the future. However, the damages associated with the primary effects of severe weather have been limited. It is the secondary effects of weather such as flood, fire, and agricultural losses that have had the greatest impact on the County. The risk and vulnerability associated with these secondary impacts are discussed in these other sections.

Snow

Impacts to Placer County as a result of winter snow storms include damage to infrastructure, frozen pipes, utility outages, road closures, traffic accidents, interruption in business and school activities. Also of concern is the impact to populations with special needs such as the elderly and those requiring the use of medical equipment. Delays in emergency response services can be of significant concern. Further, there are economic impacts associated with areas prone to heavy snow. Depending on the nature of a given storm, the eastern portion of Placer County is the most vulnerable to effects of snow. However, snowfall in the lower elevations can create significant issues, as they are usually not as prepared for heavy snows.

Like most weather events, periods of heavy snow occur on an annual basis. School and business closures occur annually, but are usually short-lived. Damages to infrastructure also occur annually; much of this is covered through private insurance policies. The economic impact for increased manpower and efforts for manning road closures, responding to traffic accidents, and for general snow-removal efforts is usually included in annual budgets.

Tornadoes

Based on information provided by the HMPC, tornadoes do occur, but are of limited concern to the County. Given the topography of the area, the valley area or western portion of the county is most vulnerable to tornado occurrences. Of the four identified tornadoes in the County since 1972, three of them were an F0 magnitude and only two resulted in reportable damages. Of the two resulting in damages, only one was significant at $250,000 while the other was only at $3,000.

Fog

Fog is an issue in Placer County; although, information on injuries or damages caused by fog incidents in the County were limited. According to information provided by the Auburn Area, CHP, from January 2000, through June 2004, traffic on I-80 was severely affected due to dense fog approximately five times. Although fog is an issue, due to the lack of injuries and damages associated with fog events, the HMPC concluded that the vulnerability to the County from fog is low.

Drought

Drought is different than many of the other natural hazards in that it is not a distinct event, and usually has a slow onset. Drought can severely impact a region both physically and economically. A drought's effects impact various sectors in different manners and with varying intensity. Adequate water is the most critical issue; Agricultural, manufacturing, tourism, recreation, and commercial and domestic use all require a constant, reliable supply of water. As the population in the area continues to grow, so will the demand for water.

Based on historic information, the occurrence of drought in California, including Placer County is cyclical, driven by weather patterns. Drought has occurred in the past and will continue to occur in the future. The periods of actual drought with adverse impacts can vary from short to long term; often the period between droughts is extended. Although an area may be under an extended dry period, defining when a drought occurs is a function of drought impacts to individual water users. Since 1850, there have been 11 documented droughts in California. The HMPC identified three droughts impacting Placer County in the last 27 years. The vulnerability to Placer County from drought is usually county-wide and depending on the area includes reduction in water supply, agricultural losses, and an increase in dry fuels and beetle kill. It is this last drought affect, increase in dry fuels and beetle kill, that will also leave the county more vulnerable to damaging wildfires.

VULNERABILITY TO LANDSLIDES

Landslides are a documented hazard in the County. Impacts from landslides primarily involve damage to infrastructure, utility systems, and roads. Road closures can further impact emergency response efforts and interrupt business and school activities. Historically landslides resulting in significant losses have been limited within the County

VULNERABILITY TO AVALANCHES

Avalanches following snowstorms often occur and have historically resulted in both injuries and fatalities. This hazard is primarily limited to the eastern portion of the County in sloped areas and generally affects only a small number of people - mostly recreational users of backcountry areas.

VULNERABILITY TO EARTHQUAKES

Based on scientific and historic information, while the risk to Placer County from earthquakes is moderate, the vulnerability is low. Earthquake vulnerability is primarily based upon population and the built environment. Urban areas in high hazard zones are the most vulnerable, while uninhabited areas are less vulnerable. According to the California Draft Multi-Hazard Mitigation Plan, zero percent of Placer County's population is located in a High Seismic Hazard Zone.

Ground shaking, the principal cause of damage, is the major earthquake hazard. The California Geological Survey and the U.S. Geological Survey have estimated earthquake probabilities and associated ground motions for future events. The recently published (Spring 2003) California Geological Survey map notes that the Placer County area "will experience lower levels of shaking less frequently" (than other areas), but "very infrequent earthquakes could still cause strong shaking here."

Many factors affect the potential damageability of structures and systems from earthquake-caused ground motions. Some of these factors include proximity to the fault and the direction of rupture, epicentral location and depth, magnitude, local geologic and soils conditions, types and quality of construction, building configurations and heights, and comparable factors that relate to utility, transportation, and other network systems. However, ground motions become structurally damaging when average peak accelerations reach 10 percent to 15 percent of gravity, average peak velocities reach 8 to 12 centimeters per second, and when the Modified Mercalli Intensity Scale is about VII where:

> Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars. (Bolt, 203)

The California Geological Survey Shaking Potential map shown in Section 4.1 is a 10 percent probability over 50 years of shaking intensity. Shaking is measured in a variety of ways, including peak ground acceleration, peak ground velocity, and spectral acceleration. This map is spectral acceleration, at one second frequency. The reason for looking at different frequencies is due to building response. In general, taller buildings may experience more damage by energy released in longer waveforms due to the harmonics of building sway, and ground shaking.

Natural or artificially filled areas, such as the Marina District in San Francisco, tend to experience amplified motions, liquefaction, and associated ground failures that can cause extensive damage.

The western portion of the County is located on alluvial deposits, which are characterized by soft, moist, and relatively unconsolidated materials that tend to amplify ground motions. Some communities, such as the City of Colfax, are located on firmer materials that tend to dampen ground motions, resulting in less damage. Historical earthquakes in the area have had limited impacts on Placer County. There is new evidence, however, that the potential for a damaging earthquake is more likely to occur in the eastern portion (i.e., Tahoe region) of the County.

Fault rupture itself contributes very little to damage unless the structure or system element crosses the active fault. In general, newer construction is more earthquake resistant than older construction because of improved building codes and their enforcement. Manufactured housing is very susceptible to damage because rarely are their foundation systems braced for earthquake motions. Locally generated earthquake motions, even from very moderate events, tend to be more damaging to smaller buildings, especially those constructed of unreinforced masonry, such as was seen in the Oroville, Coalinga, Santa Cruz, and Paso Robles earthquakes. Further in places like Auburn, many houses constructed prior to 1960 did not have adequate anchorage to their foundations. Other, newer houses lacked adequate bracing of walls that form crawl spaces below first floors. Water heaters in older homes and those replaced by homeowners often are not braced or anchored to resist earthquakes.

Common impacts from earthquakes include damages to infrastructure and buildings (e.g., unreinforced masonry [brick] crumbling; architectural facades falling; underground utilities breaking, gas-fed fires; landslides and rock falls; and road closures). Earthquakes also frequently trigger secondary effects, such as dam failures, explosions, and fires that become disasters themselves.

HAZUS-MH Earthquake Scenarios

HAZUS-MH was utilized to model earthquake losses for Placer County. Two different scenarios were chosen to represent two vary distinct differences in earthquake hazards and vulnerabilities between eastern and western Placer County based on current and historic data. The division between eastern and western Placer County is not based on any identifiable boundary between the eastern and western portion of the County, but utilizes the faults with the greatest potential for a damaging earthquake in the County. For western Placer, the epicenter was located on a Late Quaternary age fault located in Auburn. For eastern Placer, the epicenter was located on a Holocene age fault submerged under Lake Tahoe. These scenarios are abitrary “what if” events defined by the HMPC based on historical earthquake data in and around Placer County. Specifically, the probable magnitude used for western Placer County utilized the 5.7 magnitude of the Oroville Earthquake, which had the greatest historical impact to the western portion of the County. The probable magnitude used for eastern Placer County was based on recent (1999) data on earthquake hazards in the Lake Tahoe basin. Level 1 analyses were run, meaning that only the default data was used and not supplemented with local building inventory or hazard data. There are certain data limitations when using the default data, so the results should be

interpreted accordingly; this is a planning level analysis. The two scenarios were defined as follows:

Eastern Placer County Scenario

* Epicenter located on Holocene age (200-10,000 years old) fault submerged under Lake Tahoe (Lat: 39.15; Long: -120.05)
* 6.9 Magnitude at 32 km (20miles) depth

According to HAZUS this moderate sized event in Eastern Placer County could induce significant economic loss in the vicinity of $125.40 million.

Western Placer County Scenario

* Epicenter located on a Late Quaternary age (10,000-700,000 years old) fault located in Auburn (Lat: 38.89; Long: -121.08)
* 5.7 Magnitude at 8km (5 miles) depth

According to HAZUS this moderate sized event could induce significant economic loss in the vicinity of $217.81 million.

The following table summarizes these results.

HAZUS-MH EARTHQUAKE SCENARIO RESULTS

Impacts/Earthquake	Eastern Placer County M5.7/ Depth 5 miles	Western Placer County M6.9/ Depth 20 miles
Residential Bldgs. Damaged *(Based upon buildings)*	Slight: 4,640 Moderate: 1,585 Extensive: 130 Complete: 28	Slight: 9,264 Moderate: 2,641 Extensive: 304 Complete: 22
Injuries *(Based upon 2pm time of occurence)*	Without requiring hospitalization: 31 Requiring hospitalization: 6 Life Threatening: 1 Fatalities: 2	Without requiring hospitalization: 35 Requiring hospitalization: 5 Life Threatening: 1 Fatalities: 1
Displaced Households	36	78
Economic Loss	Property and Lifeline Damage: $125.40M	Property and Lifeline Damage: $217.81M
Damage to Schools *(Based upon 26 buildings)*	None with at least moderate damage	None with at least moderate damage
Damage to Hospital	None with at least moderate damage	None with at least moderate damage
Damage to Transportation Systems	None with at least moderate damage	None with at least moderate damage
Households w/out Power & Water Service *(Based upon 7,211 households)*	No loss of power Water loss @ Day 1: 126 Water loss @ Day 3: 0 Water loss @ Day 7: 0 Water loss @ Day 30: 0	No loss of power No loss of water

VULNERABILITY TO VOLCANOES

Although volcanoes are identified as one of the hazards adversely impacting California, Placer County's location relative to the two nearest active Volcanoes limits both the County's risk and vulnerability to this hazard. The County's vulnerability from renewed volcanic activity from either the Long Valley Caldera or Lassen Peak would be limited to ashfall associated with large or very large explosive eruptions. Lessons learned from the 1980 Mt. St. Helens eruption demonstrate that the impact of distant ashfall is primarily clogging of motor air filters, difficulties with breathing in certain individuals, and resulting sediment issues.

VULNERABILITY TO AGRICULTUAL HAZARDS

Given the importance of agriculture to Placer County, agricultural disasters continue to be an ongoing concern. The primary causes of agricultural losses are insect infestations and severe weather events, such as drought and freeze. According to the HMPC, agricultural losses occur on an annual basis throughout the County and are usually associated with these severe weather events.

VULNERABILITY TO WEST NILE VIRUS

Both the risk and vulnerability to California from WNV is considered low, based on the percentage of total population that actually comes down with the disease. The first appearance of WNV in North America occurred in 1999. As of August 2003, WNV has been documented in 46 states and the District of Columbia. In California, WNV was detected on a very limited basis in both horses and humans in 2003.

According to the CDC, even though last years outbreak was the largest in the country, fewer people died or had serious brain damage from it compared to 2002. The 9006 cases of the virus last year were more than double the 4,156 cases in 2002; however, there were only 220 deaths and 2,695 cases of sever brain damage in 2003, compared to 228 deaths and 2,944 cases of severe neurological disease in 2003. Researchers think that the larger number of confirmed cases in 2003, could be due to an increase in testing and reporting compared to 2002.

Although the potential for exposure does exist in Placer County in the 2004 season, the risk should be considered in terms of adverse effects due to exposure. The county already has an active vector control program in place for mosquitoes due to the past concern with equine encephalitis. And most important, protective measures to prevent exposure are relatively simple and cost effective. Given the nature of protective measures, such as wearing long sleeved clothing and using bug spray, the responsibility for protection can and should be an individual responsibility. Placer County's current public education program should give the community both the knowledge as well as access to resources to effectively counter the risk and impact from WNV.

COMMUNITY ELEMENTS

The following sections present the community elements, focusing on the vulnerability data for the incorporated communities of Auburn, Colfax, Lincoln, Loomis, and Rocklin.

CITY OF AUBURN

Population: 12,462 (2000 Census)
Area: 7.2 square miles

According to the Safety Element portion of the General Plan, Auburn has not declared any local emergencies or been part of any state or federal declared emergencies in the recent past. The Hazard Analysis Summary for the City of Auburn is below.

SUMMARY HAZARD ANALYSIS: CITY OF AUBURN

Hazard	Estimated Frequency	Expected Severity
Aircraft Accidents	Low	Moderate
Earthquakes/Geologic Hazards	Rare	Moderate
Fires	Occasional	High
Floods	Low	Low
Hazardous Materials Incidents	Frequent	Low
Interstate 80 Corridor Accidents	Frequent	Moderate
Terrorism	Rare	Moderate

Total Vulnerability and Values At Risk

The following sections show the total value of property and key inventories at risk within the City of Auburn.

Assessor Data

Utilizing Placer County assessor data, the total assessed values for the City of Auburn are:

2004 CERTIFIED ROLL VALUES

Property Type	Units	Net Value
Residential	4,944	961,861,685
Commercial	481	167,050,896
Industrial	34	10,419,736
Agricultural	31	765,138
Total Value	**5,494**	**1,142,840,470**

Critical Facilities Inventory

Utilizing the definition of critical facilities previously set forth in this Plan, the critical facilities in the City of Auburn are listed below.

Class 1 Facility:

- Auburn City Dispatch Center

Class 2 Facilities:

- Auburn Police Stations
- Auburn Fire Stations
- Auburn Airport

Class 3 Facilities:

- Schools
- Water Treatment plants
- Power generation infrastructure
- Sewage infrastructure
- Auburn Fair Grounds
- Memorial Halls
- Park Facilities

Cultural and Natural Resources at Risk

Cultural and natural resources in the City of Auburn include those previously identified in the County inventory. Of specific cultural value to the city is Historic Old Town Auburn. The State Recreation Area bordering the City limits of Auburn is an important natural resource to the community. No other separate inventories or mapping of cultural or natural resources have been conducted by the City of Auburn; therefore, the HMPC was unable to perform a more accurate analysis of these resources located within City limits.

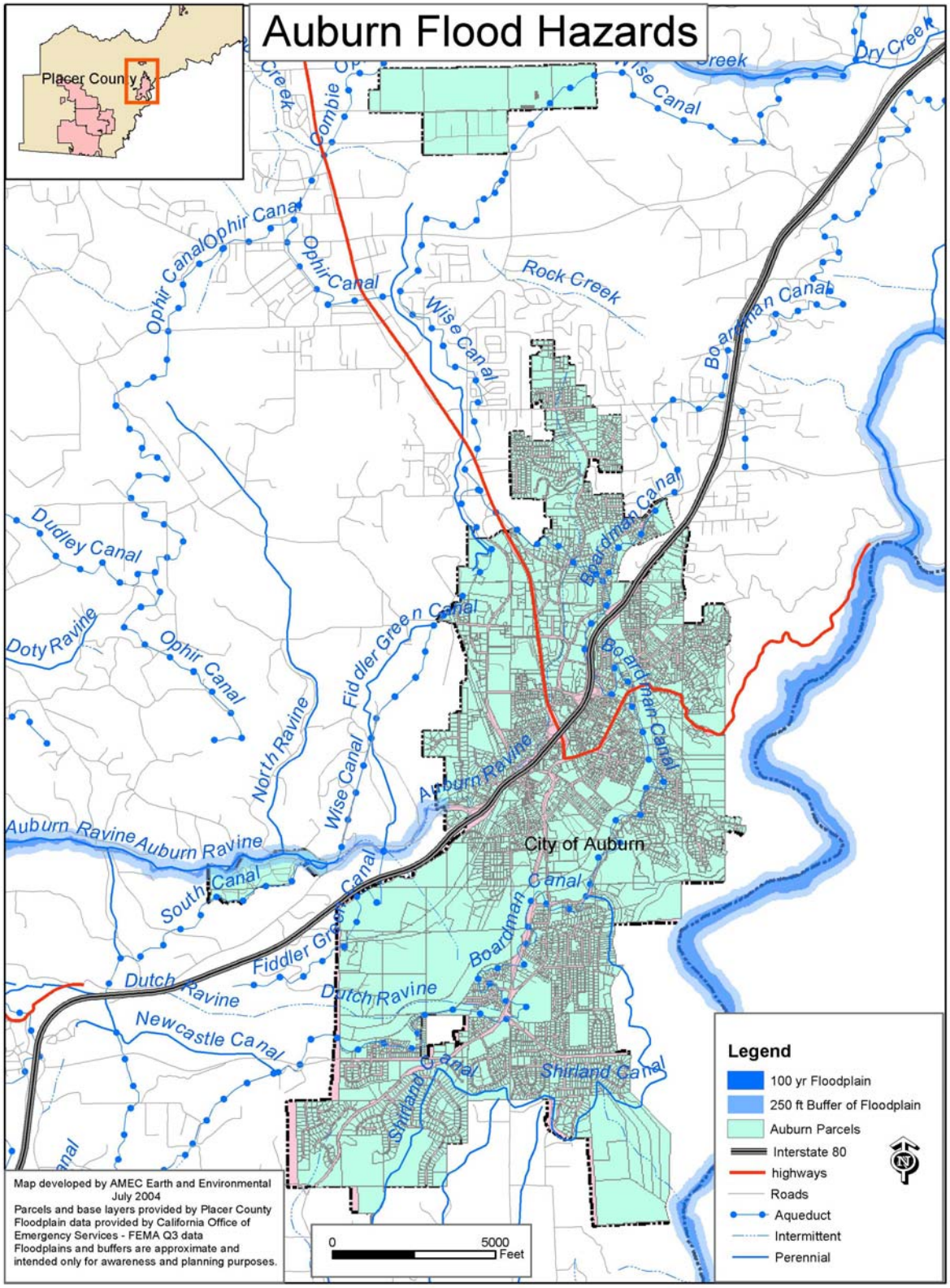
Development Trends

Although growth as a whole in Placer County has been significant in the last 14 years, Auburn is one of two cities that have demonstrated negative population growth between 1999 and 2003. However, the city is projected to have a housing unit increase of 37.8 percent between 2000 and 2020. New development in Auburn includes small residential subdivisions infilling areas within the City limits.

Vulnerability to Flood

According to the Safety Element of Auburn's General Plan, "The average annual rainfall totals 35 inches…[and] although no major flooding is expected in the planning area, intermittent flooding and sheet wash occur along major drainage channels and adjoining areas on scattered sites. Areas with flood hazards are the natural drainage channels of the Auburn Ravine, Dutch Ravine and Rock Creek, and the tunnel section of the Auburn Ravine under Old Town." Also considered a flood hazard are the numerous under-sized bridge and culverts within the Auburn/Bowman Area.

The map on the following page intersects the City of Auburn's parcel data with FEMA's Q3, 100-year floodplain data. Based on this analysis the following table quantifies the value of parcels falling within the 100-year floodplain.



(Map Compilation: AMEC Earth & Environmental; Source Data:FEMA's Q3 data/Placer County Assessor)

Assessor Data

The following table shows the value of parcels located within the 100-year floodplain.

CITY OF AUBURN: 100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Agricultural	1	0
Commercial	1	0
Industrial	0	0
Residential	5	230,067
Total	**7**	**230,067**

Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Auburn joined the NFIP on 12/23/1981. The following table and identifies the existing FIRM maps within the city limits.

CITY OF AUBURN: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0288F	06/08/1998
06061C0409F	06/08/1998
06061C0426F	06/08/1998
06061C0428F	06/08/1998
06061C0450F	06/08/1998
06061CINDO	11/21/2001

NFIP Insurance data indicates that as of August 31, 2004, there are 14 flood insurance policies in the City of Auburn. Historically, there have been 23 claims for flood losses totaling $483,022.

Vulnerability to Dam Failure

A dam failure can range from a small, uncontrolled release to a catastrophic failure. The HMPC's analysis of inundation areas for dam failure's was based strictly on information on file with CA-OES and was evaluated on a County-wide basis in the previous section. The analysis does not reflect the actual inundation maps on file for each of the dams. Since available dam failure data was limited, no further analysis was done with respect to the potential vulnerability of the City of Auburn to dam failures. However, utilizing the CA-OES GIS data, dam inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would likely be those areas located along these streams and drainages.

Vulnerability to Wildfire

Three types of fires are of concern to the City of Auburn: wildland, urban-wildland interface, and, to a lesser extent, structural fires. According to the Safety Element of Auburn's General Plan, wildland and urban interface fires have occurred close to or encroached into the City, especially in the heavily forested areas to the south. Urban structural fires "have been due largely to human accidents," and the threat is "continuously present in the form of older buildings in the city center…" (pg. IX-9).

The Countywide Wildland Fire Risk Map (page 124) identifies most of Auburn as being in areas of High Threat. Using the Wildland Fire Risk Map, in conjunction with County Assessor data, the values of identified parcels at risk within the mapped fire risk categories in the City of Auburn were determined and presented in the table below.

CITY OF AUBURN: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	0	0	5,209	1,020,509,160	5	785,044
Commercial	0	0	611	208,801,906	0	
Industrial	0	0	58	15,685,097	0	
Agricultural	0	0	105	2,248,109	0	
Misc.	0	0	0	0	0	
Total	**0**	**0**	**5,983**	**1,247,244,272**	**5**	**785,044**

Vulnerability to Other Hazards

Severe Weather

The severe weather evaluated as part of this risk assessment included: Heavy Rains, Thunderstorms, Wind, Lightning; Fog; Snow; Tornadoes, and Drought. In general, both the risk and vulnerability to the City of Auburn from severe weather is moderate and follows the analysis provided in the discussions for Placer County.

Landslide

According to the Safety Element, in addition to earthquake hazards, "Geologic hazards within the area of the Auburn General Plan are small slumps, block slides, landslides and erosional gullying." The City also has "steep slopes on its eastern edges, with unstable slopes, and areas subject to erosion and landslides…Increased urbanization on the hillsides exposes the community to possible landslides and rockslides, which may result in human injury and property damage" (pg. IX-13). However, no injuries to people or property damage have been identified within the City of Auburn. As such, the HMPC concluded that the risk and vulnerability to Auburn from landslides was minimal.

Avalanche

Avalanches in Placer County predominantly occur in sloped areas subject to heavy snowfall found in the eastern portion of the County. Given the City's location in the western portion of the County with minimal snowfall, the HMPC determined that the City of Auburn is not at risk to Avalanches.

Earthquake

Placer County is traversed by a series of northwest trending-faults that are related to the Sierra Nevada uplift. According to the Safety Element of Auburn's General Plan, "the City of Auburn is located in a seismically active region...," and "there is a high potential that the area will be subject to at least moderate earthquake shaking one or more times over the next century." It states further that "The closest identified 'potentially active' faults…are the Bear Mountain and the Melones Faults, which are situated approximately three to four miles westerly and easterly from Auburn respectively. Earthquakes on these faults would have the greatest potential for damaging buildings in Auburn, especially the unreinforced masonry structures in the older part of the city.

The closest identified 'active' fault…is the Cleveland Hills fault, situated approximately 36 miles northwesterly of Auburn…[it] was the source of the 1975 Oroville earthquake (Richter Magnitude: 5.7)" (pp. IX 9-10). Another potential earthquake source is the Midland Fault Zone to the west, where in 1892 an earthquake centered between Vacaville and Winters caused minor damage in nearby Lincoln.

Additionally, Auburn may experience minor ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas fault (source of the 8.0 estimated Richter magnitude San Francisco earthquake that damaged Sacramento in 1906) and the closer Hayward fault have the potential for experiencing major to great events. To the east in Nevada, the several faults associated with a series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16, 1954 Fairview Peak event (about 100 miles east of Carson City), could cause minor ground shaking in Auburn.

Volcano

Similar to the countywide analysis of this hazard, the vulnerability of the City of Auburn to volcanoes is limited to ashfall associated with large or very large explosive eruptions.

Agricultural Hazard

The City of Auburn is predominantly urban in nature; agricultural production within the City limits is minimal. As such, the vulnerability of Auburn to agricultural disasters is also minimal.

West Nile Virus

Based on the same analysis conducted for Placer County, both the risk and vulnerability to the City of Auburn from WNV is considered low, based on the percentage of total population that actually comes down with the disease.

CITY OF COLFAX

Population: 1,496 (2000 Census)
Area: 1.3 square miles

According to the Safety Element portion of the General Plan, the City of Colfax has not declared any local emergencies or been part of any state or federal declared emergencies in the recent past. The Hazard Analysis Summary for the City of Colfax is below.

SUMMARY HAZARD ANALYSIS: CITY OF COLFAX

Hazard	Estimated Frequency	Expected Severity
Earthquakes/Geologic Hazards	Rare	Low
Fires	Frequent	High
Floods	Low	Low
Interstate 80 Corridor Accidents	Frequent	Moderate
Propane Distribution Facilities	Low	High
Terrorism	Rare	Low

Total Vulnerability and Values At Risk

The following sections show the value of property and key inventories at risk within the City of Colfax.

Assessor Data

Utilizing Placer County assessor data, the following information was obtained for the City of Colfax.

2004 CERTIFIED ROLL VALUES

Property Type	Units	Net Value
Residential	701	90,073,829
Commercial	119	24,574,567
Industrial	26	16,714,795
Agricultural	4	0
Total Value	**850**	**131,363,191**

Critical Facilities at Risk

Utilizing the definition of critical facilities set forth previously in this Plan, the critical facilities in the City of Colfax are listed below.

Class 1 Facilities:

- Repeaters for Sheriff and Fire
- Repeaters for cell phones
- Verizon telephone center

Class 2 Facilities:

- Sheriff Substation
- CDF Fire Station
- City Fire Stations (2)
- AMR (Ambulance) quarters

Class 3 Facilities:

- Water Treatment plant
- Wastewater Treatment plant
- Sewage infrastructure
- Park Facilities
- Veteran's Memorial Hall
- Sierra Vista Community Center

Cultural and Natural Resources at Risk

Cultural and natural resources in the City of Colfax include those previously identified in the County inventory. Other irreplaceable cultural resources of importance to Colfax are listed below.

- Neff House at 55 West Grass Valley St.
- The Colfax Hotel at Grass Valley St. and Railroad St.
- Chamber of Commerce Rail Car
- Perkins-Lobner Victorian on Railroad St.
- Colfax Fruit Sheds
- Lincoln Highway and Highway 40 routes went through the City
- Schuyler Colfax statue at Grass Valley St. and Railroad St.
- Northwestern Pacific Caboose, Number 28 at Main St. and Grass Valley St.
- Fire Bell Tower at the north end of the Colfax Freight Depot
- Hydraulic Monitor at the foot of the flagpole on North Main St.
- Judge Jacob Kuenzly home at Depot St. and Pleasant St.

- Masonic Building and IOOF Building on North Main St.
- Colfax Record Newspaper building at 25 W. Church St.
- Colfax City Hall at 33 South Main St.
- Colfax Theater at 49 South Main St.
- Building currently housing the Colfax Branch Library at South Main St. and Church St.
- All of the other buildings along the west side of North and South Main St.
- Colfax Cemetery on North Canyon Way
- Cape Horn railroad roadbed

Development Trends

Although growth as a whole in Placer County has been significant in the last 14 years, Colfax's population has shown only a moderate increase between 1990 and 2000. The population is projected to increase by 38 percent between 2000 and 2020, growing to 2,900 according to the 2004 Wastewater Treatment Plan. Currently, development is on hold due to inadequacies of the Wastewater Treatment Plant. Upgrades to the Plant are scheduled for completion in 2006.

Vulnerability to Flood

Flooding is not a significant hazard to the City of Colfax, but street flooding has occurred occasionally during heavy rainfalls. The City does not currently have any structures within the defined 100-year floodplain. The existing FIRM maps for the City of Colfax are identified in the following table.

CITY OF COLFAX: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0125F	06/08/1998
06061CINDO	11/21/2001

Vulnerability to Dam Failure

A dam failure can range from a small, uncontrolled release to a catastrophic failure. The HMPC's analysis of inundation areas for dam failure's was based strictly on information on file with the County GIS and was evaluated on a County-wide basis in the previous section. The analysis does not reflect the actual inundation maps on file for each of the dams. Since available dam failure data was limited, no further analysis was done with respect to the potential vulnerability of the City of Colfax to dam failures. However, utilizing the County GIS data, dam inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would likely be those areas located along these streams and drainages.

While not a threat to Colfax, should the wastewater treatment plant dam fail, the City would be responsible for any damages to downstream properties. The dam is inspected annually by the California Department of Water Resources, Division of Safety of Dams (DSOD).

Vulnerability to Wildfire

Wildfire is a constant threat to the City of Colfax. The Safety Element of Colfax's General Plan notes that Colfax and the surrounding area are designated as a "very high hazard area", and wildland and urban-wildland interface fires do occur relatively frequently, with a significant interface fire (the "Narrow Gauge Fire") burning close to the edge of town in 2002. The 2001 Ponderosa Fire and the 2004 Stevens Fire also threatened the city.

The Countywide Wildland Fire Risk Map (page 124) identifies most of Colfax as being in areas of High to Very High Threat. Using the Wildland Fire Risk Map, in conjunction with County Assessor data, the values of identified parcels at risk within the mapped fire risk categories in the City of Colfax were determined and presented in the table below.

CITY OF COLFAX: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	1	0	722	91,801,164	0	0
Commercial	1	0	154	38,637,485	0	0
Industrial	0	0	36	17,513,089	0	0
Agricultural	0	0	5	0	0	0
Misc.	0	0	0	0	0	0
Total	**2**	**0**	**917**	**1,47,951,738**	**0**	**0**

Vulnerability to Other Hazards

Severe Weather

The severe weather evaluated as part of this risk assessment included: Heavy Rains, Thunderstorms, Wind, Lightning; Fog; Snow; Tornadoes, and Drought. In general, both the risk and vulnerability to the City of Colfax from severe weather is moderate and follows the analysis provided in the discussions for Placer County.

Landslides

The Safety Element also identifies other local geologic hazards, which may or may not be associated with earthquake shaking. These include a "moderate to very high erosion hazard;" the potential for soil liquefaction in or near stream beds or nearby slopes, that are highly saturated with water; and landslides due to a variety of slope, vegetation, and development conditions. However, no injuries to people or property damage from landslides have been identified within the City of Colfax. As such, the HMPC concluded that the risk and vulnerability to Colfax from landslides was minimal.

Avalanche

Avalanches in Placer County predominantly occur in sloped areas subject to heavy snowfall found in the eastern portion of the County. Given the City's location in the central to western portion of the County with minimal snowfall, the HMPC determined that the City of Colfax is not at risk to Avalanches.

Earthquake

Placer County is traversed by a series of northwest trending-faults that are related to the Sierra Nevada uplift. According to the Safety Element of the General Plan, the City of Colfax is located in a seismically active region, and while the City has no recent experience with earthquake effects, it is reasonable to assume the potential exists for moderate ground shaking to occur one or more times over the next century, especially if an epicenter is located nearby, such as was the case in 1975 in Oroville, which is approximately 40 miles north of Colfax.

The Safety Element notes that the State's listing of active faults does not include any showing surface rupture in the City of Colfax, but relatively little fault mapping has been completed in the region. A study for the nearby City of Auburn notes that "potentially active" faults in the area include the Bear Mountain and the Melones Faults, which are in the vicinity of Colfax, and are located about three to four miles to the west and east of Auburn, respectively. Earthquakes on these faults would have the greatest potential for damaging buildings in Colfax, especially the unreinforced masonry structures in the older part of the city.

Additionally, Colfax may experience ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas fault (source of the 8.0 estimated Richter magnitude San Francisco earthquake that damaged Sacramento in 1906) and the closer Hayward fault have the potential for experiencing major to great events. To the east in Nevada, the several faults associated with the series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16, 1954 Fairview Peak event (about 100 miles east of Carson City) could cause minor ground shaking in Colfax.

Volcano

Similar to the countywide analysis of this hazard, the vulnerability of the City of Colfax to volcanoes is limited to ashfall associated with large or very large explosive eruptions.

Agricultural Hazard

The City of Colfax is located in the foothills; agricultural production within the City limits is minimal. As such, the vulnerability of Colfax to agricultural disasters is also minimal.

West Nile Virus

Based on the same analysis conducted for Placer County, both the risk and vulnerability to the City of Colfax from WNV is considered low, based on the percentage of total population that actually comes down with the disease.

CITY OF LINCOLN

Population: 11,205 (2000 Census)
Area: 18.3 square miles

According to the Safety Element portion of the General Plan, the City of Lincoln has been included in recently declared flood emergencies in 1986, 1992, and 1995. In the 1995 Yuba City floods, Lincoln provided three shelter facilities for 2500 evacuees.

SUMMARY HAZARD ANALYSIS: CITY OF LINCOLN

Hazard	Estimated Frequency	Expected Severity
Aircraft Accidents	Frequent	Low
Earthquakes/Geologic Hazards	Rare	Low
Explosive Manufacturing & Storage	Rare	High
Fires	Occasional	Moderate
Floods	Frequent	Moderate
Propane & Natural Gas Incidents	Rare	High
SR 65 & Railroad Accidents	Frequent	Moderate
Terrorism	Rare	Moderate

Total Vulnerability and Values At Risk

The following sections show the value of property and key inventories at risk within the City of Lincoln.

Assessor Data

Utilizing Placer County assessor data, the following table of information was obtained for the City of Lincoln.

2004 CERTIFIED ROLL VALUES

Property Type	Units	Net Value
Residential	12,399	2,732,063,066
Industrial	111	135,273,364
Commercial	228	116,791,234
Agricultural	22	1,050,703
Total Value	**12,762**	**2,985,366,902**

Critical Facilities at Risk

Utilizing the definition of critical facilities set forth previously in this Plan, critical facilities in the City of Lincoln are listed below.

Class 1 Facility:

- Lincoln City Dispatch Center

Class 2 Facilities:

- Lincoln Police Stations
- Lincoln Fire Stations
- Lincoln Airport

Class 3 Facilities:

- Schools
- Water Treatment plants
- Power generation infrastructure
- Sewage infrastructure
- Memorial Halls
- Park Facilities

Cultural and Natural Resources at Risk

Cultural and natural resources in the City of Lincoln include those previously identified in the County inventory. No other separate inventories or mapping of cultural or natural resources have been conducted by the City of Lincoln; therefore, the HMPC was unable to perform a more accurate analysis of these resources located within City limits.

Development Trends

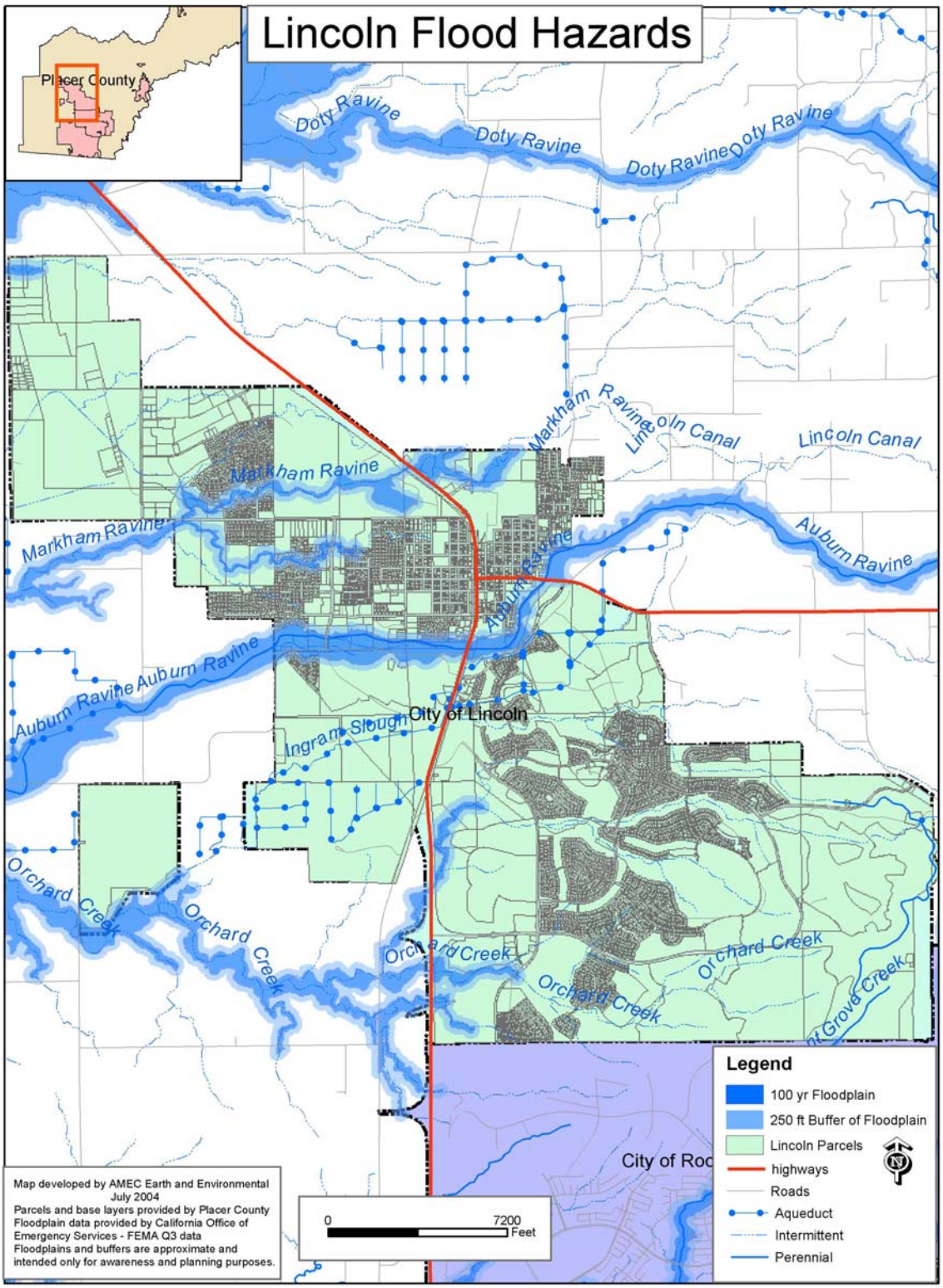
Growth as a whole in Placer County has been significant in the last 14 years; Lincoln is the city with the second highest growth rate in the State, showing a 59 percent increase in population

between 1990 and 2000. The population is anticipated to increase by 450 percent between 200 and 2020. The flood and fire vulnerability will likely increase proportionately.

Vulnerability to Flood

Flooding is a significant hazard to the City of Lincoln with certain areas of the city included in the currently defined 100-year floodplains: specifically, Markham Ravine and Auburn Ravine and their tributaries. The Safety Element of Lincoln's General Plan notes that where Nicolaus Road crosses Markham Ravine "flooding has closed and washed out the roadway on a regular basis." Other localized flooding occurs due to drainage problems that restrict flows, such as the railroad right-of-way and State Route 65, both of which go through central Lincoln.

The map on the following page intersects the City of Lincoln's parcel data with FEMA's Q3, 100-year floodplain data. Based on this analysis the following table quantifies the value of parcels falling within the 100-year floodplain.



(Map Compilation: AMEC Earth & Environmental; Source Data:FEMA's Q3 data/Placer County Assessor)

Assessor Data

The following table shows the value of parcels located within the 100-year floodplain.

CITY OF LINCOLN: 100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Residential	605	132,275,066
Industrial	37	36,246,886
Commercial	9	5,945,916
Agricultural	26	265,417
Total	**677**	**174,733,285**

Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Lincoln joined the NFIP on February 3, 1982. The following table identifies the existing FIRM maps for the City of Lincoln.

CITY OF LINCOLN: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0382F	06/08/1998
06061C0400F	06/08/1998
06061C0401F	06/08/1998
06061C0403F	06/08/1998
06061C0404F	06/08/1998
06061C0411F	06/08/1998
06061C0412F	06/08/1998
06061CINDO	11/21/2001

NFIP Insurance data indicates that as of August 31,2004, there are 42 flood insurance policies in City of Lincoln. Historically, there have been 8 claims for flood losses totaling $65,072. 42 policies for 677 parcels in the floodplain is coverage of only 6.2%.

Vulnerability to Dam Failure

A dam failure can range from a small, uncontrolled release to a catastrophic failure. The HMPC's analysis of inundation areas for dam failures was based strictly on information on file with the County GIS and was evaluated on a County-wide basis in the previous section. The analysis does not reflect the actual inundation maps on file for each of the dams. Since available dam failure data was limited, no further analysis was done with respect to the potential vulnerability of the City of Lincoln to dam failures. However, utilizing the County GIS data, dam inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would likely be those areas located along these streams and drainages.

Vulnerability to Wildfire

Wildland, urban-wildland interface, and, to a much lesser extent, structural fires are of concern to the City of Lincoln. According to the Safety Element of the General Plan, historically, wildland fires have occurred near the City, but development is changing the fire potential, especially in the rangeland and higher elevation, mixed fuel areas, where wildland-urban interface fires are a continuing threat, especially if there are westerly breezes or winds. Some of the newer developments are required to have fuel management plans to reduce the fire risk, and the City has strengthened its fire protection capabilities. Nonetheless, the risk of fire remains.

The Countywide Wildland Fire Risk Map included (page 124) identifies most of Lincoln as being in areas of Medium to High Threat. Using the Wildland Fire Risk Map, in conjunction with County Assessor data, the values of identified parcels at risk within the mapped fire risk categories in the City of Lincoln were determined and presented in the table below.

CITY OF LINCOLN: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	10,566	3,239,358,683	14	34,799,110	0	0
Commercial	267	138,007,222	2	9,150,000	0	0
Industrial	154	198,717,339	0	0	0	0
Agricultural	111	35,413,392	1	0	0	0
Misc.	0	0	0	0	0	0
Total	**11,098**	**3,611,496,636**	**17**	**43,949,110**	**0**	**0**

Vulnerability to Other Hazards

Severe Weather

The severe weather evaluated as part of this risk assessment included: Heavy Rains, Thunderstorms, Wind, Lightning; Fog; Snow; Tornadoes, and Drought. In general, both the risk and vulnerability to the City of Lincoln from severe weather is moderate and follows the analysis provided in the discussions for Placer County.

Landslide

The Safety Element for the City of Lincoln did not determine the City to be at risk to geologic hazards beyond earthquakes. Further, no injuries to people or property damage from landslides have been identified within the City limits. As such, the HMPC concluded that the risk and vulnerability to Lincoln from landslides was minimal.

Avalanche

Avalanches in Placer County predominantly occur in sloped areas subject to heavy snowfall found in the eastern portion of the County. Given the City's location in the lower, western portion of the County with almost no snowfall, the HMPC determined that the City of Lincoln is not at risk to Avalanches.

Earthquake

Placer County is traversed by a series of northwest trending-faults in the foothill and mountain areas that are related to the Sierra Nevada uplift. The City of Lincoln's location puts it in a low shaking intensity zone, and the City has no recent experience with earthquake effects. However, nearby earthquakes have occurred in 1975 in Oroville, approximately 40 miles north of Lincoln, and an 1892 earthquake in the Midland Fault Zone to the west, between Vacaville and Winters, caused minor damage in Lincoln. Therefore, the potential exists for moderate ground shaking to occur one or more times over the next century, especially if an epicenter is located nearby.

A study for the nearby City of Auburn notes that "potentially active" faults in the area include the Bear Mountain and the Melones Faults, which are located about three to four miles to the west and east of Auburn, respectively. Earthquakes on these faults could have the potential for damaging buildings in Lincoln, especially the unreinforced masonry structures in the older part of the city.

Additionally, Lincoln may experience ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas fault (source of the 8.0 estimated Richter magnitude San Francisco earthquake that damaged Sacramento in 1906) and the closer Hayward fault have the potential for experiencing major to great events. To the east in Nevada, the several faults associated with a series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16, 1954 Fairview Peak event (about 100 miles east of Carson City) could cause minor ground shaking in Lincoln.

Volcano

Similar to the countywide analysis of this hazard, the vulnerability of the City of Lincoln to volcanoes is limited to ashfall associated with large or very large explosive eruptions.

Agricultural Hazard

The City of Lincoln is located in the western portion of the County. Although the City continues to support ranching and farming in the area, agricultural production within the City limits is being displaced by other development. As such, the vulnerability of Lincoln to agricultural disasters is low to moderate depending on the overall economic impacts to the community associated with a disaster event.

West Nile Virus

Based on the same analysis conducted for Placer County, both the risk and vulnerability to the City of Lincoln from WNV is considered low, based on the percentage of total population that actually comes down with the disease.

TOWN OF LOOMIS

Population: 6,260 (2000 Census)
Area: 7.3 square miles

Loomis experienced localized flooding in 1986, 1992 – 1993, and 1995. Local emergencies were declared for these events and for the interface Sierra Fire in 2002, for which the Town received a Fire Management Assistance Grant.

SUMMARY HAZARD ANALYSIS: TOWN OF LOOMIS

Hazard	Estimated Frequency	Expected Severity
Earthquakes/Geologic Hazards	Rare	Moderate
Fires	Occasional	Moderate
Floods	Low	Low
Interstate 80 Corridor Accidents	Frequent	Low
Terrorism	Rare	Moderate

Total Vulnerability and Values At Risk

The following sections show the value of property and key inventories at risk within the Town of Loomis.

Assessor Data

Utilizing Placer County assessor data, the following information was obtained for the Town of Loomis.

2004 CERTIFIED ROLL VALUES

Property Type	Units	Net Value
Residential	2,455	429,682,878
Commercial	177	55,663,456
Industrial	114	39,179,914
Agricultural	38	2,749,550
Total Value	**2784**	**527,275,798**

Critical Facilities at Risk

Utilizing the definition of critical facilities set forth previously in this Plan, critical facilities in the Town of Loomis are listed below.

Class 1 Facilities:

- Corporation yard
- Town Hall

Class 2 Facilities:

- Loomis Police Stations
- Loomis Fire Stations

Class 3 Facilities:

- Schools
- Water Treatment plants
- Power generation infrastructure
- Sewage infrastructure
- Memorial Halls
- Park Facilities

Cultural and Natural Resources

Cultural and natural resources in the Town of Loomis include those previously identified in the County inventory. No other separate inventories or mapping of cultural or natural resources have been conducted by the Town of Loomis; therefore, the HMPC was unable to perform a more accurate analysis of these resources located within Town limits.

Development Trends

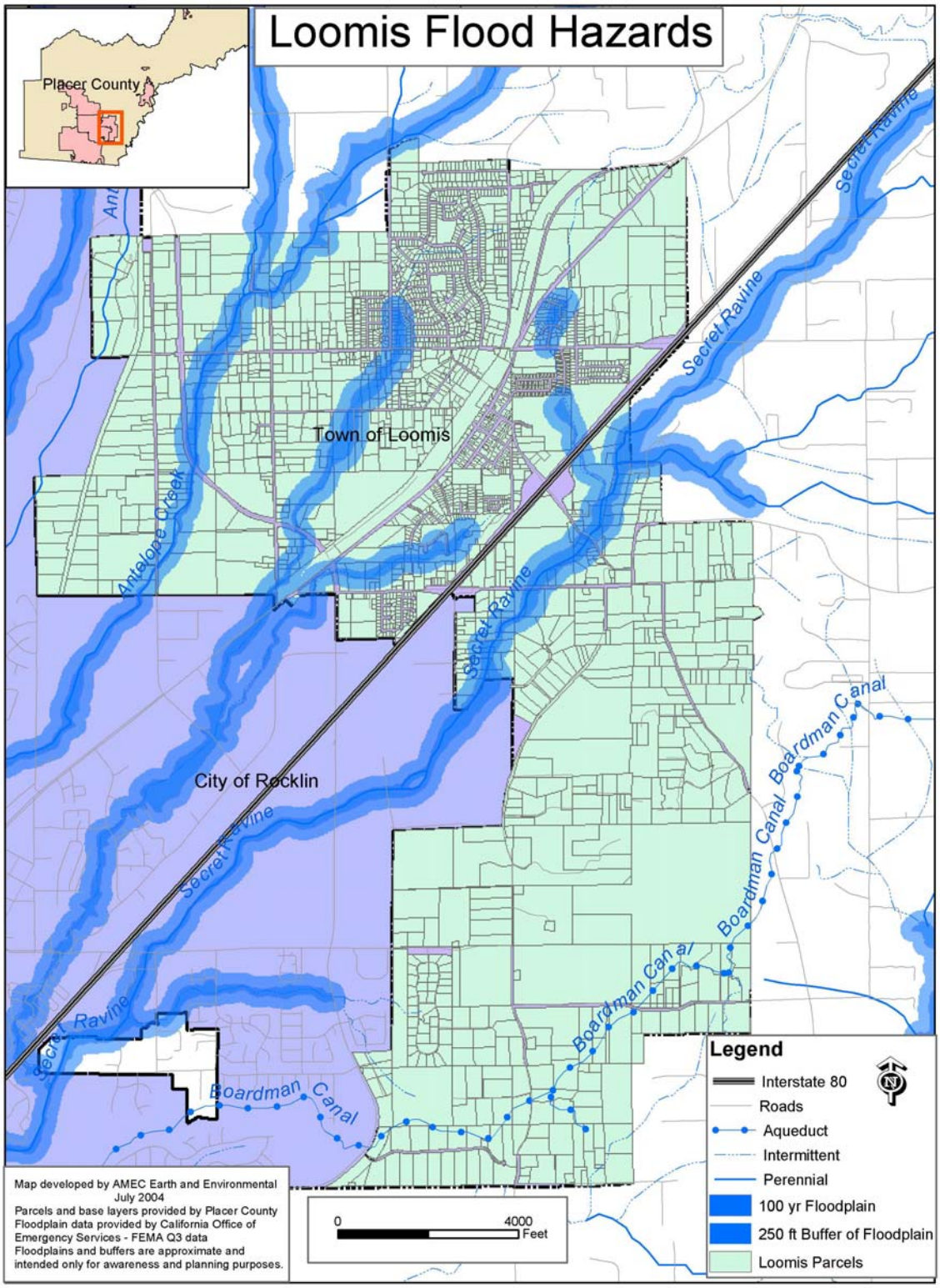
Although growth as a whole in Placer County has been significant in the last 14 years, Loomis is one of two cities that has demonstrated negative population growth between 1999 and 2003. However, housing units are projected to increase by 61.9 percent in the Town of Loomis between 2000 and 2020. The areas in Loomis likely to see the most new development include the central area through expansion of downtown and along Taylor road (multi-family housing). There also are some larger parcels on the outer edge of Loomis that will be developed into 4.6 and 2.3 acre lots.

Vulnerability to Flood

The Safety Element of Loomis' General Plan notes that flooding has been a minor hazard because of the Town's relatively elevated location compared to downstream localities. However, the 1998 Flood Insurance Rate Map does identify portions of Loomis that could be inundated in the event of 100-year and 500-year floods from several creeks that flow through the Town (Antelope Creek, Secret Ravine, and Sucker Creek and their tributaries).

Local drainage problems exist because of inadequately-sized culverts and bridges that impede high water flows, including "culverts under Interstate 80; the Horseshoe Bar Road crossing over Secret Ravine; the railroad and Taylor Road crossing of Sucker Ravine and crossings of Antelope Creek and its tributaries." In the 1995 floods, local flooding did cause damage to the floors of a few buildings ."

The map on the following page intersects the Town of Loomis' parcel data with FEMA's Q3, 100-year floodplain data. Based on this analysis the following table quantifies the value of parcels falling within the 100-year floodplain.



(Map Compilation: AMEC Earth & Environmental; Source Data:FEMA's Q3 data/Placer County Assessor)

Assessor Data

The following table shows the value of parcels located within the 100-year floodplain.

TOWN OF LOOMIS: 100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Residential	423	73,985,436
Commercial	31	18,308,435
Industrial	1	1,295,701
Agricultural	10	1,134,951
Total	465	94,724,523

Insurance Coverage, Claims Paid, and Repetitive Losses

The Town of Loomis joined the NFIP on 12/29/1986. The following table and identifies the existing FIRM maps for the Town of Loomis.

TOWN OF LOOMIS: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0412F	06/08/1998
06061C0414F	06/08/1998
06061C0416F	06/08/1998
06061C0418F	06/08/1998
06061C0481G	11/21/2001
06061CINDO	11/21/2001

NFIP Insurance data indicates that as of August 31,2004, there are 62 flood insurance policies in Town of Loomis. Historically, there have also been 12 claims for flood losses totaling $362,690. 62 policies for 465 parcels in the floodplain is coverage of almost 15%.

Vulnerability to Dam Failure

A dam failure can range from a small, uncontrolled release to a catastrophic failure. The HMPC's analysis of inundation areas for dam failures was based strictly on information on file with the County GIS and was evaluated on a County-wide basis in the previous section. The analysis does not reflect the actual inundation maps on file for each of the dams. Since available dam failure data was limited, no further analysis was done with respect to the potential vulnerability of the Town of Loomis to dam failures. However, utilizing the County GIS data, dam inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would likely be those areas located along these streams and drainages.

Vulnerability to Wildfire

According to the Safety Element of the General Plan , two types of fires are of concern to the Town of Loomis: wildland (including urban-wildland interface) fires and structural fires. "The topography, climate, and vegetation…are conducive to the spread of wildland fires" and in 2002 the town was impacted by the Sierra Fire.

Structural fires are associated primarily with human activities. The structural fire hazard is greatest in areas containing older buildings that do not meet current building codes.

The Countywide Wildland Fire Risk Map (page 124) identifies most of Loomis as being in areas of High Threat. Using the Wildland Fire Risk Map, in conjunction with County Assessor data, the values of identified parcels at risk within the mapped fire risk categories in the Town of Loomis were determined and presented in the table below.

TOWN OF LOOMIS: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	0	0	2,587	518,157,707	0	0
Commercial	0	0	232	75,922,782	0	0
Industrial	0	0	99	44,465,783	0	0
Agricultural	0	0	53	3,147,809	0	0
Misc.	0	0	0	0	0	0
Total	**0**	**0**	**2,971**	**641,694,081**	**0**	**0**

Vulnerability to Other Hazards

Severe Weather

The severe weather evaluated as part of this risk assessment included: Heavy Rains, Thunderstorms, Wind, Lightning; Fog; Snow; Tornadoes; and Drought. In general, both the risk and vulnerability to the Town of Loomis from severe weather is moderate and follows the analysis provided in the discussions for Placer County.

Landslide

As identified in the Safety Element for the Town of Loomis, other local geologic hazards besides earthquakes include potential landslides and erosion in the steeper slope areas. However, both of these are considered relatively minor hazards. Further, no injuries to people or property damage from landslides have been identified within the Town limits. As such, the HMPC concluded that the risk and vulnerability to Loomis from landslides was minimal.

Avalanche

Avalanches in Placer County predominantly occur in sloped areas subject to heavy snowfall found in the eastern portion of the County. Given the Town's location in the lower, western portion of the County with almost no snowfall, the HMPC determined that the Town of Loomis is not at risk to Avalanches.

Earthquake

Placer County is traversed by a series of northwest trending-faults that are related to the Sierra Nevada uplift. The Foothills Fault System's Cleveland Hills Fault was the source of the 1975 Oroville earthquake (Richter Magnitude: 5.7). The SE notes that "Two segments of this fault system are relatively close to Loomis: the segment of the Bear Mountain Fault…and the Melones Fault Zone, about 15 miles to the east" (SE, pg. 121). Because of their close proximity, earthquakes on these faults could have the greatest potential for damaging buildings in Loomis, especially those constructed before earthquake resistant requirements were included in local building codes. The SE also notes that an inferred inactive fault was mapped near Loomis' southern boundary.

Ground shaking is the major earthquake hazard because of the town's location, primarily on alluvial deposits, especially along the creeks and ravines in the northern part of the Town. Parts of Loomis may experience earthquake-related ground failures, such as liquefaction, minor subsidence, lurch cracking, and lateral spreading.

Additionally, Loomis may experience ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas fault (source of the 8.0 estimated Richter magnitude San Francisco earthquake that damaged Sacramento in 1906) and the closer Hayward fault have the potential for experiencing major to great events. Another potential earthquake source is the Midland Fault Zone (Dunnigan Hills Fault) to the west, where in 1892 an earthquake centered between Vacaville and Winters caused minor structural damage in nearby communities. To the east in Nevada, the several faults associated with a series of earthquakes in 1954, especially the source of the major (7.1 Richter magnitude) December 16, 1954 Fairview Peak earthquake (about 100 miles east of Carson City), could cause ground shaking in Loomis.

Volcano

Similar to the countywide analysis of this hazard, the vulnerability of the Town of Loomis to volcanoes is limited to ashfall associated with large or very large explosive eruptions.

Agricultural Hazard

The Town of Loomis is located in the western portion of the County. Although at one time the Town was once a major commercial producer of fruit, today it is only a small part of the Town's economy. As such, the vulnerability of Loomis to agricultural disasters is low to moderate

depending on the overall economic impacts to the community associated with a given disaster event.

West Nile Virus

Based on the same analysis conducted for Placer County, both the risk and vulnerability to the Town of Loomis from WNV is considered low, based on the percentage of total population that actually comes down with the disease.

CITY OF ROCKLIN

Population: 36,330 (2000 Census)
Area: 21 square miles

Rocklin has not declared any local emergencies or been part of any state or federal declared emergencies in the recent past.

SUMMARY HAZARD ANALYSIS: CITY OF ROCKLIN

Hazard	Estimated Frequency	Expected Severity
Earthquakes/Geologic Hazards	Infrequent	Low
Extreme Weather	Sometimes	Moderate
Fires	Frequent	Moderate
Floods	Sometimes	Low-Moderate
Interstate 80 Corridor Accidents	Sometimes	Low-Moderate
Landslides	Infrequent	Low
Terrorism	Infrequent	Low-Moderate
Train Accident	Sometimes	Low-Mod.-High

Total Vulnerability and Values At Risk

The following sections show the value of property and key inventories at risk within the City of Rocklin.

Assessor Data

Utilizing Placer County assessor data, the table of information on the following page was obtained for the City of Rocklin.

2004 CERTIFIED ROLL VALUES

Property Type	Units	Net Value
Residential	15,817	4,126,607,948
Commercial	544	578,156,919
Industrial	168	271,511,507
Agricultural	52	1,998,662
Total Value	**16,581**	**4,978,275,036**

Critical Facilities at Risk

Utilizing the definition of critical facilities set forth previously in this Plan, the critical facilities in the City of Rocklin are listed below.

Class 1 Facilities:

- Rocklin Dispatch Center/Station 1
- Rocklin Police Station/Dispatch Center (opening 2005)

Class 2 Facilities:

- Rocklin Police/Fire Station
- Fire Station 2
- Fire Station 3 (opening Fall 2005)

Class 3 Facilities:

<u>City General Government Buildings</u>

- City Hall
- Administration Building
- Corporation Yard

<u>City Community Buildings</u>

- Sunset Center
- Community Center
- Finn Hall
- 3rd Street Recreation Center
- 5th Street Recreation Center

<u>School Facilities</u>

- Rocklin High School
- Liberty High School (opening Fall 2005)

- Spring View Middle School
- Granite Oaks Middle School
- Breen Elementary School (ES)
- Cobblestone ES
- Parker Whitney ES
- Sierra ES
- Valley View ES
- Rocklin ES
- Antelope Creek ES
- Twin Oaks ES
- Rock Creek ES
- Ruhkala ES (opening Fall 2005)
- Rocklin Unified School District Office
- RUSD Corporation Yard

Community Parks

- Johnson-Springview
- Twin Oaks
- Lone Tree
- Margaret Azevedo (opening Fall 2005)

Cultural and Natural Resources at Risk

Cultural and natural resources in the City of Rocklin include those previously identified in the County inventory. This includes the following cultural resource: 780-2 First Transcontinental Railroad – Rocklin (Location: SE corner of Rocklin Rd and First St, Rocklin).

The State of California has also listed Finnish Temperance Hall (PLA:016-1985) at Rocklin Road/South Grove Street on the State list of "Point of Interest. The City of Rocklin has other areas that have been identified, for local purposes, as local "Points of Interest." These Points of Interest areas are identified in the Rocklin General Plan and include such sites as Front Street Historic District, Parker Whitney Mansion, and the Train Depot site.

No other separate inventories or mapping of cultural or natural resources have been conducted by the City of Rocklin; therefore, the HMPC was unable to perform a more accurate analysis of these resources located within City limits.

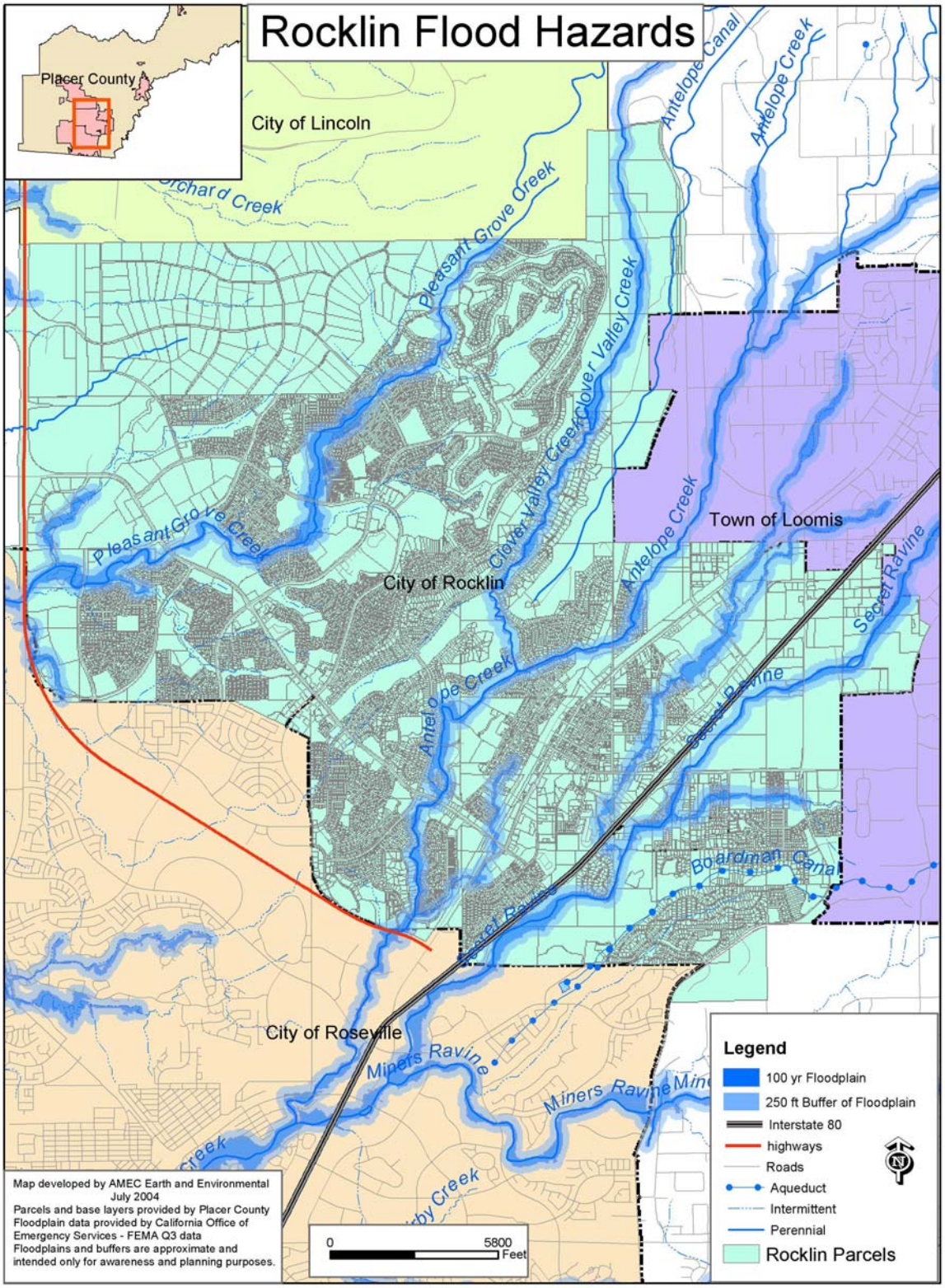
Development Trends

Growth as a whole in Placer County has been significant in the last 14 year. Rocklin is one of three cities in the County among the top 30 in the state for growth. The housing stock in Rocklin increased by 93 percent between 1990 and 2000 and is projected to increase by 70.3 percent between 2000 and 2020. The areas in Rocklin seeing the most new development include the north and northwest areas as well as in Central and Southeast Rocklin.

Vulnerability to Flood

Flood hazards in Rocklin occur due to overflows from the existing stream drainage system. The City's urban drainage system discharges into the creeks that transect the community. This includes Antelope Creek, Secret Ravine Creek, Clover Valley Creek, Sucker Creek, Pleasant Grove Creek, the Aguilar Tributary area, and the Second Street Tributary area. Except for the Pleasant Grove Creek, all of these ultimately discharge into Dry Creek. The Pleasant Grove Creek watershed flows to Sutter County, where it discharges into the Sacramento River. The City of Rocklin participates in the NFIP. FEMA has mapped floodplains in Rocklin and surrounding areas. The maps show 100-year and 500-year floodplains and floodways located primarily along the channels of the area creeks. Rocklin's Safety Element notes that the major contributors to flooding are from several creeks that flow through the City: Antelope, Secret Ravine, Clover Valley, and Sucker.

The map on the following page intersects the City of Rocklin's parcel data with FEMA's Q3, 100-year floodplain data. Based on this analysis the following table quantifies the value of parcels falling within the 100-year floodplain.



(Map Compilation: AMEC Earth & Environmental; Source Data:FEMA's Q3 data/Placer County Assessor)

Assessor Data

The following table shows the value of parcels located within the 100-year floodplain.

CITY OF ROCKLIN: 100-YEAR FLOODPLAIN VALUES AT RISK

Property Type	Parcel Count	Net Value
Residential	2191	635,028,506
Commercial	135	156,579,470
Industrial	47	150,309,824
Agricultural	42	801,439
Total	**2415**	**942,719,239**

Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Rocklin joined the NFIP on 05/15/1984. The following table identifies the existing FIRM maps for the City of Rocklin:

CITY OF ROCKLIN: NFIP COMMUNITY #06061C0

Map Number	Effective Date
06061C0412F	06/08/1998
06061C0413F	06/08/1998
06061C0414F	06/08/1998
06061C0418F	06/08/1998
06061C0477G	11/21/2001
06061C0481G	11/21/2001
06061CINDO	11/21/2001

NFIP Insurance data indicates that as of August 31, 2004, there are 122 flood insurance policies in City of Rocklin. Historically, there have been 24 claims for flood losses, totaling $250,461. 122 policies for 2415 parcels in the floodplain is coverage of only 5%.

Vulnerability to Dam Failure

A dam failure can range from a small, uncontrolled release to a catastrophic failure. The HMPC's analysis of inundation areas for dam failures was based strictly on information on file with the County GIS and was evaluated on a countywide basis in the previous section. The analysis does not reflect the actual inundation maps on file for each of the dams. Since available dam failure data was limited, no further analysis was done with respect to the potential vulnerability of the City of Rocklin to dam failures. However, utilizing the County GIS data, dam inundation zones generally follow the existing streams and drainage areas, and areas subject to flooding from a dam failure would likely be those areas located along these streams and drainages. Rocklin itself does not any navigable waters or dams. All of the creeks and drainages are influenced by seasonal run-off and have specific control mechanisms.

Vulnerability to Wildfire

Two types of fires are of concern to the City of Rocklin: urban-wildland interface and, to a lesser extent, structural fires. The City of Rocklin has been a rapidly growing city in Placer County. Native Rocklin has some areas of sloped grasslands with medium-density oak trees. Much of the new development has occurred on these grassy slopes, creating an increased exposure to fire. According to the 2004 Draft General Plan, these include Clover Valley Lakes, areas at the southern end of China Garden Road, portions of Whitney Oaks, the Croftwood/Dias Lane area, and the Sunset Ranchos. This new development in the wildland interface areas, combined with summertime temperatures, low humidity, and dry north winds compounds the exposure to wildfire.

The County-wide Wildland Fire Risk Map (page 124) identifies most of Rocklin as being in areas of Medium to High Threat. Using the Wildland Fire Risk Map, in conjunction with County Assessor data, the values of identified parcels at risk within the mapped fire risk categories in the City of Rocklin were determined and presented in the table below.

TOWN OF ROCKLIN: VALUES AT RISK TO WILDFIRE

Fire Risk	Medium		High		Very High	
Property Type	**Parcel #**	**Value**	**Parcel #**	**Value**	**Parcel #**	**Value**
Residential	14,591	4,194,744,934	1,702	530,684,334	0	0
Commercial	561	738,154,080	157	146,121,353	0	0
Industrial	130	179,854,080	70	81,554,616	0	0
Agricultural	112	3,295,979	33	249,710	0	0
Misc.	0	0	0	0	0	0
Total	**15,394**	**5,116,047,853**	**1,962**	**758,610,013**	**0**	**0**

Vulnerability to Other Hazards

Severe Weather

The severe weather evaluated as part of this risk assessment included: Heavy Rains, Thunderstorms, Wind, Lightning; Fog; Snow; Tornadoes; and Drought. Problems connected with severe weather include erosion, sedimentation, degradation of water quality, and losses of environmental resources in low lying areas. In general, both the risk and vulnerability to the City of Rocklin from severe weather is moderate and follows the analysis provided in the discussions for Placer County. The damages associated with the primary effects of severe weather have been limited. It is the secondary effects of weather such as flood, fire, and damage to transportation systems that have had the greatest impact on the City of Rocklin. The vulnerability to the City of Rocklin from drought includes reduction in water supply, landscape losses, and an increase in dry fuels. It is this last drought affect that leaves the city more vulnerable to damaging wildfires.

Landslide

As identified in the Safety Element for the City of Rocklin, other local geologic hazards besides earthquakes include minor soil stability and erosion problems in limited areas. However, these are considered relatively minor hazards. No injuries to people or property damage from landslides have been identified within the City limits. As such, the HMPC concluded that the risk and vulnerability to Rocklin from landslides was minimal.

Avalanche

Avalanches in Placer County predominantly occur in sloped areas subject to heavy snowfall found in the eastern portion of the County. Given the City's location in the lower, western portion of the County with almost no snowfall, the HMPC determined that the City of Rocklin is not at risk to Avalanches.

Earthquake and Geologic Hazard

The City of Rocklin is located in an area that has a relatively low risk of seismic activity. While the seismic risk may not be considered substantial, seismic activity may affect development in the planning area and cannot be completely discounted as a planning factor.

There are no known active faults in Placer County. The last seismic event recorded in the area with a magnitude of 4 or greater(Richter scale) occurred in 1908. The distance to major regional faults and general stability of the underlying geology of the area combine to minimize the potential localized impact of seismic events that may occur elsewhere. According to the Safety Element of the 1994 Draft General Plan, the Rocklin area could be subject to moderate to strong ground shaking from earthquake or fault zones located in the area near the boundary of the Sierra Nevadas and the Sacramento Valley, and near the coast Ranges and the San Francisco Bay Area. There are other fault zones in the Sierra Nevada foothills that could also produce seismic effects in the Rocklin area. The nearest well-defined fault zone is a portion of the West Branch of the Bear Mountains Fault Zone, a portion of the Foothills Fault System, which follows the eastern side of the Sacramento Valley through El Dorado, Placer and Amador Counties.

Within the Sierra Nevada foothills, the largest estimated earthquake is a magnitude 6.5 and the largest probable earthquake has been estimated at a magnitude of 5.0 to 5.5 (Draft 2004 SE).

Volcano

Similar to the countywide analysis of this hazard, the vulnerability of the City of Rocklin to volcanoes is limited to ashfall associated with large or very large explosive eruptions.

Agricultural Hazard

The City of Rocklin is located in the western portion of the County. Although the City once was a large commercial producer of fruit, the soils today are generally of poor quality and no longer support commercial agricultural activities, with the exception of livestock grazing. As such, the vulnerability of Rocklin to agricultural disasters is low to moderate depending on the overall economic impacts to the community associated with a given disaster event.

West Nile Virus

Based on the same analysis conducted for Placer County, both the risk and vulnerability to the City of Rocklin from WNV is considered low, based on the percentage of total population that actually comes down with the disease.

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4.3 Capability Assessment

Thus far, the planning process has identified the natural hazards posing a threat to Placer County and described and quantified the vulnerability of the County and communities to these risks. The next step, prior to forming Goals and Objectives for improving each jurisdiction's ability to reduce the impacts of these risks, is to assess what loss prevention mechanisms are already in place. Doing so provides the County's "net vulnerability" to natural disasters and more accurately focuses the goals, objectives and proposed actions of this plan. This part of the planning process is referred to as the "Capability Assessment."

The HMPC took two approaches in conducting this assessment. First, an inventory of existing policies, regulations and plans was made. These policy and planning documents were collected and reviewed to determine if they contributed to reducing hazard related losses, or if they inadvertently contributed to increasing such losses. Second, an inventory of other mitigation activities was made through the use of a matrix. The purpose for this effort was to identify activities and actions beyond policies, regulations and plans that were either in place, needed improvement, or could be undertaken, if deemed appropriate.

Below is a summary of how each of these documents contributes to an overall Hazard Mitigation framework. Each point identifies where and how mitigation concepts, principles and measures are integrated into the normal day-to-day activities of the local governments.

General Plan, Last Updated August 16, 1994

- The General Plan is considered a comprehensive and long-term document that serves as the communities "constitution" for land use and development. The General Plan is divided into two documents: the General Plan Background Report which inventories and analyzes existing conditions in the County and the General Plan Policy Document, which includes goals, policies, standards, and implementation programs. A Draft Update is currently under consideration and has already been recommended for approval by the Planning Commission. It will be considered by the Board of Supervisors in 2005.

- The Land Use Element provides a broad outline of future land use patterns in the unincorporated county and provides policies for existing and future residential, commercial, industrial, recreation, agricultural, open space, visual and scenic, land uses of the county. In terms of general land use, the Land Use Element states that the County shall permit only low-intensity forms of development in areas where natural or human-caused hazards are likely to pose a significant threat to health, safety, or property. The Land Use Element also has a policy to encourage the preservation of historic and attractive buildings in downtown areas. Another policy requires that development on hillsides employ design, construction, and maintenance techniques that ensure development do not cause or worsen natural hazards such as erosion, sedimentation, fire or water quality; and minimize risk to life and property from slope failure, landslides and flooding.

- The Housing Element was mostly recently updated in April 2003. Placer County has adopted the Uniform Building Code (UBC), the Uniform Housing Code, and the Uniform Code for the Abatement of Dangerous Buildings. According to the Housing Element, slight modifications, such as special roof design requirements to accommodate snow loads and avalanche protection standards have been made to the UBC for construction above a 5,000-foot elevation. Environmental constraints for building homes, which are in-place to preserve water quality, air quality, wildlife habitat, and other environmental resources, are recognized as an obstacle to creating affordable housing in the Tahoe region because meeting those environmental standards creates additional costs.

- The Public Utilities and Services Element contains policies for stormwater drainage, which include improving urban and suburban runoff through mitigation measures such as artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks and other best management practices (BMPs). More specifically, a stormwater policy requires that developers encase, or protect domestic water supply canals where they pass through developments with lot sizes of 2.3 acres or less and where subdivision roads are constructed 100 feet upslope from canals. Also within the Public Facilities and Services Element is a section dedicated to flood protection. The goal of this section is to protect the lives and property of the citizens of Placer County from hazards associated with

development in floodplains and to manage floodplains for their natural resource values. Some policies in this section are:

- 4.F.1. The County shall require that arterial roadways and expressways, residences, commercial and industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.

- 4.F.5. The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances:

    - Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and game regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers; or

    - When facilities for the treatment of urban runoff can be located in the floodplain, provided that there is no destruction of riparian vegetation.

- 4.F.9 The County shall continue to implement floodplain zoning and undertake other actions required to comply with state floodplain requirements, and to maintain the County's eligibility under the Federal Flood Insurance Program.

- 4.F.11. To the extent that funding is available, the County shall work to solve flood control problems in areas where existing development has encroached into a floodplain.

- The Public Utilities and Services Element also contains a Fire Protection Services section with a main goal of protecting residents of and visitors to Placer County from injury and loss of life and to protect property and watershed resources from fires. One fire protection policy requires new development to fund fire protection facilities and operations, which maintains service standards.

- The Recreational and Cultural Resources Element establishes a goal of maintaining park and recreational facilities throughout the County to serve the needs of present and future community members. One associated policy is to strive to achieve and maintain a standard of 5 acres of improved parkland and 5 acres of passive recreation area or open space (floodways included) per population of 1,000. This Element also maintains a goal to identify, protect, and enhance Placer County's important historical, archaeological, paleontological, and cultural sites and their contributing environment.

- The Natural Resources Element focuses on policies structured around the protection of the County's streams, creeks, and groundwater, and the fish and wildlife habitat they provide. For example, the County requires sensitive habitat buffers, which include 100 feet from the centerline of perennial streams to development and 50 feet from centerline of intermittent streams. Another policy states that all development in the 100-year

floodplain must comply with the *Placer County Flood Damage Prevention Ordinance*. Policies also encourage the prevention of runoff into wetland areas. Implementation programs call for a maintaining a countywide inventory of ecologically significant resource areas, as well as current maps of critical habitat areas, and an updated list of state and federal rare, threatened and endangered species within the County

- The Health and Safety Element focuses on policies related to seismic events, flood hazards, fire hazards, airport hazards, emergency management, hazardous materials, and avalanche hazards:

- With regard to seismic safety, the County requires preparation of soils and geologic-seismic analysis reports prior to permitting new development in areas prone to geological or seismic hazards. Further, habitable structures or sewage disposal systems on or in critically expansive soils are prohibited unless adequate mitigation is incorporated. Policies are also in-place to prevent development that would be prone to landslides. Another policy requires that facilities proposed for development in areas subject to earthquake activity and/or liquefaction must incorporate design measures to minimize damage.

- With regard to flood hazards, policies are in place to: maintain natural conditions within the 100-year floodplain; require areas subject to flooding to "flood-proof"; mitigate impacts of development in Placer County that could increase runoff in adjacent jurisdictions; prohibit the construction of emergency facilities within the 100-year floodplain; and avoid alteration of waterways whenever possible.

- Fire hazard policies in place to ensure development in high-fire-hazard areas is designed to minimize risk from fire hazards. Further, the County requires that discretionary permits for new development in fire hazard areas be conditioned to include requirements for fire-resistant vegetation, cleared firebreaks, or a fuel management program. However, there is some concern to whether this wording is too broad to be effectively enforced.

- The emergency management section of the Health and Safety Element states that the County shall ensure critical emergency response facilities such as hospitals, fire stations, dispatch centers, and emergency operations centers, have minimal exposure to flooding, seismic and geological effects, fire, avalanche, and explosions. The County's Emergency Operations Plan is referenced here as well. One of the implementation programs within this element requires that the County conduct an evaluation of County-owned emergency management facilities and public utility systems for susceptibility to flood and seismic hazards.

- Per avalanche hazard policies, the County is required to maintain maps of Potential Avalanche Hazard Areas (PAHAs) and require new development in such areas to be sited, designed, and constructed to minimize avalanche hazards. The Planning Department maintains hard copies of these maps.

- Finally, the Public Health and Safety Element has a policy that calls for an assessment district to provide mosquito abatement activities to prevent the spread of disease in Western Placer County.

County Code, March 2004

- **Chapter 15, Building and Development, Article 15.52, Flood Damage Prevention Regulations.** This article is also considered Placer County's Flood Damage Prevention Ordinance. Standards of construction require that all new construction and substantial improvements shall be anchored to prevent flotation. New construction and substantial improvement of any structure shall have the lowest floor, including basement, elevated at **a minimum of one foot above the base flood elevation**, which shall be certified by a California registered civil engineer or licensed land surveyor. **Standards for developing lots located in both Zones A and C require that if a portion of a lot is within a flood hazard and another portion of the lot is outside of the flood hazard, construction shall be located outside of the hazard.** Standards for utilities require new replacement of water supply and sanitary sewage systems to be designed to minimize infiltration of floodwaters. On-site waste disposal systems shall be located to avoid impairment during floods. Standards for subdivisions require all preliminary subdivision proposals identify flood hazards and base elevations. The final elevation must be certified by a California registered civil engineer or licensed land surveyor prior to construction. With regard to floodways, no encroachments of development, including fill are allowed in these areas unless certified by a civil engineer, showing that encroachments won't increase flood levels.

- **Chapter 15, Building and Development, Article 15.48, Grading, Erosion, and Sediment Control Regulations.** This article requires a permit for most grading conducted within the unincorporated areas of Placer County. A primary objective is to is to control all grading activities to ensure that grading does not obstruct, impede, or interfere with the natural flow of stormwaters, in such a manner as to cause flooding where it would not otherwise occur, aggravate any existing flooding conditions, or cause accelerated erosion.

- **Chapter 15, Building and Development, Article 15.36.010, Development Fees.** This article requires the payment of fees to be paid to the fire protection agency for the benefit of the owners or residents of the development where a local fire protection agency has adopted a capital improvement plan and identified a development fee to satisfy the plan.

- **Chapter 15, Building and Development, Article 15.40, Factory-Built Housing.** This article requires all factory-built housing to be placed on an adequate foundation and be provided with all normal utilities required for any standard housing.

Chapter 17, Zoning. This section of the County Code is the tool to achieve the objectives of the General Plan and characterizes land use standards for all parcels in unincorporated Placer County. It addresses setbacks, buffers, natural resources protection and drainage. For example,

the flood hazard combining district identifies areas subject to the 100-year floodplain and requires that new development in this combining zone abide by standards within the Placer County Flood Damage Prevention Ordinance (Article 15.52). Likewise, the geological hazard combining district was established to identify areas where geological and soil conditions may present hazards to life or property. All land use permit applications for projects located within this district require a report describing all geological and avalanche hazards in the region proposed for development.

- **Title 14, California Code of Regulations (CCR).** County adopted most of the California Code of Regulations (CCR), Title 14, Natural Resources, Division 1.5 Department of Forestry and Fire Protection, Chapter 7. Fire Protection, Subchapter 2. SRA Fire Safe Regulations.

Stormwater Management Plan, 2003-2008 (Revised March 1, 2004)

This comprehensive plan is designed to ultimately reduce pollution in stormwater runoff in compliance with the County's National Pollutant Discharge Elimination System (NPDES) stormwater permit within portions of western Placer County (excludes Foresthill and Colfax). The plan includes processes for accomplishing the goals of minimizing construction site runoff as well as post-construction stormwater management in newly developed and redeveloped areas.

Placer County Flood Control and Water Conservation District's Stormwater Management Manual, 1990.

The primary purpose of the District is to protect lives and property from the effects of flooding by comprehensive, coordinated flood prevention planning, using consistent standards to evaluate flood risk, and by implementing flood control measures such as requiring new development to construct detention basins and operation and management of a flood warning system. This manual presents policy, guidelines, and specific criteria for the development and management of natural resources, facilities and infrastructure for stormwater management. Flooding is recognized as the primary proble, associated with development occurring adjacent to streams and a consequent increase in stormwater runoff. The plan refers to the Basic Drainage Law Requirements which include four general principles that apply to development projects in general. The principles dictate what upstream and downstream property owners must do to minimize alteration to existing, functional drainage patterns in the region of their property.

Auburn/Bowman Community Plan, Hydrology Study, JMM 1992

This study covers the Auburn/Bowman area and includes flood mitigation recommendations.

Dry Creek Watershed Flood Control Plan, JMM 1992

This plan covers the Dry Creek Watershed area and includes flood mitigation recommendations.

Local Emergency Operations Plan (February 2004)

The Emergency Operations Plan, including the Placer Operational Area, includes information on hazards facing the county and associated response and recovery information.

Community Plans

Placer County has developed 25 community plans. The following are available online:

- Auburn/Bowman Community Plan
- Carnelian Bay Community Plan
- Draft Foresthill Divide Community Plan
- Granite Bay Community Plan
- Horseshoe Bar/Penryn Community Plan
- Kings Beach Community Plan
- Meadow Vista Community Plan

Other Services/Groups

American River Watershed Group

This organization focuses on natural resource management issues in the North and Middle Forks of the American River, including issues associated with safety of life and property, water quality, wildland fire management, and education.

Lake Tahoe Regional Fire Chiefs Association

Similar to the Western Placer County Fire Chief's Association, this association is comprised of fire chiefs primarily located in the Lake Tahoe area.

Mosquito Abatement

The Placer Mosquito Abatement District covers the western part of the County, which extends from Newcastle to the county lines of Sacramento, Sutter, and Yuba. In spring of 2000, Measure M was passed within western Placer County to fund the Placer Mosquito Abatement District, which was originally formed on June 18, 1996. In 2004, voters approved extending the Placer County Mosquito Abatement District to cover the entire county. The District provides information on facts about West Nile Virus and measures that can be taken to minimize contact with mosquitoes. Additionally, Placer County formed a WNV Task Force. Over the last year, the Task Force has planned for surveillance and abatement activities throughout the County; has mapped many of the standing water sources throughout the County; has conducted surveillance and abatement services; and has provided public information and conducted public education in the County.

North Fork American River Watershed Coordination Group

The California Department of Conservation has granted funds to the Placer County Resource Conservation District to be used for Watershed Coordination for 3 years (2003 to 2007). The North Fork American River Watershed actually includes both the North and Middle Forks of the American River. The objectives of the group is to coordinate collaboration between all stakeholders; implement education and outreach with landowners, businesses, and agencies; facilitate implementation of water quality improvements and ecosystem restoration; and inform and educate stakeholders on water quality issues and implement a water quality data collection program.

Office of Emergency Services

The Placer Operational Area Office of Emergency Services (OES) is the emergency management agency for Placer County. Placer County OES is headquartered in Auburn, the County seat. The office provides service countywide, in cooperation with local cities and special districts, such as fire and law agencies.

OES' Responsibilities include:

- Directs the County's overall response to natural and human-caused disasters.
- Assigns emergency responsibilities to the various departments of the County.
- Coordinates the response and recovery efforts of governmental and non-governmental agencies during disasters.
- In the case of a possible terrorist attack, works with the Placer County Health Officer and the Placer County Sheriff's Office to respond and protect public health and safety.
- Manages the County's Emergency Operations Centers.
- Conducts emergency drills and simulations.

OES also provides updated emergency-related information to the public on the County's website. This site provides weather and flooding information, which includes guidance on protecting your home from winter storms, where to get sandbags, preparation for what to do before, during and after floods, etc. Also provided are links to national, state, and local information on fires, earthquakes, highway and road information, and general federal and state emergency information.

Placer County Fire Safe Alliance

The Placer County Fire Safe Alliance began 12 years ago and includes members from federal, state, and local fire and non-fire agencies, the several fire safe councils in the County, and the Resource Conservation District. In 2001, the Alliance became a county-wide organization and switched from an information-sharing group to an action-oriented organization with regard to wildfire safety. Various programs and valuable information are offered to the public to help residents learn how to protect their property from fires. The Alliance and its partners have implemented many fire safe projects in the County, including the Placer County Chipper Program, defensible space inspections, and vegetation reduction projects.

Placer County Law Enforcement Association

This group is an association of law enforcement agencies from Placer County.

Placer County Flood Control and Water Conservation District

Flood control services in Placer County are provided by the Placer County Flood Control and Water Conservation District, which was established in 1984 as a special district to address regional flood control issues arising with growth. The District has developed a county flood warning system, a Flood Response Handbook (updated annually) and also sets standards for development and assists the County's OES during flood events. The District pursues planning and implementation of regional detention and retention flood control facilities in partnership with local member agencies. The District also administers an annual storm channel maintenance program in unincorporated portions of the County.

Placer County Resource Conservation District (RCD)

The Placer County Resource Conservation District (RCD) was founded in 1947. It is dedicated to:

- Identifying natural resource management and conservation issues;
- Providing education and technical assistance or direction to private landowners and local agencies/organizations; and
- Inspiring and mobilizing public conservation awareness and involvement for implementing programs and plans (including wildfire risk reduction) to conserve and enhance the natural resources within the County.

The RCD works with farmers and ranchers on agricultural issues. In addition, CDF partners with the RCD for definition of agency Vegetation Management Plans.

Tahoe Regional Planning Agency

The Tahoe Regional Planning Agency (TRPA) has developed a Best Management Practices (BMP) program, which are defined in the Lake Tahoe Basin as "structural and nonstructural practices proven effective in soil erosion control and management of surface runoff in the Lake Tahoe Region." An example of a BMP required for all property owners in the Lake Tahoe Basin (per subsection 25.5.A of the TRPA Code of Ordinances) is an infiltration facility designed to accommodate the volume of runoff from a six-hour storm with a two-year recurrence probability.

Western Placer County Fire Chief's Association

The Western Placer County Fire Chief's Association is comprised of fire chiefs primarily located in the Western portion of the County. A primary purpose of the group is to develop the

administrative abilities of Fire Chief's of Placer County, and to act as an Advisory Association to all governmental agencies as it pertains to fire protection and emergency services in Placer County. As part of their efforts, they provide aid in the training, preparation, and coordination of Placer County's Emergency Response Departments prior to, during and after a catastrophic emergency.

County Projects

The County also has many planned and ongoing projects focused on minimizing future losses associated with identified hazards. Many of these projects are sponsored and implemented by one or more County departments and/or other state and local agencies and organizations. Examples of projects include the following:

Flood Control Projects

Placer County and the Placer County Flood Control and Water Conservation District have identified the following projects that have either been completed, are ongoing, or in the planning stage.

Implementation Projects

- Local detention/retention structures to mitigate runoff impacts, associated with new development

- Miners Ravine Off-Channel Detention Basin Project – a multi-objective flood control, creek restoration and public recreation project

- Secret Ravine Multi-objective Floodplain Restoration Sites 1 and 3 (also known as Alternative 4) from the August 2003 feasibility study. (Note that property acquisition would be part of grant request (6.5 million))

- Flood Warning System Upgrades – Purchase and installation of additional precipitation and stream level gages; addition of gage adjusted radar capabilities; design, installation and calibration of flood forecasting software.

- Squaw Creek Embankment Reinforcement Project – completed after the 1997 flood to protect future stream erosion and critical sewer infrastructure

Planning Projects

- Detailed re-study, Cross Canal Watershed Flood Control Plan (Update hydrology models, identify regional retention needs, identify critical bridge and culvert replacements,

identify potential structure elevation needs, identify potential multi-objective flood control projects)

- Detailed re-study, Cross Canal Watershed Flood Control Plan (Update hydrology models, identify regional retention needs, identify critical bridge and culvert replacements, identify potential structure elevation needs, identify potential multi-objective flood control projects)

Placer County Chipper Program

The Placer County Chipper Program is free to all residents of the County, except for Truckee, which is served by the Nevada County Fire Safe Council Chipper Program (also free) since it straddles the County line. The program provides a very cost-effective way for residents to convert large piles of flammable material into small piles of useable biodegradable material. Initially started with funds from a PG&E Settlement after a major wildfire caused by PG&E power lines, subsequent funding was provided as part of a Proposition 204 Grant from the State of California. Funding for the past several years, and for the next few, is coming from a WUI Grant. As with most fire safe projects in the County, the Chipper Program is accomplished through an inter-agency partnership. Funding is administered by the RCD, project management and equipment maintenance are provided by CDF, and the Placer County Sheriff's Office provides jail inmates for the crews. Over the past seven years, since the program began in 1998, an estimated total of 17,486 tons have been chipped.

Fire Mitigation Projects

The following list identifies completed and in-process projects led by the Placer County Fire Safe Alliance Partners. This list does not include other agency led projects conducted under separate budgets.

- Auburn Shaded Fuel Break - Private Lands
- Auburn Shaded Fuel Break - Public Lands
- Community education and outreach, including Coffee Klatches
- Community Fire Safe Plan - Greater Auburn Area Fire Safe Council (FSC)
- Community Fire Safe Plans - Foothills FSCs
- Coordinator for the Placer County Fire Safe Alliance
- Cost-share fuel reduction
- *Defensible Space & Healthy Forest Handbook*
- Defensible Space Inspections 2001-2004
- Demonstration Shaded Fuel Breaks
- Finning Mill Road Shaded Fuel Break
- *Fire & Water* publication in 1998 and 2003
- Fire Wise Construction Workshop
- Foresthill Evacuation Plan
- Foresthill/Iowa Hill Evacuation Routes Map

- GIS Database
- *Healthy Fire-Safe Forest Self Guided Tour* brochure
- Iowa Hill Chipper
- Iowa Hill Fuel Breaks
- Kings Hill Road (Iowa Hill Shaded Fuel Break)
- Legislator Tour
- Meadow Vista Program Timber Environmental Impact Report (PTEIR)
- Placer County Chipper Program 1998-present
- Propose goals and policies for Strategic Fire Protection and Vegetation Management in the Weimar-Applegate-Colfax Area Municipal Advisory Council (WAC MAC) Community Plan Update
- *You and Your Forest: A "How-to" Workbook*

An example of the success of these projects is exemplified in the PRC 4291 Defensible Space Inspection Project. This project took place in 2003-2004 and was funded by a National Fire Plan grant. A total of 7,718 property inspections took place, which covered 8,850 structures (these include outbuildings as well as homes). Only 462 violations were noted, which required second and possibly third inspections. The communities covered by the inspections were Foresthill, Meadow Vista, Weimar, Applegate, Clipper Gap, Cape Horn, and the unincorporated County surrounding the City of Colfax.

Although not directly related to Placer County, the value of defensible space and vegetative management is illustrated through the photos below taken of the 2002 Cone Fire occurring in both the Blacks Mountain Experimental Forest, where various fuel reduction treatments had been conducted and in the Lassen National Forest, where no fuel treatments had been done.

CONE FIRE IN TREATED AREA

CONE FIRE IN UNTREATED AREA

Other fire mitigation projects include those implemented by a variety of agencies such as BLM, USFS, CDF, and others and include the following projects:

- Fuels Treatment and Reduction (prescribed burns, mechanical thinning/removal, fuelbreaks)
- Vegetation Management
- Defensible Space
- Healthy Forest Restoration
- Response and Evacuation Planning
- FireWise Construction
- Firesafe landscapes
- Fire Education/Community Outreach
- Fire Safe Freeway
- Water Supply

Community Wildfire Protection Plans

National, state, and local policies have focused efforts on reducing the threat of wildfire, particularly in the wildland urban interface. Community wildfire protection plans assist communities in defining priorities for the protection of assets in the wildland urban interface areas. Currently there are several ongoing efforts to develop these plans within the County. One such plan currently in Draft form is the Community Wildfire Protection Plans for the California Portion of the Lake Tahoe Basin. This plan is being prepared on behalf of the following groups: Tahoe Basin Fire Safe Council: Fallen Leaf Fire Department, Lake Valley Fire Protection District, Meeks Bay Fire Protection District, and North Tahoe Fire Protection District.

Other

- The County, including its various jurisdictions and special districts conduct a variety of hazard preparedness and response training and drill sessions. The training and drill sessions are focused on familiarizing the trainees with established department procedures and equipment to improve overall hazard preparedness and response throughout the County. Also included is evacuation planning for the County.

- 1997 Coordination Agreement with Flood Control District. The County, Cities (Auburn, Colfax, Lincoln, Loomis, Rocklin, and Roseville) and the Flood Control District have entered into an Agreement in order to jointly coordinate in the development, support, and operation of the Placer County Flood Control and Water Conservation District. The District has been created to provide countywide water conservation; development of water resources; and control and management of drainage, storm, flood, and other waters; and exercise other powers as provided by law. The District was formed as the flood-related problems cannot be economically or efficiently solved through individual actions of existing public entities within Placer County.

- The various fire districts throughout the County maintain mitigation plans such as: Fuels Management Plans and Community Wildfire Protection Plans.

CITY OF AUBURN

General Plan, 1993

The Safety Element of the City's General Plan identifies areas with flood hazards as the natural drainage channels of the Auburn Ravine, Dutch Ravine and Rock Creek, and the tunnel section of the Auburn Ravine under Old Town. This element also recognizes the City of Auburn to be located in a seismically active region.

Building Codes

- Adopted Uniform Building Code 1997/2001, includes roofing ordinance for Class A roofing materials for all residential building within the City limits.

- Adopted Uniform Fire Code UFC 2000/CFC 2001, includes ordinance designating Very High Fire Severity Hazard Zones and Wildland Urban Interface areas within the City; ordinance of Fire Safe Building Standards for new development in VHFSHZ & WUI; and GIS and hard copy maps of Fire Hazard Zones, Fire Evacuation Zones, Fire Response Areas, and Fire Hydrants.

Other

- The City of Auburn has instituted new fire safe measures for the City. As part of the City's fire prevention efforts, the city provides a fire prevention checklist for homeowners on the City's website.

- Fuel Modification Program, "Shaded Fuel Break' for approximately 120 private parcels in the City bordering the American River Canyon.

- Annual home inspections for defensible space and vegetation management; one residential subdivision is completed each year.

- Public awareness programs and information through media and community events, averaging four to five times each year.

- Other available maps include GIS and hard copies of sewer, water, stormwater, and floodplains.

- Development and implementation of a stormwater treatment plan.

CITY OF COLFAX

General Plan, 1998

The Safety Element recognizes that Colfax and the surrounding area are designated as a "very high hazard area" with regard to wildland and urban-wildland fires. Flooding is not recognized as a hazard to the City as no portions are located within the 100-year floodplain. The Safety Element notes that the State's listing of active faults does not include any showing surface rupture in the City of Colfax, but relatively little fault mapping has been completed in the region.

Other

- The City upgraded its building code to the 1997 Universal Building Code in 2003.
- In 2004, the City updated its Hillside Development Guidelines to address wildfire issues, particularly vegetation management and restrictions when building on slopes.
- The City has increased enforcement of its weed abatement ordinance in 2002.
- The Colfax Lions Club is ensuring that all homes within the city have adequate address signs.
- The Wastewater Treatment Plant is being upgraded, which will lessen the potential of a contamination event; this work is due to be complete in 2006.

CITY OF LINCOLN

General Plan, Updated September, 2003

- The Public Facilities and Services Element was updated with a policy implemented to encourage project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, and be designed to provide a natural water course appearance. Another policy requires new development in the City to provide stormwater detention sufficient to limit outflow to 90% of pre-project conditions for the 100-year flood event. Further, new development is required to provide stormwater-retention sufficient for the incremental runoff from an eight-day 100-year storm. Most significantly, per this element, the City shall prohibit development or major fill or structural improvements (except for flood control purposes) within the 100-year floodplain.

- The Open Space and Conservation Element states that all lands located within 100-year floodplains and within a minimum of 50 feet from the center channel of perennial and intermittent streams and creeks are designated open space, thereby protecting these areas from development. Another policy calls for the City to prepare a historical resources inventory.

- The Health and Safety Element includes policies created to minimize the impacts of natural hazards. For example, new structures intended for human occupancy must be designed to minimize risk due to groundshaking. Policies are also in-place to hillside development and to discourage development in areas prone to seismic hazards. The flood section of this element includes a policy to require master drainage plans as a condition of approval for large projects. Another policy is that the City will work with the Placer County Flood Control District to develop flood control facilities to help provide regional flood protection. Further, any new residential construction is required to have its lowest habitable floor elevated above the base flood level elevation**.** Finally, this element has a urban and wildland fire section which includes policies to expand existing fire protection and emergency services, enforce building codes, educate residents of fire hazards, and to develop wildland fire management plans for projects near open space areas.

Municipal Code, 10/90

Chapter 15.32, Flood Damage Prevention. This ordinance includes provisions to ensure notification to potential buyers of flood hazards putting properties at risk and methods for reducing flood losses. Specific provisions include language for requiring new construction and substantial improvements to be at or above the base flood elevation; a prohibition against new development increasing the base flood elevation by more than one foot, as well as other flood prevention language.

Department of Public Works Design Criteria & Procedures Manual, June 2004

The manual includes references to Section 10, Drainage, of the Municipal Code. These design standards for establishing elevations based on FEMA floodplain maps are more stringent than those found in Chapter 15.32 of the municipal code.

TOWN OF LOOMIS

General Plan, 2001

The Safety Element notes that flooding has been a minor hazard in the Town of Loomis because of it's relatively elevated location; however, portions of the town are within the 100-year and 500-year floodplain. Local drainage problems are attributed to inadequately sized culverts and bridges, which include culverts under Interstate 80 (I-80); the Horseshoe Bar Road crossing over Secret Ravine; the railroad and Taylor Road crossings of Sucker Ravine and Antelope Creek.

Municipal Code, June, 2004

- **Chapter 11.04, Construction Codes.** The City of Loomis has adopted both the Uniform Building Code and Uniform Fire Code, among several other construction codes.

- **Chapter 11.08, Flood Damage Prevention.** This ordinance establishes standard regulations for development within flood hazards, similar to all other areas of Placer County (e.g., all new construction must be anchored to prevent flotation). New construction is required to be **elevated at least one foot above the base flood elevation** within the Town of Loomis. Encroachment into the floodway is prohibited unless new development is certified by a registered professional engineer or architect, who demonstrates that no increase in the base flood elevation would occur upon project implementation.

General Plan, 1991, (2004 Draft Updated General Plan)

- The City's General Plan is currently being updated. As part of the update, a "Constraints, Opportunities and Options Report" has been drafted to discuss environmental constraints to growth and opportunities for growth and suggest where General Plan policies can be improved. This report also looks extensively at past and future growth rates within Rocklin and Placer County. According to growth projections produced by Sacramento Area Council of Governments (SACOG), Rocklin's average annual growth rate is expected to remain between 2.6 and 4.3 percent over the next 10 years. The report also states that Placer County was the fastest growing county in California in 2002. With regard to current safety policies, the City currently requires owners of large areas of grassland that are annexed to the City to pay for the costs for the City to contract with the California Department of Forestry (CDF) to provide aerial fire suppression. The Constraints, Opportunities and Options Report suggests updated policies within the General Plan that includes require these additional costs to be borne by the development creating the additional impact.

- The Safety Element of the General Plan has policies in-place to support the goal of minimizing the danger of natural and man-made hazards and to protect people from earthquakes, fires, floods, and other disasters. For example, master drainage plans must accompany proposed large development projects. The City participates in the NFIP and also requires new residential construction to have its lowest habitable floor **elevated at least two feet above the base flood level elevation.** This element recognizes the threat of flooding from several creeks that flow through the City of Rocklin (e.g., Antelope, Aguilar, Secret Ravine, Clover Valley, Pleasant Grove, and Sucker). The City is also required to maintain an emergency plan. Another policy encourages residential development to be located within two road miles from a fire station and that high-density commercial development is located one and one-half road miles from a fire station. With regard to seismic hazards, the General Plan does not consider Rocklin to be in danger due to a combination of significant distances to major faults and general stability of underlying geology within the City.

City of Rocklin Municipal Code

- **Chapter 15.04, Uniform Construction Codes.** The City has adopted the Uniform Construction Codes including Building and Fire Codes as part of its building regulations. These regulations govern such issues as seismic and fire safety requirements in building and construction.

- **Chapter 15.16, Flood Hazard Areas (Flood Hazard Ordinance).** Sets standards for development within flood hazard areas, including the requirement that all new construction and substantial improvement of any structure shall have the lowest floor,

including basement, elevated two feet above the base flood elevation, and shall be certified by a registered engineer or surveyor.

- **Chapter 2.32, Emergency Organization (Emergency Operations Plan).** This ordinance defines the structure for the roles of all emergency affiliated staff within the City, including powers and duties of each person.

- **Chapter 17 & 17, Subdivisions and Zoning.** The use of subdivision and zoning ordinances creates procedures for regulating subdivisions and establishing zoning requirements to protect the health, safety, and welfare of the people.

City of Rocklin Administrative Guidelines

The Rocklin Fire Department established administrative guidelines for fire prevention measures such as for maintenance of vacant parcels, fire breaks, weed abatement, burn control, and the arson task force.

City of Rocklin Floodplain Management Program

A community effort combining zoning, building requirements, and floodplain ordinances to reduce risk of flood damage. The city of Rocklin participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. Examples include requirements for stormwater control, such as drainage and grading requirements.

Dry Creek Watershed Flood Control Plan, 1992

This plan is pertinent to the southeast one-half of the City of Rocklin. The plan anticipated that future land use changes would increase impervious surface area in the watershed by 50 percent, resulting in increased flood flows. The plan recommends strategies to prevent flooding such as detention structures, flood maintenance activities, and erosion control during the rainy season.

Feasibility Study of 3 Floodplain Restoration Sites, 2003

This study, along Secret Ravine within the City of Rocklin, will help meet regional detention goals within the watershed.

Other

- The City of Rocklin participates in a Juvenile Firesetter Program, which is a regional program to educate, assist, and council children who “exhibit firesetting behavior”. Approximately 15 different agencies within the Sacramento and Placer County regions are involved in the program due to a statistically high number of fires being started by juveniles in the area.

- **Fire Department Training Division.** The City of Rocklin conducts ongoing training and drill sessions relating to the prevention, response, and mitigation of natural hazards.

- The City of Rocklin has been very proactive to control, if not eliminate exposure to wildfire. Some examples of mitigation efforts are:

  1. Non-combustible (metal) fencing at the rear of structures near the exposure to fuels and open space.

  2. Fire Access Points between housing for suppression crew access.

  3. Fire Vehicle Access Points into large undeveloped areas of dry fuels.

  4. An aggressive Vegetation Abatement program with financial penalties.

  5. The purchase of off-road type apparatus and wildland firefighting equipment and training.

  6. Contracts with the California Department of Forestry and Fire Protection to utilize aircraft in high-risk areas.

  7. Non-combustible roof building codes and ordinances.

  8. Automatic and Mutual Aid Agreements with regional firefighting resources.

  9. Training and certification in National Incident Management Systems (NIMS).

  10. Maintain a very high standard of hydrant density and water supply in Rocklin.

  11. Sub-division fuel modification zones and regulations

Collectively, these activities earned Rocklin a Class 3 Insurance Services Organization (ISO) Fire Rating.

LOCAL GOVERNMENT CAPABILITY MATRIX

In addition to the assessment of community policies, regulations and plans, the Planning Team also created a matrix as a way of taking inventory of additional mitigation capabilities in each community. The intent of this effort was to see if there were any similarities or gaps in community programs and tools that might indicate where some improvements could be made. The matrix and the key to the matrix labels are located on the following pages.

	PLACER COUNTY	AUBURN	COLFAX	LINCOLN	LOOMIS	Rocklin
Comp Plan/General Plan	Yes	Yes			Yes, 7/01	Yes
Land Use Plan	Yes	Yes			Yes, 7/01	Yes
Subdivision Ord	Yes	Yes			Yes	Yes
Zoning Ordinance	Yes	Yes			Yes, 2/03	Yes
NFIP/FPM Ordinance	Yes	Yes			1996	
- Map Date	1998/2001				1998	
- Substantial Damage language?	Yes	Yes			Yes	
- Certified Floodplain Manager?	Yes	Yes			Yes	
- # of Floodprone Buildings?	95	Yes (map)			19	
- # of NFIP policies	518	14	0	42	62	122
- Maintain Elevation Certificates?	Yes				Yes	
- # of Repetitive Losses?	3				10	
CRS Rating, if applicable	6	TBD			N/A	
Stormwater Program?	Yes	Yes			Yes	
Building Code Version	Yes	Yes			1997	
Full-time Building Official		Yes			No	
- Conduct "as-built" Inspections?		Yes			No	
BCEGS Rating					Yes	
Local Emergency Operations Plan	Yes	Yes (in progress)			Yes	
Hazard Mitigation Plan	No	No				
Warning System in Place?	Yes	Yes			No	
- Storm Ready Certified?	No				No	
- Weather Radio reception?	Yes	Yes			No	
- Outdoor Warning Sirens?	No	No			Yes	
- Emergency Notification (R-911)?	Yes	Yes			No	
- Other? (e.g., cable over-ride)	ALERT Gage System	Yes			County	
GIS System?	Yes	Yes			No	
- Hazard Data?		Yes			N/A	
- Building footprints?		No			N/A	
- Tied to Assessor data?	Yes	Yes			N/A	
- Land-Use designations?	Yes	Yes			Yes, 7/01	
Structural Protection Projects					No	
Property Owner Protection Projects	Yes (raised homes post '97 floods)	Infrastructure maintenance			No	
Critical Facilities Protected?					Yes	
Natural Resources Inventory?	Yes	Yes (GP)			No	
Cultural Resources Inventory?	Yes	Yes (GP)			No	
Erosion Control procedures?	Yes	Yes			Yes	
Sediment Control procedures?	Yes	Yes			Yes	
Public Information Program/Outlet	Yes	Yes (CM/PD)			Yes	
Environmental Education Program?	Yes (limited)				Yes	

EXPLANATION OF CAPABILITY ASSESSMENT MATRIX

Comp Plan: Comprehensive Long-Term Community Growth Plan

Land Use Plan: Designates type of Land Use desired/required – Comprised of Zoning

Subdivision Ordinance: Dictates lot sizes, density, setbacks, and construction type.

Zoning Ordinance: Dictates type of Use and Occupancy, Implements Land Use Plan

NFIP/FPM Ord: Floodplain Management Ordinance: Directs development in identified Flood Hazard Areas. Required for Participation in NFIP and Availability of Flood Insurance

Sub. Damage: Does your FPM Ordinance contain language on Substantial Damage/Improvements? (50% rule)

Administrator: Do you have a Floodplain Management Administrator (someone with the responsibility of enforcing the ordinance and providing ancillary services (map reading, public education on floods, etc.)

# of FP Bldgs: How many buildings are in the Floodplain?

# of policies?: How many buildings are insured against flood through the NFIP?

# of RL's: # of Repetitive Losses: Paid more than $1,000, twice in the past 10 years

CRS Rating: Are you in the Community Rating System of the NFIP, and if so, what's your rating?

BCEGS: Building Code Effectiveness Grading System Rating

LEOP: Do you have a Local Emergency Operations Plan – a Disaster RESPONSE Plan?

HM Plan: Do you have a Hazard Mitigation Plan?

Warning: Do you have any type of system, such as "Storm Ready" Certification from the National Weather Service, NOAA Weather Radio reception, Sirens, Cable (TV) Override, "Reverse 911"?

GIS: Geographic Information System

Structural Protection Projects: Levees, drainage facilities, detention/retention basins

Property Protection Projects: Buy-outs, elevation of structures, floodproofing, small "residential" levees or berms/floodwalls

Critical Facility Protection: For example, protection of power substations, sewage lift stations, water-supply sources, the EOC, police/fire stations, medical facilities that are at risk, e.g., in the floodplain.

Natural And Cultural Inventory: Do you have an inventory of resources, maps, or special regulations within the community? (wetlands and historic structures/districts, etc.)

Erosion Or Sediment Control: Do you have any projects or regulations in place?

Public Information And/Or Environmental Education Program: Do you have an ongoing program even if its primary focus is not hazards? Examples would be "regular" flyers included in city utility billings, a website, or an environmental education program for kids in conjunction with Parks & Recreation?

FEDERAL AND STATE CONSIDERATIONS

There are some regional capabilities that should also be considered, and an additional layer of regulations at the state and federal level enhance these local capabilities. The Planning Team also reviewed the following:

Forests with a Future Campaign

The USDA Forest Service is initiating the Forests with a Future campaign in California and parts of Nevada to protect Sierra Nevada old-growth forests, wildlife and communities against catastrophic wildfires. This campaign is a new proactive approach aimed at restoring natural conditions to our forests and building public understanding of the need for action while encouraging people to help.

The Healthy Forest Restoration Act (HFRA) of 2003

This act created national legislation to focus efforts on reducing wildfire threats to communities, watersheds and wildlife habitat, as well as promoting healthy forest conditions and old-growth-large tree retention. Under this legislation, communities are responsible for developing a Community Fire Plan in order to be eligible for certain funding.

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Multi-Hazard Mitigation Plan
5.0 Mitigation Strategy

This Section describes the mitigation strategy process and mitigation action plan for Placer County's DMA Plan.

The HMPC reviewed and discussed formulating Mitigation Goals as part of Team Meeting #3 in preparation for identifying the goals for this plan. Each HMPC member was provided with a written explanation of Goals and Objectives, the purpose they serve, and how they are developed and written. Up to this point in the planning process, the HMPC has been involved in talking to agencies and organizations and collecting and recording hazard related data. From these discussions and efforts, the HMPC produced three documents. The first two:

1. Hazard Identification, and

2. Vulnerability Assessment.

"Painted a picture" of the vulnerability of Placer County to natural hazards. From these documents, the HMPC learned that:

1. Wildfire continues to be a significant threat to the community,

2. Flooding is and will continue to be a threat to the community, especially given the growth/development projections in the County,

3. Earthquakes pose a moderate threat, especially given the new earthquake data in Eastern Placer, and

4. Most meteorological and natural biological hazards occur periodically, and sometimes annually (drought, severe snow, severe hail, severe thunderstorms/rain; West Nile Virus), but do not constitute a significant on-going threat, as severe events resulting in excessive damages are infrequent. In addition, the general manpower and budget requirements for responding to these annual occurrences such as snowfall is planned for by individuals and the communities.

The third document, the Capability Assessment, describes the current ability of Placer County to counter these threats through existing policies, regulations, programs, and procedures. The HMPC learned that:

1. The wildfire mitigation programs (defensible space and fuels management) while having many successes are often limited due to lack of resources for public education and enforcement.

2. There is a need to continue and expand these programs, because they are never completed – vegetation grows back, new people move in, etc.

3. In the Dry Creek Watershed, as a result of past flooding events, 95 homes within the 100-year floodplain were recommended for elevating. Of these 95 homes, 25-30 declined the initial grant money for elevation. Elevation of the remaining 25-30 homes should be pursued.

4. Measures to reduce flooding impacts associated with past floods, such as regional detention/retention projects and culvert replacement projects, have been implemented in some instances; however, many projects remain on the books and still need to be implemented.

5. Flood insurance is available, but only approximately 1,053 policies are in force with 10,452 parcels located within the floodplain.

6. There is a County-wide Stormwater Management Program in place.

7. This plan offers the opportunity to review the mitigation accomplishments undertaken by Placer County following past disaster events, and to identify work that remains to be accomplished.

8. Many progressive state and County ordinances are in place to reduce the risk and/or vulnerability of the County to identified hazards; however, the resources for enforcement of the existing code is limited.

9. Certain codes and ordinances should be in place on a countywide basis. Specifically, codes should be reviewed with a particular emphasis on fire safe construction, defensible space requirements, and fire response capabilities in high to very high fire danger areas.

10. There is a need to identify public information and education methods to improve effectiveness and subsequent individual action. Communities need to know the hazards in their area and individuals need to know how best to mitigate against these hazards. Current efforts at public education, in particular, have had only marginal success and have not motivated individuals to take action.

11. Placer County has a good Emergency Management Program and partnership with other emergency response agencies and offices.

12. There is a program in place to upgrade the Sewage Treatment Plants in the County.

GOAL SETTING

This analysis of the Risk Assessment identified areas where improvements could be made, providing the framework for the HMPC to formulate planning goals, so that the improvements would be incorporated into the Mitigation Plan. Each HMPC member was provided an alphabetized list of 14 possible goal statements. Each HMPC member then received three index cards and was asked to write what they felt would be appropriate goals for the plan --- one on each card --- using the possible goal statements as a guide.

The HMPC members were instructed that they could use, combine or revise the statements they were provided or develop new ones on their own. The goal statements were then attached to the meeting-room wall, and grouped into similar topics, combined, rewritten, and agreed upon in HMPC meeting #4.

Some of the statements were determined to be better suited as objectives or actual mitigation projects, and were set aside for later use. Based upon the planning data review, and the process described above, the HMPC developed the final goal statements listed below. The goals and objectives provide the direction for reducing future hazard-related losses within Placer County.

GOAL 1: Prevent Future Hazard Related Losses of Life and Property

Objective 1.1: Provide protection for existing development to the extent possible

1.1.1 Provide/improve fire protection
  1.1.1.1 Coordinate access roads ROW (maintenance)
1.1.2 Improve Community based fire safe planning and execution

1.1.2.1 Support the development of new Fire Safe Councils in the County and assist existing Councils in being effective
1.1.2.2 Foster the Placer County Fire Safe Alliance, whose membership includes the various Fire Safe Councils in the County, to define, prioritize, fund, and implement essential wildfire mitigation projects
1.1.2.3 Sustain partnerships between the County and fire safe organizations, including the Alliance

1.1.2 Provide/improve flood protection
1.1.2.1 Lower cost of flood insurance through CRS program
1.1.2.1.1 Lincoln should consider joining CRS
1.1.2.2 Flood control structures
1.1.2.3 Drainage Maintenance Plans
1.1.2.4 Reduce impacts to livestock (relocate)

1.1.3 Provide/improve protection for avalanches

Objective 1.2: Provide protection for future development to the extent possible

1.2.1 Review existing process and enforcement for implementation of new standards

Objective 1.3: Provide protection for critical public facilities and services

1.3.1 Police, fire, schools, City Hall, power, water, sewage, communications, and other infrastructure (dams, pipelines)
Note: that not all public safety facilities meet current "essential services" building standards.

1.3.2 Protect emergency communications facilities (mountain-top repeaters)

Objective 1.4: Promote interagency coordination

1.4.1 Assure coordination between other community plans and goals
1.4.2 Assure coordination between participating communities
1.4.3 Assure plan coordination with adjoining counties

Objective 1.5: Promote agricultural planning and animal health

1.5.1 Protect against invasive species (noxious weeds)
1.5.2 Exclude, and eradicate invasive insects, disease and weeds
1.5.2.1 Implement a weed abatement program

Objective 1.6: Provide protection for natural/cultural resources to the extent possible

1.6.2 Protect water, forests, wildlife

GOAL 2: Increase Public Awareness/Action Of Vulnerability To Hazards (Protect People's lives from Hazards)

Objective 2.1: **Inform and educate residents and businesses about the types of hazards they are exposed to, where they occur, and what they can do to mitigate damages and to be better prepared (research and create an effective outreach program, provide educational resources)**

Objective 2.2: **Create a multi-hazard Public Outreach Strategy according to CRS guidance (CRS Activity 330, include all hazards discussed in plan, including West Nile Virus – coordinate with existing efforts underway)**

GOAL 3: Improve Community Emergency Services/Management Capability

Objective 3.1: **Continue to coordinate jurisdictional responsibilities to various hazards through County and Community Disaster/Emergency Response Plans and Exercises**

Objective 3.2: **Develop/Improve warning and evacuation procedures and information for residents and businesses**

Objective 3.3: **Update Business Continuity Plans**

Objective 3.4: **Maintain the flood warning system**

Objective 3.5: **Continue to assess emergency service response times, and work to identify and fix conditions that result in repeated delays where possible.**

GOAL 4: Pursue Multi-Objective Opportunities Whenever Possible

IDENTIFICATION OF MITIGATION MEASURES

Following the goal setting meeting, the HMPC undertook a brainstorming session to generate a set of viable alternatives that would support the Identified goals. Each HMPC member was provided with the following list of categories of mitigation measures:

- Prevention,
- Property Protection,
- Structural Projects,

- Natural Resource Protection,
- Emergency Services, and
- Public Information.

The HMPC members were also provided with several lists of alternative multi-hazard mitigation actions for each of the above categories. A facilitated discussion then took place to examine and analyze the alternatives. With an understanding of the alternatives, a brainstorming session was conducted to generate a list of preferred mitigation actions to be recommended. Once the mitigation actions were identified, the HMPC members were provided with several sets of decision-making tools, including, FEMA's recommended STAPLE/E set (Sustainable Disaster Recovery, Smart Growth principles) and "Others" to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented then another. The lists of mitigation categories, multi-hazard measures, and criteria sets are included as (Appendix B).

With these tools, the HMPC listed all of the hazards posing a threat to the community on individual sheets of flip-chart paper. With the paper pasted to the walls, HMPC then generated their preferred set of mitigation measures per hazard, utilizing the criteria sets to determine the most suitable proposals.

After some discussion, the HMPC decided not to address the issue of prioritizing the recommended actions. The HMPC felt that the actions were too diverse in nature, cost, and feasibility to assign an implementation priority that would only be divisive. Rather, recognizing the DMA regulatory requirement to prioritize by Benefit-Cost and the need for any publicly funded project to be cost-effective, the HMPC decided to pursue implementation according to when and where damages occur, available funding, individual community priority, and priorities identified in the State Mitigation Plan.

THE MITIGATION STRATEGY

Any effective mitigation strategy must encompass the participation of the communities forming the partnership. Within the Placer County, there are five incorporated communities and 47 districts that participated on the HMPC and provided valuable data and insight into this plan. While different in their boundaries, form and function, each recognizes their role to prepare for disaster, respond to natural hazards and undertake mitigation initiatives. A prime example of the critical nature of this partnership is the roles of each community and district in Flood Protection. While either the County can achieve great flood mitigation on their own, the Cities and Districts could compromise the total effectiveness of the work without similar, coordinated efforts within their respective jurisdictions. Only together, through coordinated efforts, will the vulnerability of the Placer community to future floods be effectively reduced. This partnership of participating jurisdictions defines the overall hazard mitigation planning strategy for Placer County.

Similar to collaboration among local communities and agencies for hazard mitigation, the Local Hazard Mitigation Plan Program (LHMP) is a priority program of California OES to meet one of their primary goals: ***Promote Hazard Mitigation as an Integrated Policy***. The LHMP provides a mechanism for the state to provide technical assistance, and to track the progress and effectiveness of local government mitigation planning programs. As part of this program, the state established the following criteria for prioritizing local mitigation activities for funding:

- Percent of population at risk
- Frequency and likelihood of hazard
- Repetitive loss areas
- Small/impoverished communities
- Planning resources available
- Types/percent of land areas at risk
- Development pressure rating
- Project urgency and C/B analysis
- Cost effectiveness of measure

The results of the planning process, the Risk Assessment, the Goal Setting, the Identification of Mitigation Measures, and the hard work of the HMPC led to the Action Plan presented below. The process also helped the HMPC clearly comprehend and identify the overall mitigation strategy that will lead to the implementation of the Action Plan.

All of the recommendations set forth fall into four easily identifiable strategies:

- ENFORCE existing rules, regulations, policies and procedures already in existence. Communities can reduce future losses not only by pursuing new programs and projects, but also by more stringent attention to what's already "on the books;"

- EDUCATE the public about hazard information that Placer County has collected and analyzed through this planning process so that the community better understands what can happen where, and what they can do themselves to be better prepared. Also, publicize the "success stories" that are achieved through the HMPC's ongoing efforts,

- IMPLEMENT the Action Plan below, some of which is comprised of recommendations that have previously been recommended through other existing community plans and efforts,

- MOM - ardently monitor "Multi-Objective Management" opportunities, so that funding opportunities may be shared and "packaged" and broader constituent support may be garnered.

ACTION PLAN

This Action Plan presents the prioritized recommendations for Placer County to pursue in order to lessen the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The Recommended Mitigation Actions are organized by community. Each recommendation also includes a discussion of the benefit-cost to meet the regulatory requirements of DMA.

PLACER COUNTY RECOMMENDED MITIGATION ACTIONS

The Placer County HMPC included representatives from numerous districts --- many of which have never received any damage from a natural hazard, disaster assistance from state or federal programs, or mitigation assistance from FEMA. They chose to participate in the development of this DMA plan nonetheless, in order to preserve and maintain their eligibility for future mitigation assistance should the need and the opportunity arise. Thus, not every District has an individual Action Item recommended, while others have several. Each District, however, now recognizes the overall risk and vulnerability of the County and their role in minimizing future damage and facilitating recovery. In that light, each District will participate in the overall countywide public education recommendation action #15 that follows in the County section. The Districts, as all local governments, reserve their right to revise this element of the plan to reflect new threats and to propose new mitigation activities as the need and the concepts arise.

WILDFIRE MITIGATION ACTIONS

ACTION #1: DEVELOP A COMMUNITY WILDFIRE PREVENTION PLAN (CWFPP) FOR THE WESTERN SLOPE OF PLACER COUNTY

Issue/Background: Fuels/vegetation management is ongoing. The HMPC agreed that ongoing vegetation management is THE most important factor in reducing the wildfire hazard in Placer County.

The Placer County Fire Safe Alliance ("the Alliance"), with its open partnership, including the various fire safe councils and major landowners and managers, is uniquely situated to assist with the coordination for and prioritization of scarce resources.

Because of the difference in needs between the Tahoe Basin and the Western Slope of the County, and because the Tahoe Basin already has a Community Wildfire Protection Plan under development, this Action applies to the development of a CWFPP for the Western Slope only.
The projects defined as a result of this effort will result in Fuels Management efforts coordinated among the Alliance stakeholders, as well as the general public, on the Western Slope of the County.

Vegetation management projects will result in ongoing fuels/vegetation reduction and management on public and private lands; implementation and enforcement of defensible space requirements on private land for both existing properties and new development; and development of criteria for on-going maintenance of the fuels management and defensible space program.

The plan will be consistent with the document "Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities" at http://www.stateforesters.org/pubs/cwpphandbook.pdf. As appropriate, projects defined in the CWFPP will be included in the update of this Multi-Hazard Mitigation Plan, due in 2009.

Given how closely inter-related the communities are on the Western Slope, defining a CWFPP at the individual Fire Safe Council level is not the most effective methodology. Instead, the Alliance partners plan to develop the CWFPP for the Western Slope in phases. Phase 1, already in process, focuses on the foothills communities which are represented by the following Fire Safe Councils:

- Iowa Hill/Foresthill FSC
- Ponderosa FSC (City of Colfax, Weimar-Applegate-Colfax Area Municipal Advisory Council and Meadow Vista Municipal Advisory Council)
- Greater Auburn (City of Auburn, North Auburn/Placer Consolidated Fire Protection District, Bowman, and Christian Valley)

Subsequent phases will be developed once Phase 1 is completed.

Other Alternatives: Continue to implement programs at the local level, without an overall system of risk assessment and resource prioritization.

Responsible Office: Placer County Fire Safe Alliance partners, including the various Fire Safe Councils, fire agencies, Placer County Office of Emergency Services

Priority (H, M, L): High

Cost Estimate: The plan is being developed as part of existing agency workloads. Funding for public meetings and review copies of the plan may be needed, but the cost will be minimal.

Benefit: Coordinated projects with a broader impact than individual efforts by the County, agencies, groups, businesses, and individual landowners.

Potential Funding: National Fire Plan, Healthy Forest Initiative; WUI Grant; local financing, private foundations, grants from state bond acts, Sierra Conservancy, and Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County, PILT (Payment in Lieu of Taxes).

Schedule: Phase 1: Steps 1, 2, and 3, as defined in the Handbook, are already completed and Phases 4, 5, and 6 are in process, with a target completion of Fall 2005.

Schedule for other phases will be determined once Phase 1 is complete.

ACTION #2: MAINTENANCE ON SHADED FUEL BREAKS AND DEMONSTRATION FUEL BREAKS.

Issue/Background: Several roadside shaded fuel breaks and demonstration fuel breaks were created from 1998 to 2002 using a grant from Proposition 204 funds and other sources. In order for these fuel breaks to continue to be effective, maintenance must be done on a periodic basis.

The fuel breaks are on primarily private property, and the property owners are expected to perform the maintenance with some cost-share assistance. The fuel break locations, size, and resources protected are listed in the following table:

Location	# Acres	# Homes Protected	Value*
Aeolia Heights demo SFB	20		Educational
Alta demo SFB	20		Educational
Foresthill School demo SFB	25		Educational
Maidu demo SFB	20		Educational
Foresthill Divide Rd. (Todd Valley)	36	1,500	391,500,000
Michigan Bluff	43	14	3,654,000
Boole Road	11	100	26,100,000
Cerro Vista	16	100	26,100,000
Ponderosa Road	21	100	26,100,000
Spring Garden Road	25	100	26,100,000
Yankee Jims Road	55	50	13,050,000
TOTALS	**312**	**1,964**	**512,604,000**

*The value is based on the average home value for the unincorporated County from the Assessor's Roll Values. The number of homes is approximate.

Other Alternatives: Taking no action will result in the continued re-growth of vegetation and the disappearance of the fuel breaks.

Responsible Office: Rich Gresham, Manager, Placer County Resource Conservation District

Priority (H, M, L): Medium

Cost Estimate: Estimated cost is $500 per Acre for a total of $156,000.

Benefit: The roadside fuel breaks protect homes valued at approximately $512,604,000, and also shield evacuation routes and firefighter access. The demonstration fuel breaks educate and encourage homeowners to create and maintain defensible space. The cost of $156,000 is 0.03 percent of the values protected.

Potential Funding: The roadside fuel breaks are on private property. This project would offer staff to provide follow up recommendations. Costs could be reduced by sharing costs with private property owners.

In general, the cost of maintenance is about $500 per acre, depending on the method used. The cost share for the project is estimated to be $78,000, with the property owners contributing an equal amount of their own funds and/or labor. The County Chipper Program will be used to help reduce the overall cost. The costs include funds for staff time and project management.

The responsibility for maintenance of the demonstration fuel breaks varies. The Aeloia Heights fuel break is on public and private lands; Alta's is managed by the Alta Fire Safe Council; the one at Foresthill School is maintained by the school; and the Maidu project is on private property within the Auburn Fuel Break and will be maintained as part of that project (described separately). This project would offer staff to provide follow-up recommendations plus cost-share funds for the private lands portions of the Aeloia Heights and Alta fuel breaks.

Possible source of funding are National Fire Plan, the Healthy Forests Initiative, CalFed grants, and EQIP.

Schedule: Every 3-5 years, if funding is available, starting in the spring of 2005 or 2006.

ACTION #3: ANNUAL DEFENSIBLE SPACE INSPECTIONS PROGRAM IN THE UNINCORPORATED COUNTY

Issue/Background: Defensible space is recognized by CDF as the single most importance action that a homeowner can take to increase the chances that homes and other structures will survive a wildfire. Defensible space also helps to protect the wildlands from a structure fire. Another benefit of defensible space is that it provides firefighters with a safe place to work while defending a home from fire.

When SB 1369 takes effect on January 1, 2005, the minimum defensible space requirement will increase from 30 feet to 100 feet.

Many homeowners are not aware of the requirements of defensible space, especially new residents who move to the County from highly urban areas where it is normal to expect a fire engine, or even multiple engines, to be dedicated to fighting a structure fire. However, during a wildfire, this is not feasible. Homes and other structures must be able to withstand an approaching wildfire with no assistance from firefighters. Also, fire fighters will not defend a home unless they can do so safely.

Regular inspections, based on the requirements of California Law as specified in Public Resources Code 4291, can help ensure that homeowners create and maintain adequate defensible space. The inspection process is also an opportunity to educate and motivate the homeowners to take action to improve their wildfire safety.

While CDF has the legislative mandate to perform these inspections, in reality budgets do not provide for sufficient staffing to do this beyond the occasional inspection requested by a homeowner. Since 1998, PRC 4291 inspections in the Placer County Foothills have been funded

by grants from Prop 204, the Community-Based Wildfire Protection Program through the California Fire Safe Council and BLM, and Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County.

Future programs need to expand to include the south County, especially the South Placer Fire Protection District and the Loomis Fire Protection District.

Other Alternatives: Taking no action will result in less compliance with defensible space requirements.

Responsible Office: Placer County Fire Safe Alliance partners, including fire agencies

Priority (H, M, L): High

Cost Estimate: Inspections cost approximately $10.50 for the inspector's time and insurance, mileage, and a manager. Adding administrative overhead brings the cost to about $11.50. (These are 2001 dollars.) An additional cost is for literature to handout. The most important handout is the Homeowner's Checklist, which can be downloaded at http://www.fire.ca.gov/php/education_checklist.php.

The most recent grant for Defensible Space Inspections was for $79,746.67 with an in-kind match for literature and other support by CDF for $13,236.50. These inspections focused on the foothills communities of Foresthill, Iowa Hill, Weimar, Meadow Vista, Applegate, the Colfax area, etc. There are approximately 7,000 homes in this area. Inspections cost approximately $10.50 for the inspector's time and insurance, mileage, and a manager. Adding administrative overhead brings the cost to about $11.50. An additional cost is for literature to handout. The most important handout is the Homeowner's Checklist, available at http://www.fire.ca.gov/php/education_checklist.php or from CDF. Color copies of this document cost from $1.50 to $2.00 depending on the number of copies.

Benefit: Life Safety; Reduce property Loss. A cost of $13.00 per home inspected ($11.50 + $1.50) is about 0.005 percent of the average Assessor's Roll Value of about $260,000 per home (which is far below actual replacement value).

Potential Funding: Potential sources of funding include: National Fire Plan, Healthy Forests Initiative, and Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County.

Schedule: Annually, as funding permits. Since not every property needs to be inspected every year, doing inspections on a rolling basis would allow smaller annual grant amounts to be needed.

ACTION #4: ONGOING COUNTY CHIPPER PROGRAM OPERATION FUNDS

Issue/Background: Since 1998, the Placer County Chipper Program has provided a free service to residents of the County. This helps to lower the costs of creating and maintaining defensible space and also reduces the amount of outdoor burning and the associated air pollution as well as escaped fires.
The County owns four chippers and tow vehicles, purchased from a PG&E settlement and supplemented by a Prop 204 grant. Maintenance is performed by CDF. Therefore the annual cost is for the four crew managers, one for each chipper, and the crews. In order to keep costs down, trustees from the County Jail are used as crews.

Response to the program has been excellent. As of June 2004, an estimated total of 17,486 tons of vegetation had been processed through the Chipper Program since its inception. The number of parcels chipped has steadily increased every year. In the first six months of 2004, which would result in about 2,500 parcels if the run rate remains constant.

Other Alternatives: No Action - If the Chipper Program is not continued, there is a risk of lower compliance with defensible space requirements as well as increased burning.

Responsible Office: Rich Gresham, Manager, Placer County Resource Conservation District; CDF NYP, Placer County

Priority (H, M, L): High

Cost Estimate: The cost of operation is about $191,000 annually, or an average of $76 per parcel chipped.

Benefit: Life Safety; Reduce property Loss. A cost of $76 per parcel is about 0.03 percent of the average Assessor's Roll Value of about $260,000 per home (which is far below actual replacement value).

Potential Funding: Current funding is through a WUI grant.

Schedule: Ongoing annually.

ACTION #5: ESTABLISH ADDITIONAL FIRE SAFE COUNCILS ON THE WESTERN SLOPE

Issue/Background: As can be seen on the Wildland Fire Risk Map in Section 4.2 of this plan, a bit less than half of the portion of the County west of Auburn is rated at a High risk and the remainder is rated at a Medium risk.

Many residents of this area are not aware of the wildfire hazard. This hazard was illustrated by the 2001 Sierra Fire in the Loomis/Rocklin area, which destroyed six homes, numerous

outbuildings, and several vehicles. A couple of years ago, a home was lost to a grass fire in Loomis!

Establishing Fire Safe Council(s) in this area of the County is a first step towards educating local residents about the fact that they live in an urban forest and there is a wildfire hazard, and motivating them to take appropriate action to reduce their risk.

Other Alternatives: Taking no action will continue to leave these homes at risk.

Responsible Office: Placer County Fire Safe Alliance partners, including local fire agencies

Priority (H, M, L): High

Cost Estimate: The major cost involved is fire agency manpower, especially on the part of the Prevention Officer/Fire Marshal. There may also be some administrative cost for mailings, etc. However, most of these costs can probably be included in normal operating expenses.

The "Core Group" models used by the Greater Auburn Area Fire Safe Council and the Ponderosa Fire Safe Council in their Partnership Agreements could be replicated to create a local base of involved citizens to work with their local fire agencies.

Benefit: Fire Safe Councils have been demonstrated across the state as being effective in informing and motivating local residents to take action to create and maintain defensible space. It costs almost nothing to start and operate a fire safe council and to create local education programs. Grant funding for larger projects will be worked through the Placer County Fire Safe Alliance partners and the developing Community Wildfire Protection Plan.

Potential Funding: Existing Budgets

Schedule: Start up at least one additional Fire Safe Council in 2005. Sub-chapters could be implemented via homeowner associations, neighborhood watch groups, and other existing community-based organizations.

ACTION #6: ENHANCE ENFORCEMENT OF COUNTY BUILDING CODES TO INCREASE COMPLIANCE WITH SB 1369 DEFENSIBLE SPACE AND OTHER FIRE SAFE REQUIREMENTS IN THE UNINCORPORATED COUNTY

Issue/Background: When SB 1369 takes effect on January 1, 2005, the minimum defensible space distance is increased from 30 feet to 100 feet (or to the property line). Further, for new or replacement construction, SB 1369 requires that the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable state and local building standards, as well as upon completion of the construction or rebuilding, the owner shall obtain from the local building official, a copy of the final inspection

report that demonstrates that the dwelling or structure was constructed in compliance with all applicable state and local building standards.

The building inspection process is an excellent time to initiate compliance with SB 1369. For example, if the creation of the minimum 100 feet (or to the property line) defensible space area was required before the building is started to be built, it is a lot more likely to be maintained after construction. This would also be a good time to enforce the PRC 4290 requirements for house and road signage installation.

Specific details of the process would be worked out among the responsible parties listed below.

Other Alternatives: No action continues to leave defensible space creation up to the good will of the homeowner.

Responsible Office: Placer County Building Department, Placer County Fire Safe Alliance partners, including CDF and local Fire Agencies

Priority (H, M, L): Medium

Cost Estimate: There is no cost involved to the responsible parties since the existing building inspection process would be used. (The cost for implementing the certification process required by the legislation is outside the scope of this project since it has to be done anyway.)

Benefit: Life Safety; Reduce property loss - with a zero cost project…

Potential Funding: Existing Budgets

Schedule: Early 2005

ACTION #7: ENSURE THAT ALL HOMES IN THE PLACER COUNTY FOOTHILLS HAVE PRC 4290 COMPLIANT ADDRESS SIGNS

Issue/Background: Many homes in the Placer County Foothills do not have adequate house signage, which makes it difficult for emergency responders to quickly locate addresses requesting assistance.

Homeowners either are unaware that their house signs are not adequate, and/or do not know where to go to purchase PRC 4290 compliant signs, and/or balk at spending what it costs to obtain such a sign.

Other Alternatives: The only other alternative is no action.

Responsible Office: Assistant Chief Loren Snell, CDF Nevada-Yuba-Placer Unit

Priority (H, M, L): High

Cost Estimate: Existing Homes:

- Cost of single PRC 4290 compliant signs is about $30 plus $5 for a stake (from The Sign), with a second sign costing $20 plus stake. The proposed project would provide cost-share funds. Homeowners would pay $5 to $10 per sign, plus stake. Low-income homeowners would pay no more than $5 for both sign and stake. The cost-share funds would provide the rest of the cost.

- There are approximately 7,000 homes in the Weimar, Applegate, Meadow Vista, Foresthill, and unincorporated county around Colfax. Of these, an estimated 50 percent do not have adequate address signage.

- Total estimated number of homes needing signage in the Placer County Foothills: 3,500.

- Cost for the project: $122,500 total; $105,000 is needed in cost-share funds if homeowners provide a $10 match; $87,500 needed if homeowners provided a $5 match. (The grant amount would need to include funds for administration of the grant as well as project management, so the actual grant request would be higher. The homeowner co-pays would provide the required matching funds.)

- Some ways to reach the homeowners: (1) during future PRC 4291 Inspections; (2) use local Boy Scout or similar organizations; (3) booths at fairs; (4) newspaper articles; (5) school newsletters; (6) hand out order blanks at supermarkets and home improvement centers.

New Homes:

County building inspector to require installation of PRC 429 compliant address signs prior to issuing final use permit. These signs are already required by County Code, but enforcement is needed. No additional cost to the County.

Benefit: Homeowners have no easy access to a source for PRC 4290-compliant signage. They have to do research to find a place to buy them. Then they have to be willing to pay $35 per sign and install it once they receive it. This project would remove all of the above obstacles, and thereby facilitate emergency responders in locating addresses quickly.

The longer the response time, the greater the potential damage:

- Structure fires attacked within 10 minutes of ignition have the greatest possibility of rapid extinguishment, and thus a decrease in potential life and property loss as well as reducing the likelihood that a house fire will spread to the wildlands.

- Vegetation fire ignitions must be attacked quickly or they can rapidly become quite large, depending on the amount and condition of the vegetation, the relative humidity, and wind.

- Without medical intervention, certain death can occur in persons with heart attack, severe bleeding, and respiratory ailments in as little as four to six minutes

Potential Funding: Possible funding sources are National Fire Plan or Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County.

Schedule: Applications for HR 2389 Title III Funds are due to the Placer County Executive's Office in August of each year.

Applications for National Fire Plan Funds can be submitted to the Clearinghouse at any time; however, Federal funding cycles determine when projects will actually be considered for funding. Usually late Fall is the time for submitting concept papers for consideration in the next year's funding cycle. See http://grants.firesafecouncil.org/resource_center.cfm for more details on the California Fire Alliance Grants Clearinghouse and http://www.cafirealliance.org/downloads/resourceguide.pdf for the California Fire Alliance Resource Guide.

ACTION #8: MODIFY COUNTY CODE (UBC) TO REQUIRE CLASS A ROOFING ASSEMBLY ON A COUNTYWIDE BASIS.

Issue/Background: Equally important for effective wildfire mitigation in Placer County, is the type of materials used in the building construction. Currently the UBC Code as adopted by Placer County requires a Class A Roofing Assembly be used in new roof construction or when more than 20 percent of the existing roof is replaced. This is limited to the central and eastern portion of the County. The Code should be modified to be implemented on a countywide basis. As currently written, the code only arbitrarily applies to certain areas with no distinction between fuel loads in these areas. Stricter application of Fire Codes can reduce future risk from fires.

Other Alternatives: Expand the existing boundary for enforcement of Class A Roofing Assembly to the West including all areas of the County that lies East of the line that is created by Freeway 80 at the intersection with the Southern boundary of Placer County to Highway 65 North at the Northern boundary of Placer County.

Responsible Office: Western Placer County Fire Chiefs Association; Placer County Building Department

Priority (H, M, L): Medium

Cost Estimate: Existing budgets and staff time

Benefit: Life Safety; Reduce property losses. More stringent fire codes will mitigate the effects of future fire events.

Potential Funding: None Necessary

Schedule: Initiate within one year

ACTION #9: DEVELOP THE FOLLOWING GIS LAYERS FOR EMERGENCY SERVICES WITHIN PLACER COUNTY: FIRE IGNITIONS LAYER, CRITICAL FACILITIES LAYER, AND FIRE HYDRANTS/WATER SOURCES LAYER

Issue/Background: It is misleading to only consider past large acreage fires when evaluating fire risk, because any ignition can lead to a wildfire with major losses, even if the acreage is small (witness the 2000 Heather Fire, which was only 10 acres but resulted in $305,000 in damages because a house was lost.)

Over 90 percent of wildfires are human-caused, and therefore suitable for mitigation activities.

Readily accessible information is needed in order to know where to focus efforts to reduce ignitions. CDF identifies over ten causes of fires. While the latitudes & longitudes and causes are available in Excel files for each year, this format is not easy to use.

Mapping ignitions by cause for a 5 or 10 year period would give fast visual access to determine where to focus efforts to reduce ignitions and what type(s) of ignition to target. The base map for this would be the roads, cities, and parcels map for the County. The map could be posted to the County's web site for easy access.

While Placer County has some mapped data on critical facilities, the data is incomplete and was not available for analysis during this project. The County's ability to assess risk at all facilities is important. Critical facility risk and vulnerability assessment can be accomplished manually, but it is extremely time consuming and subject to error. Mapped facilities compared against mapped hazard areas will provide the greatest ability to assess risks and vulnerabilities for mitigation planning.

Placer County should have the ability to assess the status of critical facilities at the time of an incident. This assessment is currently accomplished by taking reports from selected facilities as facilities report in. If an agency or employees at a facility do not report then the data is not available and critical facilities may be missed or may be assumed to be intact. Mapped data would improve this process by allowing the Emergency Operations center to compare a mapped hazard against mapped facilities allowing for a more precise query of affected facilities. Mapped data will significantly improve the direction of damage assessment teams as an example.

Placer County does not currently have a single map with all fire hydrants and water sources. All of the County's fire agencies routinely provide mutual aid into each other's jurisdiction. Mapped fire hydrants and water sources will reduce the time that it takes an engine company to find an adequate water source in the event of a fire. This effort is particularly important in the mountain areas of Placer County, where deep snows bury hydrants every year, causing the affected fire

districts to have to dig them out in selected communities either at the time of an emergency or after a heavy snow.

Other Alternatives: Continue to estimate fire mitigation measures based on memory and un-mapped data. Continue to estimate critical facilities risk and vulnerability based on un-mapped data. Continue to use manually mapped fire hydrant data that is seldom shared with agencies who are providing mutual aid to a sister agency.

Responsible Office: Placer County Fire Chiefs Association / Lake Tahoe Regional Fire Chiefs Association

Priority (H, M, L): Medium

Cost Estimate:	Fire Ignitions Layer	$ 6,000
	Critical Facilities Layer	$12,000
	Fire Hydrant/Water Sources Layer	$50,000
	TOTAL	**$68,000**

Benefit: The development of GIS based mapped data will significantly improve the quality of the County's risk and vulnerability assessments. Mapped data will improve planning accuracy, will improve precision in operations and will improve response timeliness. It is not possible to quantify cost savings in terms of dollars. It is clear, however, that precisely mapped data will significantly improve our efficiency in future mitigation planning projects and will afford first responders and support staff with critical operational data that is essential to there response functions.

Potential Funding: TBD

Schedule: Completion by no later than the next update of the Placer County Multi-Hazard Mitigation Plan, due in 2009.

ACTION #10: DEVELOP AND FUND AN ENFORCEABLE WEED ABATEMENT ORDINANCE

Issue/Background: Similar to the defensible space issue, weed abatement is an important factor in both reducing ignitions and the potential for fire to spread. An effective, countywide ordinance would further the County's fuel management objectives and would mitigate the risk of wildfires in the County. To be effective, the weed abatement code will need to have language ensuring accountability as well as a strong enforcement component.

Responsible Office: Fire Departments in conjunction with Placer County's Public Works

Priority (H, M, L): Medium

Cost Estimate: Code Development: Existing budget and staff

Cost Benefit: Life Safety; reduce property losses

Potential Funding: TBD

Schedule: Within one year

ACTION #11: ADD AN EXIT FROM EASTBOUND INTERSTATE 80 ONTO CAPE HORN ROAD FOR USE BY EMERGENCY VEHICLES ONLY

Issue/Background: When Caltrans closed the Magra exit from Eastbound Interstate 80 a side effect was to increase the response time from Colfax to Cape Horn Road.

Emergency responders to the Cape Horn area primarily come from the CDF station in Colfax, Colfax City Fire, and the AMR station in Colfax. The main staging area for firefighting resources on the 2004 Stevens Fire, which threatened Cape Horn, was in Colfax.

With the closure of the Eastbound I-80 Magra Road exit, the minimum response time to Cape Horn from Colfax is 16 minutes via Norton Grade.

Infrastructure resources at risk in the Cape Horn area include: Interstate 80 and its link to nationwide commerce, Union Pacific Railroad, PG&E power lines, PCWA Boardman Canal, Kinder-Morgan high pressure gas transmission line, USFS Wild and Scenic River along the North Fork of the American River, tourism and recreation, and the American River Watershed and its water supply to other areas of California. A wildfire in the Cape Horn area would also threaten the City of Colfax and homes along Norton Grade Road.

The minimum response time could be reduced to <u>under 10 minutes</u> if an emergency exit at Cape Horn was available Response time is critical because:

- Structure fires attacked within 10 minutes of ignition have the greatest chance of rapid extinguishment, and thus a decrease in potential life and property loss as well as reducing the chances that a house fire will spread to the wildlands. Also, without medical intervention, certain death can occur in persons with heart attack, severe bleeding, and respiratory ailments in as little as four to six minutes.

- Similar statistics hold for rapid extinguishment of wildland fires.

- Norton Grade is a narrow road, with tight turns, and oncoming traffic. Additionally, Norton Grade can become congested with traffic if evacuations are called for.

Wildfire History:

- 1975 Sawmill fire in Cape Horn
- 1977 Another fire occurred in the same area as the Sawmill Fire

- 2001 Ponderosa Fire – came within less than ½ mile of Cape Horn
- 2004 Stevens Fire – burned 934 acres in the American River Canyon bordering Cape Horn; destroyed 2 residences and 2 outbuildings; high winds would have resulted in much higher losses

Other Alternatives: Plan for, build and staff a fire station at or near the Magra exit. This alternative, while suitable, would cost Placer County over $3,000,000 initially and another $800,000 yearly for the life of the station.

Responsible Office: California Department of Forestry and Fire Protection Nevada – Yuba – Placer Unit in conjunction with CalTrans

Priority (H, M, L): Medium

Cost Estimate: In 2004 dollars the off ramp from I-80 is estimated to cost $5M according to the Placer County 2022 Regional Transportation Plan. Many factors could impact the final cost, such as rising construction costs, any necessity of purchasing property for right-of-way, and perhaps having to realign Cape Horn Road.

Benefit: A structure fire in Cape Horn could readily set the entire area ablaze, or a wildfire from the canyon could enter the area, destroying critical infrastructure that supports the entire County as well as interrupting interstate commerce and travel, not to mention the threatening the lives and property of area residents. The faster the response time for emergency responders, the less chance there is of losing these important resources to wildfire.

It is difficult to put a precise value on the various infrastructure and other resources at risk in the Cape Horn area, but looking just at the approximately 200 homes in the area, the values at risk are $80,000,000 (using a median value of $400,000 per home). The cost of the exit is a very small percentage of the total resources at risk.

Potential Funding: Potential sources of funding are: Federal Pre-Disaster Mitigation Grants or SHOPP funds

Schedule: The exit is already included in the Placer County 2022 Regional Transportation Plan.

It would be built during or after the planned Caltrans project to add a truck lane to the Eastbound "Three Mile" (AKA "Colfax Narrows") area, which is several years in the future. There is no point in doing it sooner, because it would likely have to be redone after the truck lane project.

Engineering specifications will have to be developed (and approved by Caltrans), and funding acquired.

FLOOD MITIGATION ACTIONS

NOTE: Many of these actions are recommended jointly with the Placer County Flood Control and Water Conservation District

ACTION #12: ELEVATE REMAINING 95 HOMES IN THE DRY CREEK WATERSHED

Issue/Background: Historically, flooding in the Dry Creek watershed has been a major concern. The February 1986 flood caused widespread damage in most of the Dry Creek watershed. Nearly all bridges and culverts were overtopped, with 30 sustaining embankment damages and one crossing washing out; two bridges over Dry Creek were damaged, street cave-ins occurred at a number of locations, and over 125 homes flooded. Of the 145 homes subject to historical flooding within the Watershed, 95 structures remain non-elevated. Of these 95 remaining homes, 25-30 declined initial grant money for elevation as did the three repetitive loss structures. Placer County is not only concerned with existing flooding problems, but with future problems resulting from increased growth and development in the area. According to the 1992 Dry Creek Watershed, Flood Control Plan, substantial flood damages will occur with the 100-year flood under existing conditions. Areas with the most extensive and frequent damages include areas in the location of the 95 homes. The report indicates that some of these areas are susceptible to flooding from storms as frequent as the 10-year storm. Elevating the remaining 95 homes will reduce future flood-related losses.

Other Alternatives: No Action

Responsible Office: Placer County Flood Control and Water Conservation District, in conjunction with its member agencies including the cities of Rocklin, Loomis, and Roseville.

Priority (H, M, L): Medium

Cost Estimate: The cost to elevate is estimated at $40 per square foot. Homes need to be elevated anywhere from one to six feet. Of the 95 homes where elevating is feasible, it is estimated to cost $6 million or $50 to $60 K per home.

Benefit: Life Safety; Reduction in Property Loss.

Potential Funding: HGMP, PDM, Dry Creek Trust Fund

Schedule: Within three years

ACTION #13: PURSUE REGIONAL DETENTION AND RETENTION PROJECTS WITHIN THE DRY CREEK AND CROSS CANAL WATERSHEDS

Issue/Background: Historically, flooding in the Dry Creek and Cross Canal watersheds has been a major concern. Placer County is not only concerned with existing flooding problems, but

with future problems resulting from increased growth and development in the area. Specifically, this action recommends a plan be developed for regional retention project identification and funding within the Cross Canal watershed. Implementation of specific regional floodplain restoration sites along secret ravine in the Dry Creek Watershed is also recommended. These sites are identified within the August 2003 feasibility study prepared for the Placer County Flood Control and Water Conservation District. Implementation of regional detention and retention projects will reduce future flood-related losses.

Other Alternatives: No Action

Responsible Office: Placer County Flood Control and Water Conservation District, in conjunction with its member agencies.

Priority (H, M, L): High

Cost Estimate: $20 million +

Benefit: Life Safety; Reduction in Property Loss.

Potential Funding: HGMP, PDM, Dry Creek Trust Fund, Grant (federal, state)

Schedule: Within five years

ACTION #14: IMPLEMENTATION OF IDENTIFIED BRIDGE AND CULVERT REPLACEMENT PROJECTS. THESE PROJECTS INCLUDE:

1. **LAKE TAHOE AREA CULVERT AND CROSSING RESTORATION AND IMPROVEMENTS - $1,210,000.**
2. **WESTERN PLACER COUNTY CULVERT IMPROVEMENTS (7 LOCATIONS) - $2,140,000.**
3. **CAVITT-STALLMAN ROAD @ MINERS RAVINE BRIDGE IMPROVEMENTS - $300,000.**
4. **AUBURN/BOWMAN AREA DRAINAGE IMPROVEMENTS (26 LOCATIONS) - $1,800,000.**
5. **HORSESHOE BAR ROAD DRAINAGE IMPROVEMENTS - $370,000.**
6. **LEIBINGER LANE @ MINERS RAVINE DRAINAGE IMPROVEMENTS - $450,000.**
7. **PLACER HILLS ROAD @ MEADOW LANE DRAINAGE IMPROVEMENTS - $1,000,000.**
8. **CREEKHAVEN ROAD CULVERT IMPROVEMENTS - $890,000.**
9. **ALL CULVERTS BENEATH WESTERN PACIFIC RAILROAD AT MAJOR CROSS CANAL WATERSHED DRAINAGE CROSSINGS.**

10. **BRIDGES TO BE REPLACED INCLUDE 16 BRIDGES IDENTIFIED IN JMM 1992 DRY CREEK WATERSHED FLOOD CONTROL PLAN IN TABLE 4-2. HIGH PRIORITY: WATT AVE AT DRY CREEK; COOK RIOLO AVE AT DRY CREEK; BARTON ROAD AT MINERS RAVINE; SALERGA AVE AT DRY CREEK.**
11. **RECOMMEND PLANNING STUDY OF SPECIFIC BRIDGES AND CULVERTS TO BE REPLACED IN CROSS CANAL WATERSHED.**

Issue/Background: Historically, flooding throughout Placer County has been a major concern. Past floods have caused widespread damage to infrastructure located in these flood-prone areas. Various restoration, drainage, and culvert improvement projects have been identified to minimize future impacts associated with specific areas of concern.

Other Alternatives: No Action

Responsible Office: Placer County Department of Public Works in conjunction with Placer County Flood Control and Water Conservation District and its member agencies

Priority (H, M, L): High

Cost Estimate: See above

Benefit: Life Safety; Reduction in Property Loss.

Potential Funding: HGMP, PDM,

Schedule: Within one year

ACTION #15: ELEVATE HIGHWAY 89, LAKE TAHOE AREA, IN TWO PLACES

Issue/Background: Highway 89 in the Lake Tahoe area became an issue during the January 1997 Floods. The 1997 flooding, which may have been greater than a 100-year flood event, may have been compounded by undersized and blocked culverts. According to the HMPC, two publicly-owned areas along Highway 89 continue to experience flooding problems during large storms. During the 1997 storm, Highway 89 was underwater in the Truckee River south of Alpine Meadows Road. During periods of flooding, access to residents and emergency vehicles is cut off or severely limited.

Other Alternatives: Culvert replacement; Improved maintenance

Responsible Office: Caltrans

Priority (H, M, L): Low

Cost Estimate: High

Benefit: Life Safety; Reduction in property loss. This also is an emergency management issue as the road becomes impassable due to flooding issues.

Potential Funding: HGMP, PDM

Schedule: Within five years

ACTION #16: UPGRADE OF FLOOD WARNING SYSTEM TO INCLUDE ADDITIONAL GAGE LOCATIONS AND FLOOD FORECASTING CAPABILITIES

Issue/Background: The Placer County Flood Control District, in conjunction with OES, has installed an Alert flood warning system in the County. The existing system, including alert gages owned and operated by the City of Roseville and Sacramento County, consists of approximately 28 rain gages and 22 stream gages. Additionally, the district monitors several rain and stream gages in the Truckee River Watershed. These alert gages provide the district with real-time rainfall amounts and stream level data. An upgraded system to include real time flood-warning gages and flood forecasting capabilities for flood-prone areas would increase the warning time for implementation of effective mitigation measures and necessary evacuations.

Other Alternatives: No Action

Responsible Office: Placer County Flood Control District and Placer County Office of Emergency Services

Priority (H, M, L): Medium

Cost Estimate: **$**100,000

Benefit: Life-safety, Reduction in property loss, Improved warning, increased lead time.

Potential Funding: PDM, HGMP, Flood Control District Reserves

Schedule: Within two years

ACTION #17: UPDATE HYDROLOGY AND HYDRAULIC MODELS WITHIN THE CRITICAL DRY CREEK AND CROSS CANAL WATERSHEDS

Issue/Background: Base hydrology models for both the Dry Creek and Cross Canal watersheds are outdated having been performed in 1992 and 1993 respectively. Rapid urbanization within these watersheds has occurred and is projected to continue with significant impacts to creeks

within the watershed due to increasing amounts of impervious surfaces and altered land uses. Updated hydrology and hydraulic models, including base topography for over 90 miles of creeks are proposed for both flood control and land-use planning purposes.

Other Alternatives: Continue to review urbanization projects with outdated models.

Responsible Office: Placer County Flood Control and Water Conservation and its member agencies

Priority (H, M, L): High

Cost Estimate: $800,000

Benefit: Improved flood control and land use planning capabilities throughout southwestern Placer County

Potential Funding: PDM, Flood Control District Reserves

Schedule: Immediate and ongoing

AGRICULTURAL MITIGATION ACTIONS

ACTION #18: DEVELOP A NOXIOUS WEED ORDINANCE

Issue/Background: Noxious weeds are highly invasive with a well-known propensity to establish and disseminate rapidly. Unpalatable to livestock, these weeds will out-compete native vegetation quickly, eventually creating a monoculture that negatively impacts wild areas, rangeland, national forests, hay crops and other assets of economic and natural importance. The objective is to eradicate noxious weeds in the project area, thereby eliminating or significantly reducing further spread in California.

The ordinance would include measures to restrict the types of plants/landscaping allowed in the County and restrict the types of plants that Nurseries are allowed to sell.

Responsible Office: Placer County Agricultural Commission

Priority (H, M, L): Medium

Cost Estimate: Existing budget and staff
Enforcement??

Benefit: Unpalatable to livestock, these weeds will out-compete native vegetation quickly, eventually creating a monoculture that negatively impacts wild areas, rangeland, national forests, hay crops and other assets of economic and natural importance. A comprehensive eradication program will benefit counties and national forests in California.

Potential Funding: PDM, HMGP

Schedule: Within two years

ACTION #19: CONTINUE AND MAINTAIN NOXIOUS WEED ERADICATION PROGRAM

Issue/Background: Occurrences of noxious weeds along highway shoulders and private lands within the project area were detected and treated in Placer County from 2001 thru 2003. The survey and eradication project targeted Spotted Knapweed, Perennial Peppercress, and Yellow Starthistle. After three seasons of survey and eradication work, the populations along key roads leading to Lake Tahoe have been significantly reduced, and eradication is still deemed possible. A comprehensive eradication project will require the continuation of a thorough program including delimitation, monitoring, treatments, and prevention components.

In general, eradication of noxious weeds in some areas is obtainable, however, it can often become a protracted effort. Therefore, a rapid response is necessary to achieve the eradication objective. In California, history shows us the degree of eradication is proportional to the degree of "Emergency Status" given to the project. Currently this project has funding through 2005. It is recommended this project continued to be supported as an emergency project through 200?????

Responsible Office: Placer County Agricultural Commission

Priority (H, M, L): High

Cost Estimate: $85,000/year

Benefit: Unpalatable to livestock, these weeds will out-compete native vegetation quickly, eventually creating a monoculture that negatively impacts wild areas, rangeland, national forests, hay crops and other assets of economic and natural importance. A comprehensive eradication program will benefit counties and national forests in California. In the bigger picture, long-term success in California will depend on it.

Potential Funding: PDM, HMGP

Schedule: Within one year

All other hazards identified in the Risk Assessment have no specific mitigation projects related to them. The preferred alternative, due to low risk and/or low vulnerability, is no action. However, each of these hazards, in addition to all others identified, are recommended to be included as part of an annual, seasonal, Public Awareness Program.

ACTION #20: RESEARCH, DEVELOP AND CONDUCT A MULTI-HAZARD, SEASONAL PUBLIC AWARENESS/EDUCATION PROGRAM THAT PROVIDES CITIZENS AND BUSINESSES WITH ACCURATE INFORMATION DESCRIBING THE RISK AND VULNERABILITY TO NATURAL HAZARDS AS WELL AS MEASURES FOR MITIGATING THE EFFECTS OF IDENTIFIED RISKS. THE POTENTIAL AREAS TO BE HIGHLIGHTED, POSSIBLY IN INDIVIDUAL CAMPAIGNS, INCLUDE:

- **WILDLAND FIRES, IGNITIONS, AND DEFENSIBLE SPACE**
- **FLOOD HAZARDS AND THE NEED FOR FLOOD INSURANCE**
- **WEST NILE VIRUS EDUCATION/HORSE VACCINATION CAMPAIGN**
- **"DON'T BRING THAT TO PLACER COUNTY CAMPAIGN"(EXOTIC PESTS AND NOXIOUS WEEDS)**
- **WINTER STORM TIPS INCLUDING DRIVING, EMERGENCY PREPAREDNESS KITS, AVALANCHE SAFETY**
- **DROUGHT AND WATER CONSERVATION INFORMATION**

Issue/Background: Placer County is subject to several natural hazards, each which poses a different degree of risk and associated vulnerability. Some hazards have a combination of attributes, including a high likelihood of occurrence, a specific location that would likely be impacted, and proven approaches that can reduce the impact, such that the HMPC has recommended specific actions be taken. For other hazards, where either the likelihood of occurrence is very low, or the area of likely impact is not specifically known, or there is very little that can be done to reduce the impacts, that the HMPC has determined that the best approach would simply be public awareness. People should know what the HMPC knows: information describing historical events and losses, the likelihood of future occurrences, the range of possible impacts, appropriate actions they can take to save lives and minimize property damage, and where additional information can be found. Any information provided through this effort should be accurate, specific, timely, and consistent with current and accepted local emergency management procedures as promoted by the California State Office of Emergency Services, the CRS Public Outreach (Activity 330) and the American Red Cross. This public outreach effort should include the following elements:

- Utilize a variety of information outlets including local news media, creating and printing of brochures and leaflets, water bill inserts, websites, and public service announcements. Current brochures and flyers should be put on display in County office buildings, libraries, and other public places. Link to billing e-payments.

- Develop public-private partnerships and incentives to support public education activities, including displaying hazard models at schools, OES, NWS, Home Depot, Lowes, Homebuilder shows, Realtor organizations, etc.

- Investigate teaming opportunities with the Placer County Realtor Associations in preparing the public information program strategy. This would determine the feasibility of developing a real estate agents' brochure or a process whereby real estate agents disclose hazard information to potential property purchasers, for example through the MLS listing services

Continue all public information activities currently implemented. Review effectiveness and revise accordingly

Responsible Office: Placer County Office of Emergency Services; Public Information; Chamber of Commerce

Priority (H, M, L): Medium

Cost Estimate: $5-20,000, depending upon printing and mailing costs, level of volunteer participation, and scope and frequency of events.

Benefit: Life safety, Reduction in property loss, Relatively low cost, Multi-hazard public outreach program is efficient, relies upon work already accomplished by HMPC and others.

Potential Funding: HMGP, PDM

Schedule: Part of a seasonal multi-hazard public awareness campaign.

FORESTHILL FIRE DEPARTMENT RECOMMENDED MITIGATION ACTIONS

ACTION #1: FORESTHILL BIOMASS PROJECT

Issue/Background: The mission of the Foresthill Fire Safe Council is to protect natural resources, human life and property improvements by mobilizing all citizens to help them make their homes, neighborhoods and the community fire safe. The reduction of excess vegetation a.k.a. fuels in the area is one of our focus statements. Clearing the forests of fuels makes them more healthy and sustainable and fire resistant. Recycling those fuels and turning them into energy makes it cheaper or even profitable to remove these fuels. It also offers an alternative energy source to reduce dependence on fossil fuels and foreign oil. It would stimulate the economy of the local area with jobs to clear and haul fuels, run a plant and market woody by-products such as soil amendments, particle board, wood chips and many others.

Other Alternatives: No action leaves our forests severely over grown with brush and a fire hazard to the whole community. Continued mastication of fuels, which is very expensive and does not remove the fuels from the forest.

Responsible Office: Foresthill/Iowa hill Fire Safe Council: Chairman Luana R. Dowling

Priority (H, M, L): High

Cost Estimate: Costs will vary depending on the size of the Biomass Plant. A beginning estimate is $300,000 for a small plant to power a building the size of the High School. The cost to put a plant on the ground, collect, haul and convert the fuels to energy and/or products – and how much money can be made via selling energy to the grid and selling wood by-products is still to be determined.

Cost Benefit: By combining fuels recycling with fuels removal, it becomes economically advantageous to remove fuels, whereas the current method of chipping the fuels and leaving them on the forest floor is very expensive, and less effective because fuels are not removed, merely rearranged, and no use is made of the woody remains after fuels treatment.

Potential Funding: Grants, loans and subsidies available for such projects.

Schedule: 1-3 years

ACTION #2: TODD VALLEY EVACUATION PLAN--FORESTHILL FIRE PROTECTION DISTRICT (FFPD) AND COOPERATIVE AGENCIES.

Issue/Background: Saving lives and property along with rapid containment of wildfires and structure fires are a high priority for the FFPD. The Todd Valley Subdivision is a neighborhood of about 1,100 homes located southeast of Foresthill, CA in rural Placer County. Encompassing some 1,500 acres, and 45 miles of roadways, with only two main exits to Foresthill Rd. The southern boundary of the 25 year old subdivision directly intersects the steep cliffs of the Middle Fork of the American River. Lot sizes are all one acre or more. To the 3,000 people who live there, Todd Valley appears to be an isolated enclave, sheltered by towering oaks and pine trees. Many homes are shielded from neighbor's views by a quarter-century accumulation of dense brush and an impenetrable vegetation understory. The calculations for fire travel from the Middle Fork American River to this subdivision in the middle of summer on the right day is 15 minutes. Having a Cooperative Agencies Evacuation Plan to save the lives of 3,000 people is critical. Having an evacuation plan in place will enable the County Teleminder system to be used effectively.

Other Alternatives: The alternative is to continue to rely on the residents of Todd Valley to evacuate in an orderly manner as flames are climbing the canyon walls.

Responsible Office: Fire Chief Snyder, Foresthill Fire Protection District

Priority (H, M, L): High

Cost Estimate: The cost to evaluate the evacuation route, map and develop information for the plan is estimated at $5,000.

Cost Benefit: Benefit to the 3,000 residents of Todd Valley is their lives as well as their homes. At the current County median value per home of over $400,000 per home, the 1,100 homes in Todd Valley are valued at $440,000,000. Having orderly evacuations will not only save lives, but also assist firefighters in gaining timely access to protect homes.

Potential Funding: Grants, loans and subsidies available for such projects

Schedule: Complete the plan by the beginning of Fire Season 2005

ACTION #3: ASSESS AND ENHANCE FORESTHILL FIRE PROTECTION DISTRICT (FFPD) NEW SUBDIVISION, HAZARD FUELS CLEARING AND MAINTENANCE ORDINANCE. PUT PROGRAMS IN PLACE WITH HOMEOWNERS ASSOCIATIONS IN CC&R'S AND MAINTENANCE CONTRACTS.

Issue/Background: Rapid containment of wildfires and structure fires are a high priority for the FFPD. This project would evaluate appropriate requirements for hazard fuel clearing and maintenance and propose an ordinance for adoption by the Foresthill Fire Protection District Board of Directors. This ordinance will be based on the State Standard on Hazard Fuels Reduction for Suburban and Rural areas and/or on the Urban-Wildland Interface Code.

Other Alternatives: The alternative is to continue to rely solely upon the land developer and subsequent absentee property owners, to provide hazard fuels reduction and maintenance. This has been attempted with other Subdivisions in the Foresthill area, and the results are not acceptable.

Responsible Office: Fire Chief Kurt Snyder, Foresthill Fire Protection District

Priority (H, M, L): High

Cost Estimate: The cost to evaluate requirements and prepare the ordinance would come out of normal operating expenses. The cost to the developers of the Subdivisions approximately $1,200 per acre initially. Maintenance would be minimal if kept up on a yearly basis. If added to Homeowners Association CC&Rs it would be easier to implement.

Cost Benefit: Homes in the FFPD area are presently valued at a median price of over $400,000 with many homes selling for a far higher cost. The $1,200 per acre cost to the developer for hazard fuels reduction represents one-half of one percent of the value of the median home price. Hazard Fuels Reduction and Maintenance is an inexpensive way to improve fire suppression capabilities for a home. It also increases the fire safety of the surrounding homes and wildlands because the faster a structure or wildland fire is contained, the less likelihood there is that it will spread.

Potential Funding: Grants, loans and subsidies available for such projects.

Schedule: Complete assessment and ordinance proposal by the end of calendar year 2005

ACTION #4: TODD VALLEY SHADED FUEL BREAK

Issue/Background: Saving lives and property along with rapid containment of wildfires and structure fires are a high priority for the Foresthill Fire Protection District (FFPD) and Foresthill Fire Safe Council (FFSC). The Todd Valley Subdivision is a neighborhood of about 1,100 homes located southeast of Foresthill, CA in rural Placer County. Encompassing some 1,500 acres, and 45 miles of roadways, with only two main exits to Foresthill Rd. The southern boundary of the 25-year-old subdivision directly intersects the steep cliffs of the Middle Fork of the American River. Lot sizes are all one acre or more. To the 3,000 people who live there, Todd Valley appears to be an isolated enclave, sheltered by towering oaks and pine trees. Many homes are shielded from neighbor's views by a quarter-century accumulation of dense brush and impenetrable vegetation under story. The calculations for fire travel from the Middle Fork American River to this subdivision in the middle of summer on the right day is 15 minutes.

A Shaded Fuel Break at the top of the ridge of the Middle Fork American River Canyon would give firefighters a place to make a stand and allow an area for the fire to slow and drop to the ground where it can be managed. This would also give Sheriffs and Firefighters a better chance to evacuate the area.

Other Alternatives: If you look at the fire history on the Foresthill Divide its not a question of IF but WHEN will we have a devastating wildfire. To do nothing in the Todd Valley area would leave the residents open to a devastating firestorm. The Placer County Chipper Program has been used very successfully in this area, but is still far from making a significant continuous connected Shaded Fuel Break. Continuous public education is also an alternative.

Responsible Office: Luana R. Dowling: FFSC Chairman

Priority (H, M, L): High

Cost Estimate: Approximately $1,200 per acre. 50/50 match with property owners and a Federal Grant. The Property in the canyon is State Recreation area owned by Bureau of Reclamation (BOR). This recreation area has been the area of several fire starts in the past. It's only a matter of time.

Cost Benefit: Benefit to the 3,000 residents of Todd Valley is their lives as well as their homes. At the current County median value per home of over $400,000 per home, the 1,100 homes in Todd Valley are valued at $440,000,000. Having a strategically planned shaded fuel break will not only save lives, but also assist firefighters in gaining timely access to protect homes.

Potential Funding: Grants, loans and subsidies available for such projects.

Schedule: Completed by the end of 2008

NORTH TAHOE FIRE PROTECTION DISTRICT RECOMMENDED MITIGATION ACTIONS

ACTION #1: COMPLETION OF FUELS MANAGEMENT PROJECTS ON VARIOUS PARCELS IN THE NORTH TAHOE FIRE PROTECTION DISTRICT, AS OUTLINED IN THE NORTH TAHOE COMMUNITY FIRE PROTECTION PLAN.

Issue/Background: Wildland fire is a major hazard in the North Tahoe Fire Protection District. Heavy wildfire fuels abut or extend into many North Tahoe communities. Human ignitions are plentiful across the District. The Lake Tahoe Basin Watershed Assessment included a detailed study of wildfire susceptibility and noted that many communities in North Tahoe are at high susceptibility to wildfire.

Other Alternatives: No action continues to leave the communities at risk to wildfire.

Responsible Office: A number of entities own land on which fuels reduction should occur. The North Tahoe Fire Protection District provides assistance to entities where time and funding allows.

The Tahoe Basin Fire Safe Council has assumed the coordination role of assisting private landowners and local jurisdictions with fuels reduction projects. The Council seeks to secure funding for projects and directly administers some fuels reduction projects.

Priority (H, M, L): High

Cost Estimate: The total cost for implementing all proposed fuels reduction projects is $12,932,570.

Cost Benefit: If a single community was to burn, losing 20 homes, in the North Tahoe Fire Protection District, the combined suppression costs and home replacement costs would be well in excess of $13 million. There are approximately 15 communities within the district.

Potential Funding: Funding may be available through the Healthy Forest Act or the National Fire Plan. The Lake Tahoe Basin has received direct congressional budget set-asides in the past.

Schedule: Each fuels reduction projects would take one to two years to complete. The entire area could be treated within 10 years. Time would vary depending on the treatment method, environmental compliance necessary, and staff availability to manage the project.

PLACER COUNTY FIRE CHIEF'S ASSOCIATION RECOMMENDED MITIGATION ACTIONS

ACTION #1: COOPERATIVE FIRE SERVICE RESPONSE AGREEMENT FOR THE WESTERN SIDE OF ALL PLACER COUNTY FIRE AGENCIES.

Issue/Background: The Placer County Fire Chief's Association is developing Cooperative Fire Service Response Agreement that will implement auto-aid based on the closest available resources for fire and medical emergencies within western Placer County. This agreement will include a comprehensive operating plan on how this will be implemented.

Other Alternatives: No Action

Responsible Office: Placer County Fire Chiefs Association, executive board.

Priority (H, M, L): High

Cost Estimate: All costs to date are borne through each participating agency.

Cost Benefit: Enhancement of the delivery of emergency services without significant cost increase to citizens, which ensures that the closest available resource(s) responds to an emergency, thus reducing response time and improving coverage. This agreement also helps to offset potential delays due to multiple fire dispatch centers in the County.

Without medical intervention, certain death can occur in persons with heart attack, severe bleeding, and respiratory ailments in as little as four to six minutes. Structure fires attacked within 10 minutes of ignition have the greatest chance of rapid extinguishment, and thus a decrease in potential life and property loss as well as reducing the chances that a house fire will spread to the wildlands or vice-versa.

It is impossible to quantify the resources protected by this agreement as they are essentially all of the resident and traveling population, all homes and businesses, and all wildlands.

Potential Funding: Unknown

Schedule: The agreement is in the process of being finalized with a target for completion of January 2005. Additional plans will be developed as needed to fully execute the agreement.

ACTION #2: ANNUAL MULTI-AGENCY WILDLAND FIRE DRILL.

Issue/Background: The Placer County Fire Chiefs Association and Training Officers Association have developed an annual training exercise that provides training and education at all levels. This is a one-day event that simulates a large wildland incident requiring a sizeable number of resources. Average participation in such an exercise has been around 135 personnel

from all different agencies. Some include: the planning and development stages of the exercise utilize the "team" concept of various Incident Command System (ICS) positions that individuals may complete required training for; engine company personnel conduct "hands on" performance based training to enhance wildland fire skills; overhead ICS positions interface with political dignitaries of jurisdictions as to what occurs and the needs during such an event.

Other Alternatives: Not having these annual drills means that when a large incident occurs, the response to and management of the incident may be less than ideal.

Responsible Office: Placer County Fire Chiefs Association and Training Officers Association

Priority (H, M, L): High

Cost Estimate: The cost for such an exercise has been running about $3000.00 annually.

Cost Benefit: Excellent realistic training for all personnel at all levels, and the cooperative effort and training among various fire agencies and local government on a regional basis, leads to a more effective response to real incidents without a significant cost factor. The value of this drill was illustrated on the 2004 Stevens Fire near Colfax where over a thousand personnel and several hundred engines from multiple fire agencies worked together in partnership.

Potential Funding: The first year was funded by the Auburn Fire Department. A grant from the Bureau of Land Management was utilized for the 2004 event and a request has been made to fund the 2005 event.

Schedule: Successfully conducted in 2003 and 2004, the objective is to do this annually, assuming funding is available.

ACTION #3: ACQUISITION AND IMPLEMENTATION OF AN ADDITIONAL COMMAND FREQUENCY FOR FIRE DISPATCH ON THE WESTERN SLOPE.

Issue/Background: Except for the cities of Roseville, Lincoln, and Rocklin, Placer County fire agencies are dispatched either by the County PSAP (the fire districts), or by the CDF dispatch center in Grass Valley. Valuable time can be lost when an incident requires responses from resources controlled by both dispatch centers. Also, the current dispatch frequency can be overwhelmed when there are multiple simultaneous incidents in progress because of the number of resources needing to make communication with the dispatch center. The new command frequency will be dedicated to use by all responding resources and both dispatch centers as an additional frequency during emergency incidents. This in turn will free-up valuable and critical dispatch time on primary frequencies for additional incidents.

Other Alternatives: No action would potentially result in crucial radio traffic not being able to get through due to the overloading of the current command channel.

Responsible Office: Placer County Fire Chiefs Association

Priority (H, M, L): High

Cost Estimate: The frequency has been acquired. Some cost for testing is pending.

Cost Benefit: Life safety; protection of property

Potential Funding: The pending cost for testing will come from the operational budgets of the County PSAP, CDF, and participating fire agencies.

Schedule: While the frequency has been acquired, implementation was postponed until after the 2004 fire season. The project is targeted for completion by no later than Spring 2005.

PLACER COUNTY OFFICE OF EDUCATION RECOMMENDED MITIGATION ACTIONS

ACTION #1: PURCHASE NOAA WEATHER RADIOS FOR ALL DISTRICT SITES.

Issue/Background: Real-time monitoring of weather events by school district administration would provide an opportunity to assess the potential danger/hazards to local school sites and to react appropriately. Evacuating hundreds of students from a site involves massive transportation planning. Early warning through the NOAA radios would give school districts a slight jump on evaluating any imminent danger and would allow for a more organized plan of action if the situation warrants.

Other Alternatives: Standard AM/FM radiobroadcasts and/or television broadcasts

Responsible Office: Individual district Superintendents or their appointed representative

Priority (H, M, L): High

Cost Estimate: Twenty districts; two per district @ $45.00 each for a total of $1,800 plus $200 for batteries

Cost Benefit: Potential savings in property damage and/or loss of life due to early warning and response to an event

Potential Funding: General Fund or as otherwise identified

Schedule: Fiscal Year 05-06, subject to funding availability

ACTION #2: INSTALL E-POP ALERT NOTIFICATION AT ALL PLACER COUNTY OFFICE OF EDUCATION SITES AND ALL SCHOOL/DISTRICT SITES.

Issue/Background: E-POP allows for authorized users to send an alert message in the event of an emergency that would override computer programs currently in use. This provides an additional method of notifying staff of an emergency.

Other Alternatives: Phone trees, loud speakers, intercoms, etc.

Responsible Office: Each site administrator

Priority (H, M, L): Medium

Cost Estimate: The fee for 150 users is $7.50 each. Software maintenance is 22 percent

Cost Benefit: Provides an additional method of notifying staff in the event of an emergency. Inexpensive way to reach a large group of people.

Potential Funding: None identified

Schedule: 2005

ACTION #3: IMPROVE COMMUNITY EMERGENCY MANAGEMENT CAPABILITY: COMMUNICATION SYSTEMS FOR INCIDENT COMMAND TEAM; CRISIS RESPONSE BOXES AND MATERIALS; PORTABLE COMMAND CENTER.

Issue/Background: The Placer County Office of Education staff has been coordinating statewide crisis response planning and implementation for districts through the California Department of Education. These efforts would be directed to all Placer County agencies and businesses.

Other Alternatives: No Action

Responsible Office: The Placer County Office of Education, Prevention Services Department

Priority (H, M, L): High

Cost Estimate: $50/response box, including contents

Cost Benefit: A well-prepared and implemented crisis response plan that was similar in management (ICS), policies and procedures would mitigate the loss of life and property.

Potential Funding: None identified

Schedule: 2005

PLACER COUNTY WATER AGENCY RECOMMENDED MITIGATION ACTIONS

ACTION #1: MAINTAIN AND ENHANCE CANAL SYSTEMS BY CONVERTING EARTHEN CANALS TO GUNITE-LINED CANALS IN CRITICAL AREAS.

Issue/Background: Wildfires present significant hazards to Placer County. CDF and most rural Fire Departments depend on canal systems operated by either public or private entities to be a source of water for firefighting.

Other Alternatives: No action

Responsible Office: Placer County Water Agency, PG&E, and other canal operators

Priority (H, M, L): High

Cost Estimate: $500,000 to $600,000 per year

Cost Benefit: Improves reliability of canal systems for Life Safety, reduction in property loss and public water supply.

Potential Funding: HGMP, PDM, FEMA, PG&E, PCWA, others

Schedule: Immediate and ongoing

ACTION #2: REPLACE WOODEN FLUME STRUCTURES WITH STEEL STRUCTURES.

Issue/Background: Historically flumes allow a gravity flow canal system to cross canyons; valleys and other low spots without going into them so that pumping stations are not necessary. The support structures for flumes are made of wood and therefore vulnerable to fires.

Other Alternatives: No action; substitute concrete materials for structural steel.

Responsible Office: Placer County Water Agency

Priority (H, M, L): High

Cost Estimate: Estimate from $50,000 to $150,000 per flume.

Cost Benefit: By replacing wood with steel, the flume supports would not be vulnerable to fires, allowing water to be available to support life safety and for property protection and water consumption.

Potential Funding: HGMP, PDM, FEMA, PCWA.

Schedule: Ongoing

ACTION #3: DE-SILT RESERVOIRS.

Issue/Background: Reservoirs are untreated water storage areas and are used to regulate the flow of water in canals for treated water production, agriculture use and as a water source in fire suppression.

Other Alternatives: No action

Responsible Office: Placer County Water Agency and private property owners.

Priority (H, M, L): Medium

Cost Estimate: Estimate from $200,000 to $ 4.6 million depending on size and amount of silt in reservoir.

Cost Benefit: Silt and other debris is continually accumulating into canals and deposited into reservoirs. As silt levels increases over the years, it decreases storage capacity in the reservoir. Periodic de-silting improves the life safety and operational value of the reservoirs.

Potential Funding: HGMP, PDM, PCWA.

Schedule: Ongoing

PLACER HILLS FIRE PROTECTION RECOMMENDED MITIGATION ACTIONS

ACTION #1: ASSESS AND ENHANCE PLACER HILLS FIRE PROTECTION DISTRICT (PHFPD) ONSITE WATER REQUIREMENTS FOR MINOR LOT SPLITS.

Issue/Background: Rapid containment of wildfires and structure fires are a high priority for the PHFPD. At present, minor lot splits (four or fewer parcels), do not have sufficient requirements for onsite storage of water for fire fighting. This project would evaluate appropriate requirements and propose an ordinance for adoption by the Placer Hills Fire Protection District Board of Directors. This ordinance will be based on the *NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting* and/or on the *Urban-Wildland Interface Code 200*0.

Other Alternatives: The alternative is to continue to rely solely upon the availability of the PHFPD water tender, and mutual aid water tenders from other local government entities.

Responsible Office: Fire Chief Ian Gow, Placer Hills Fire Protection District

Priority (H, M, L): High

Cost Estimate: The cost to evaluate requirements and prepare the ordinance would come out of normal operating expenses. The cost to the developers of a minor lot splits would be approximately $2,000 per storage tank. In some cases, multiple homes could share a tank.

Cost Benefit: Homes in the PHFPD area are presently valued at a median price of over $400,000 with many homes selling for a far higher cost. The $2,000 cost to the developer for onsite water storage represents one-half of one percent of the value of the median home price. On-site water storage is an inexpensive way to improve fire suppression capabilities for a home. It also increases the fire safety of the surrounding homes and wildlands because the faster a structure fire is contained, the less likelihood there is that it will spread. The water would also be used to protect homes from encroaching wildfire.

Potential Funding: Unknown

Schedule: Complete assessment and ordinance proposal by the end of calendar year 2005.

ACTION #2: ANNUAL DEFENSIBLE SPACE INSPECTIONS PROGRAM FOR THE PLACER HILLS FIRE PROTECTION DISTRICT (PHFPD)

Issue/Background: Defensible space around structures is the most important factor in the ability of a home or other building to survive an encroaching wildfire. Regular inspections,

based on the requirements of California Law as specified in Public Resources Code 4291, can help ensure that homeowners create and maintain adequate defensible space. The inspection process is also an opportunity to educate and motivate the homeowners to take action to improve their wildfire safety.

Other Alternatives: One alternative is to continue to rely on CDF to fund and perform these inspections. However, unless outside grant funding is acquired, CDF does not have the budget to carry out this function. And for the times that CDF does have grant funding, having a program in the PHFPD will mean that those scarce funds can be used for other areas of the county which do not have their own programs.

Another alternative is using unpaid volunteers to do the inspections. However, in order to complete the inspections in a timely manner that allows residents adequate time to comply with defensible space requirements prior to the start of fire season each year would either need a large cadre of inspectors and place an onus, and cost, on the fire district to manage them, or necessitate a huge individual time commitment that is inappropriate to expect from volunteers.

Responsible Office: Fire Chief Ian Gow, Placer Hills Fire Protection District

Priority (H, M, L): High

Cost Estimate: $10,000 per year will fund 750 home inspections. There are approximately 3,600 homes in the fire district. Inspections would cycle through the fire district, so that every home would be inspected approximately every five years.

Cost Benefit: The homes in the PHFPD have a median value of over $400,000, and many homes have a much higher valuation. Therefore each group of 750 inspections would protect $300,000,000 in values at risk for a cost of $10,000, or 0.003 percent of the resource value protected.

Potential Funding: Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County; Grant funding from various programs under the National Fire Plan

Schedule: Annually in the spring, starting in the spring of 2005.

SIERRA JOINT COMMUNITY COLLEGE DISTRICT RECOMMENDED MITIGATION ACTIONS

ACTION #1: SIERRA COLLEGE -- FIRE PREVENTION IN 100+ ACRES NATURE AREA

Issue/Background: In September, 2002, a wild fire in Loomis and Granite Bay, two communities adjacent to Sierra College in the City of Rocklin, threatened two schools, a fire station and many homes. It destroyed six structures including three homes. One hundred homes were evacuated (Source: FEMA region IX). If the wind had changed direction towards Sierra College, the fire would have surely burned the 100+ acres wooded area behind the college and endangered 57 structures.

As far as we know, there has been no concerned effort in the last sixty years to manage the fire hazard of the wooded areas. Fuel management is nonexistent. Overgrown underbrush and fallen trees are commonplace in the area. The objective of the project is to: (1) Establish an on-going program for fire prevention, (2) Reduce and manage fuel, (3) Create defensible space, and (4) Create fire breaks.

Other Alternatives: (1) No Action: This option is not viable because the fire hazard continues to exist. The nature area in question is literally within yards to college buildings where students and employees actively conduct business on a daily basis. Fire and smoke (poison oaks) could easily overrun the 20,000+ population within shouting distance.

Responsible Office: Sierra College Risk Management Office (916-781-7185), City of Rocklin Fire Department.

Priority (H, M, L): High

Cost Estimate: TBD

Cost Benefit: Life safety; over 20,000 students and employees are going to school and working in this location. In addition, reduction in property loss; based on March 2004 AAA report to Sierra College insurer, ASCIP, the total (building and content) appraised value of the Sierra College properties at this location is $111,606,713. The buildings have 534,971 square feet.

Potential Funding: Unknown at the time of preparing this project proposal but most likely will come from Sierra College general fund and sunk personnel costs.

Schedule: Immediate within fiscal year 2004-2005 and ongoing.

ACTION #2: SIERRA COLLEGE -- IMPROVED EMERGENCY RESPONSE CAPABILITIES THROUGH AN UP-TO-DATE CRISIS RESPONSE PLAN AND MULTI-JURISDICTIONAL TRAINING DRILLS

Issue/Background: Sierra Community College District emergency procedure is designed to provide for rapid emergency response at District facilities by using the same Standardized Emergency Management System (SEMS) legally recognized and used by local, state and federal governments.

The District has established a Crisis Response Plan to help facilitate effective coordination of aid requests, resources and the flow of information among all agencies and jurisdictions within the region. The Crisis Response Plan is designed for use during the planning, response and recovery phases of an emergency or disaster that affects the District's operations, facilities, personnel, students, contractors, vendors or visitors. It has been prepared in compliance with State Disaster Planning requirements, City and County Emergency Management Plans, and SEMS, which incorporates the use of Incident Command System (ICS), the Master Mutual Aid Agreement, existing mutual aid systems, the Placer County operational area concept, and multi-agency coordination.

The objectives of the Crisis Response Plan are:

A. To provide for effective action in the case of disaster so as to minimize injuries and loss of life among students, staff and the public.

B. To provide for the maximum utilization of staff and facilities in emergency situations.

C. To provide for the well being of students, staff, visitors and children in child care programs.

D. To protect school property.

E. This plan is a living document, subject to twice yearly revisions and goes through periodic, planned, preferably multi-jurisdictional training exercises to ensure accuracy, currency and relevancy.

2004-2005 activities include:

- Implement photo ID system for all employees
- Visit Placer County OES
- Complete voice and data communications connection to Child Care facility
- Participate in MCI (Multi-Casualty Incident) drills
- Update emergency contact information
- Create consistent "Alpha direction" instructions
- Exercise Incident Command System (ICS) at Roseville Gateway campus
- Perform annual check on building kits

- Create MSDS on CD
- Train second and third tier on the Incident Command (IC) Team
- Train employees at large

Other Alternatives: None considered.

Responsible Office: Sierra College Human Resources Department (916-781-0470) and Risk Management Office (916-781-7185). State and Placer County OES, City of Rocklin Fire Department, Police Department, County Sheriff Office, local and regional hospitals, and other public and private medical and emergency response organizations.

Priority (H, M, L): High

Cost Estimate: $30,000 for various activities above, plus sunk personnel cost.

Cost Benefit: Life safety; over 20,000 students and employees are going to school and working in this location. In addition, reduction in property loss; based on March 2004 AAA report to Sierra College insurer, ASCIP, the total (building and content) appraised value of the Sierra College properties at this location is $111,606,713. The buildings have 534,971 square feet.

Potential Funding: Unknown at the time of preparing this project proposal. We plan to work with Sierra College insurer, ASCIP (Alliance of Schools for Cooperative Insurance Programs), who has pledged grant money within limits, and California Conservation Corp (CCC) to work out the details.

Schedule: Immediate within fiscal year 2004-2005 and on-going.

SQUAW VALLEY PUBLIC SERVICE DISTRICT RECOMMENDED MITIGATION ACTIONS

ACTION #1: INCREASED STAFFING OF FIRE PERSONNEL TO PROVIDE GREATER COMMUNITY SERVICE.

Issue/Background: The Squaw Valley Public Service District Board Of Directors will vote to consider an increase in the level of protection and service to the community. The increase from three to four firefighters per shift in manpower will allow a faster response. The additional person per shift will allow greater coverage and flexibility. It would allow firefighters to enter a burning building without waiting for backup from a volunteer or another fire station (four are required to enter a burning building). This could be the difference between life and death. Additionally, if more than one fire (or medical aid call) is received the second truck could respond. This increase in staffing could be the difference between a small fire or a catastrophic wildlands fire.

Other Alternatives: No action

Responsible Office: Chief Peter Bansen

Priority (H, M, L): High

Cost Estimate: $180,000/year

Cost Benefit: This is the least expensive way to provide this increased level of reliable service. The cost to add one person per shift greatly increases fire protection and medical aid responses.

Potential Funding: TBD

Schedule: Within two years

ACTION #2: DEVELOP A COMMUNITY-WIDE EMERGENCY NOTIFICATION SYSTEM CAPABLE OF PROVIDING INFORMATION TO BOTH RESIDENTS AND VISITORS BY UTILIZING PERMANENT, ROADSIDE CHANGEABLE MESSAGE BOARDS AND A LOW-POWER RADIO TRANSMITTER.

Issue/Background: Squaw Valley has a number of potential hazards that can impact both residents and visitors. Natural hazards include an avalanche hazard area affecting a significant number of homes and a mudslide that affects a smaller number. Both residences and businesses have been affected by flooding. The Granite Chief wilderness area to the west of the Valley poses the threat of wildland fire. During periods of heavy snow, the Valley can be essentially paralyzed until side roads are plowed. Human-caused hazards include frequent periods of very

heavy traffic during winter months and occasional, but equally paralyzing traffic during the summer.

The population of Squaw Valley can increase more than ten-fold over the course of several hours on a Saturday morning. Presently, there is no way of effectively alerting residents and visitors of a hazard and the actions to be taken in response.

A community-wide emergency notification system could be implemented with relative ease and cost-efficiency in a compact area like Squaw Valley. Permanent, changeable message boards located along Squaw Valley Road at the west and east ends of the Valley could be used to alert residents and visitors of a hazard and refer them to the frequency for a low-power FM transmitter that would transmit more detailed information and recommended courses of action.

Other Alternatives:

1. No action
2. Emergency siren/air horn
3. Teleminder (already in place at the county level)

Other alternatives have been considered and/or tried at one time or another. The emergency siren/air horn was in place until the mid-1980s, but was ineffective at providing information – residents might know that there was an emergency, but not what to do; visitors were simply bewildered. The Teleminder system is in place, but notifies only residents in their homes and only the population for which a valid telephone number is available.

Responsible Office: Peter A. Bansen, Fire Chief

Priority (H, M, L): High

Cost Estimate: Approximately $70,000.

Cost Benefit: This is a highly effective way of reaching a large number of people at a very low 'per capita' cost. Once installed, the changeable message boards should be very low maintenance and will cost very little to program and operate. The low-power radio transmitter should be even less costly to install and operate. The two components are both necessary – without the radio transmitter the message boards can provide only minimal information; without the message boards, no one will know to turn their radio to the low power transmitter.

Potential Funding: Potentially funded by a grant or combination of grants.

Schedule: One year or less, depending on permitting and product availability.

CITY OF AUBURN RECOMMENDED MITIGATION ACTIONS

ACTION #1: COMPLETION OF THE PRIVATE LANDS PORTION (WITHIN THE CITY OF AUBURN) OF A MULTI-JURISDICTION SHADED FUEL BREAK ON PUBLIC/PRIVATE LANDS ALONG THE INTERFACE OF THE AMERICAN RIVER CANYON AND THE CITY OF AUBURN.

Issue/Background: The City of Auburn, with high-density residential development, is bounded on the east and south by the Auburn State Recreation Area (ARSA) in the American River Canyon. The fire hazard in the ARSA and nearby private lands is rated as Very High by CDF. The ASRA property is owned by BOR, with BLM owning adjoining portions, and is leased to California State Parks & Recreation. CDF is responsible for wildfire suppression in the ASRA and on adjoining private lands.

A shaded fuel break along the Canyon Rim has been designed as part of the multi-jurisdictional "Comprehensive Fire Management Plan for the Auburn State Recreation Area" (a.k.a. "the Canyonlands Plan"). The fuel break crosses public lands as well as private lands within the City of Auburn. The public lands portion of the fuel break is nearing completion, funded by BOR with CDF crews doing the work.

A shaded fuel break in this area will help to reduce the potential of wildfire, and to lessen the damages of any fires that do occur. It will lessen the chance of fire spreading from the private lands to the public lands and vice-versa, thus increasing community protection as well as public lands protection. The outreach included in the project will inform residents in the fuel break area about the importance of creating and maintaining defensible space, leading to behavioral changes to further improve community safety in the region.

Fuel break work on the private lands started in 2003 and is being performed using the prescription specified in the Auburn City Fire Department's "American River Canyon Shaded Fuel Break Project Implementation Program June 2002," which was developed in concert with the Canyonlands Plan. The private lands comprise approximately 120 parcels, or 80-100 total acres.

The ongoing maintenance of the private lands portion of the fuel break is covered in a separate Recommended Mitigation Action Form.

Other Alternatives: Historically, relying on private landowners to fund and perform vegetation reduction has resulted in an intense build up of vegetation, rather than a decrease. And even when some of the homeowners in the fuel break area do perform fuel reduction, they generally do not complete the work in compliance with the fuel break prescription.

Responsible Office: City of Auburn Fire, cooperatively with CDF, FP & BOR

Priority (H, M, L): High

Cost Estimate: The overall estimate for the project, not including maintenance, is approximately $320,000.

Cost Benefit: The value of the Auburn properties, according to the Assessor's Roll values, is $1.1 billion. $320,000 for the project is 0.028 percent of the values protected in the City. The value of the natural resources in the ASRA, including water quality, are impossible to estimate.

Potential Funding: In 2003, an $80,000 grant was received from Bureau of Land Management National Fire Plan funds for the City of Auburn to perform groundwork on private parcels. This is a 50/50 matching grant with the individual homeowners. Other avenues of funding will need to be identified for the completion of this project. Possible sources are another National Fire Plan grant or Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County. The Placer County Chipper Program helps to reduce costs.

Schedule: Work on the project began 2003. The target completion date for the currently funded portion is Spring of 2005. The completion of the remainder is pending the acquisition of funds.

ACTION #2: RESIDENTIAL HOME INSPECTIONS FOR COMPLIANCE OF FIRE SAFE STANDARDS; DEFENSIBLE SPACE.

Issue/Background: The City of Auburn fire department personnel identify one area of residential homes; approximately 30-40, each year and perform on site inspection with the property owner for defensible space and other means to prevent loss due to wildfire. The state of California LE-38 inspection form is used to identify needed actions. The program is based on educating citizens and on going worked performed by the homeowner to make the residence fire safe. These inspections occur in the Very High Fire Severity Hazard Zones and Wildland Urban Interface Zones within the City of Auburn.

Other Alternatives: Do not conduct interaction type programs or inspections and rely on the homeowners to take action with no prompting.

Responsible Office: City of Auburn Fire

Priority (H, M, L): High

Cost Estimate: Currently, all costs are borne through the fire department budget. At an estimated one hour per home inspection at a burdened rate of $100 per hour for an engine company to do the inspection, the cost is $ 100 per home, for a total of $4000 per year.

Cost Benefit: The project reduces potential losses from wildfire. Using an average value of a home in the City of Auburn, based on the Assessor's Roll Values, of $194,551, the value of 30-40 homes is $5.8 million to $7.5 million. The cost of $4000 for inspections represents only approximately .06 percent of the values protected.

Potential Funding: Grant funding would allow a greater number of homes to be inspected each year. Possible sources are National Fire Plan funds or Title III funds from the *Secure Rural Schools & Community Self-Determination Act of 2000* (AKA "HR 2389 Timber Tax") payments to Placer County.

Schedule: The project started in 2003 and continues annually, with different target areas each year.

ACTION #3: PUBLIC EDUCATION OF THE RESULTS OF WILDFIRE IN A COMMUNITY AND WHAT CAN BE DONE BY CITIZENS IN DEVELOPING SAFEGUARDS.

Issue/Background: The Greater Auburn Area Fire Safe Council (GAAFSC) is developing a program that will provide education to the citizens of the community about wildfire devastation and how a homeowner needs to take responsibility in creating a fire safe area around the home. The focus of this issue the GAAFSC is intending to capture is that wildfire and prevention is everyone's responsibility, not just the fire department or governmental agencies.

Other Alternatives:

Responsible Office: Greater Auburn Area Fire Safe Council with City of Auburn Fire

Priority (H, M, L): High

Cost Estimate: $2,000 annually

Cost Benefit: Educating the citizens of the community in the understanding of the importance in reducing the potential of fire damage due to wildfire and motivating them to take action will reduce the possibility of wildfire and lessen the damages of those fires that do occur. A very small investment in education can result in the protection of a large value of resources.

Potential Funding: A grant fund was obtained from Placer County in the amount of $2000 to begin this project. Additional funding will be needed if this is to be a recurring event.

Schedule: August 2004 through June 2005 for the currently funded program.

ACTION #4: MAINTENANCE OF THE PRIVATE LANDS PORTION OF THE SHADED FUEL BREAK ALONG THE RIM OF THE AMERICAN RIVER CANYON AND THE AUBURN STATE RECREATION AREA (ASRA).

Issue/Background: The completion of the private lands portion (within the City of Auburn) of a multi-jurisdiction shaded fuel break on public/private lands along the interface of the American

River Canyon and the City of Auburn, described in its own Recommended Mitigation Action Form, is only useful as long as the vegetation is continually cut back.

Other Alternatives: To let the vegetation in the fuel break area to regrow, which will eliminate the fuel break in 5-10 years.

Responsible Office: City of Auburn Fire and landowners in the fuel break area

Priority (H, M, L): High

Cost Estimate: Assuming the continued availability of the Placer County Chipper Program, the cost to the City of Auburn would be an estimated $5000 annually, and the cost to the homeowners would be approximately $500 per acre or less.

Cost Benefit: Without maintenance, the $1.1 billion in resources protected by the fuel break would again be exposed to a higher risk of wildfire damage and loss.

Potential Funding: Placer County Chipper Program and Homeowners

Schedule: The agencies which maintain the public lands portion of the fuel break anticipate performing maintenance activities about every three years. The private lands portion would follow the schedule set by these agencies.

ACTION #5: GIS BASED MAPPING OF PERTINENT INFORMATION THAT CAN BE USED BY ALL AGENCIES IN THE DEVELOPMENT OF PRE-PLANNING AND DURING EMERGENCY INCIDENTS.

Issue/Background: The City of Auburn is in the process of creating a GIS based mapping system that provides information of various infrastructure as well as systems and areas that are of benefit in pre-planning for emergencies or mitigation such emergencies. Some of these include: water system, sewer system, storm water system, Fire Hazard zones, Fire evacuation areas, Fire response areas, fire hydrant locations and flow information, Police response zones, street names and addresses, Zoning information, and property ownership.

Other Alternatives: Rely on older City maps created by hand with outdated information.

Responsible Office: City of Auburn, Public Works Department, GIS Technician

Priority (H, M, L): High

Cost Estimate: It is estimated that an additional $15,000 is needed to finish this project to a point where maintenance will be the only requirement to keep the information up to date.

Cost Benefit: It is difficult to put an exact cost benefit from such a project. Identification of critical infrastructure and use in pre-planning for emergencies would be the greatest benefit. A

GIS system is most cost effective in maintenance and updating since it will only require data entry to an already established system. Such a system could also interface with other regional agencies and provide easy access for critical information sharing.

Potential Funding: Some funding has come from the City of Auburn sewer mitigation funds and the rest has been provided from the General Fund of the City. No grant funding has been available for this project to date.

Schedule: In process. Estimated two to three years out for completion and full implementation.

ACTION #6: **IMPLEMENTATION OF STORM WATER TREATMENT PLAN**.

Issue/Background: The City of Auburn Public Works Department adopted an ordinance imposing limitations and procedures regarding storm water treatment and incidents affecting storm water run-off facilities. This was a mandated program by the Federal EPA. The plan was assembled and approved according to EPA recommendations.

Other Alternatives: Do not impose additional safety measures in such areas. Failure to comply with Federal mandate.

Responsible Office: City of Auburn, Public Works Director

Priority (H, M, L): High

Cost Estimate: Undergoing analysis of projected costs to implement all phases of the program. It is estimated that approximately $100,000.00 each year is required to fully implement the plan for successful results.

Cost Benefit: Reduction of natural and environmental hazards to waterways and areas within the City and surrounding regional waterways.

Potential Funding: Grant funding can provide a valuable source of funding for this program

Schedule: Plan completed, implementation phase in progress.

ACTION #7: **ELECTRIC STREET DIVERSION PROJECT**

Issue/Background: The City of Auburn Public Works Department is in process of developing and implementing a project to assist with the diversion of storm water run-off to alternate locations. This diversion project consists of infrastructure in place to reduce run-off to the historical section of Auburn causing potential flood related damages.

Other Alternatives: Do not conduct project. Continue damage repair when occurs.

Responsible Office: City of Auburn, Public Works Director

Priority (H, M, L): High

Cost Estimate: This project is estimated at approximately $200,000

Cost Benefit: Reduction of flood related damage to historical buildings in Auburn. It is estimated that this project can eliminate up to $500,000 worth of damage from a storm system with significant rainfall.

Potential Funding: There is no funding dedicated for this project, all funding will come from general funding and generated sources. Grant funding can provide a valuable source of funding for this program**.**

Schedule: Identification of project only at this time. Awaiting funding source.

ACTION #8: OLD TOWN AUBURN STORM DRAIN SYSTEM

Issue/Background: The storm drain system under the Historic section of Old Town Auburn is comprised of a number of tunnels and channels directing run-off water to a local waterway. Most all this system is directly under historic buildings of the town. Several sections of the system are original and dating back to as many as 100 years. Significant rainfall can cause temporary flooding and cause erosion to this older drainage system. The system itself needs to be evaluated for future repair/replacement, or other in an effort to eliminate potential flooding which can result in the loss of historical buildings.

Other Alternatives: Do not evaluate system.

Responsible Office: City of Auburn, Public Works Director

Priority (H, M, L): High

Cost Estimate: It is estimated that $30,000 to $40,000 is required to conduct a full assessment and develop a plan that would identify required mitigation measures. It would be anticipated this assessment and plan development would provide mitigation/preparation in the event of a 100-year flood event.

Cost Benefit: Reduction of flood related damage to historical buildings in Auburn. It is estimated that this project can eliminate up to $500,000 worth of damage from a storm system with significant rainfall.

Potential Funding: No funding is available for such a project.

Schedule: It is undetermined at this time the cost benefit. It would be anticipated that such an assessment would identified such benefit.

ACTION #9: IDENTIFY THE UNREINFORCED MASONRY BUILDINGS IN COMPLIANCE WITH CALIFORNIA STATE LAW AND THE UCBC.

Issue/Background: With numerous unreinforced masonry buildings within City limits, many of them historic and in highly visited parts of town, the potential public safety hazard is high.

Other Alternatives: Spend considerable staff time identifying structures, notifying property owners, developing and adopting an ordinance.

Responsible Office: City of Auburn, Building Department

Priority (H, M, L): High

Cost Estimate: It is estimated that $15,000 to $25,000 would be required to conduct a full assessment and develop a plan to identify mitigation measures.

Cost Benefit: The project reduces potential loss of life from unreinforced masonry building failure and reduction of the seismic event related damages to historic buildings in Auburn.

Potential Funding: Unknown

Schedule: Identification of project only at this time. Awaiting funding source.

CITY OF COLFAX RECOMMENDED MITIGATION ACTIONS

ACTION #1: CITY OF COLFAX—CONTINUE ANNUAL WEED ABATEMENT ORDINANCE ENFORCEMENT

Issue/Background: The City of Colfax is classified as a "Very High Fire Hazard Severity Zone" Local Responsibility Area (LRA) by CDF in compliance with the Bates Bill (California Government Code sections 51175-51188). The city is surrounded by State Responsibility Area (SRA) rated as high fire hazard. Wildfire is a constant threat to the city.
There are several vacant parcels, and some developed properties, which have excessive growth of grass and other potential ladder fuels each year. If left untreated these fuels increase the fire hazard within the city limits.

Further, one large parcel near the Interstate 80 exit is used by CDF as a staging area during fire season and this lot needs to be available for use.
Note that the City is in the process of revising its grading ordinance to further delineate what is vegetation removal and what is grading. The intent is to facilitate vegetation removal without a lengthy permit process.

Other Alternatives: Continue to rely on property owners to take action without prompting, which has not worked historically

Responsible Office: Bob Perrault, City Manager

Priority (H, M, L): High

Cost Estimate: Inspect all parcels in the City to determine which ones need treatment—$4,000. To reduce costs, some of this could be done by the Volunteer Fire Department. Reinspect—$2,000. To reduce costs, some of this could be done by the Volunteer Fire Department.

For those parcels which do not comply, the City must perform the work at $500 to $1,000 per parcel. Technically, this cost is recovered by tax liens on the property but in reality the City has to carry the cost for some time, and the likelihood of recovery is low.

Cost Benefit: Using the average value of $125,000 for a home in Colfax, based on the Assessor's Roll Values, saving just one from a vegetation fire is a small cost compared to the value protected.

Potential Funding: This process was formerly conducted by the City's Nuisance Abatement Officer, but this position is no longer staffed. Also, the former Nuisance Abatement fund has been depleted and unless other funding is acquired, the General Fund must pay for this effort.

Schedule: Annually in the Spring before fire season is declared, assuming funding is available.

ACTION #2: CITY OF COLFAX—OBTAIN FUNDING FOR A RESIDENTIAL FIRE PROTECTION PROGRAM

Issue/Background: Numerous of the homes in the City of Colfax were built long before modern residential fire protection methods were available—some as long ago as the Gold Rush era. Consequently, many do not even have such basic fire prevention aids as smoke alarms. Not only are these tools crucial to the survival of the residents in case of fire, they also provide an early warning that can reduce the response time of firefighters, thus lowering the possibility that a fire could spread to other homes.

Other Alternatives: Continue to rely on residents to take action on their own.

Responsible Office: Bob Perrault, City Manager

Priority (H, M, L): High

Cost Estimate: Evaluate the need: $100 per home for about 250 homes—$25,000. Assuming 50 percent of the homes require smoke alarms, another $25,000 would be needed for implementation.

Cost Benefit: The average Assessor Roll value for homes in Colfax is $128,500, and the value of human lives is priceless. A smoke alarm costs about $25.

Potential Funding: Funding would come from a grant, which would include funds for administration and project management.

Possible funding sources are: USFA/FEMA Assistance to Firefighters Grant Program (AFGP) Fire Prevention & Safety Grants; grants from the U.S. Department of Housing and Urban Development; donations from local businesses and community organizations

Schedule: Completion prior to the next update of this plan, due in 2009.

ACTION #3: CITY OF COLFAX—EVALUATE THE NEED AND FEASIBILITY OF IMPROVING FIRE PREVENTION FOR THE HISTORIC BUSINESS DISTRICT

Issue/Background: Much of the historic downtown of Colfax was built over a century ago. While most of the individual buildings do not qualify for classification as historic, due to past interior remodeling, etc., the aggregate of the Historic District is essential to the character and even the survival of the City. These buildings do not have interior sprinklers or even smoke alarms or emergency lighting. Some buildings share attic space, which could easily spread a fire from one business to another, as happened in historic Nevada City, CA a couple of years ago. This project will evaluate the historic downtown business buildings to see what fire prevention measures are advisable, what are feasible to accomplish, and identify sources of funding assistance.

Other Alternatives: No action.

Responsible Office: Bob Perrault, City Manager, with the partnership of the Colfax Area Chamber of Commerce

Priority (H, M, L): High

Cost Estimate: TBD

Cost Benefit: While the Assessor Roll book puts a value of $24.6 million of all 119 businesses in Colfax (which includes businesses outside of the Historic District), the buildings in the Historic Downtown are actually irreplaceable. If any of these buildings is lost to fire, the character of the Historic District would be lessened or even lost. This would negatively impact the ability of the City to survive since the Historic District is one of its major attractions for tourists and visitors and their dollars.

Potential Funding: TBD

Schedule: Complete assessment and plan, and identify sources of funding, by no later than the next update of this plan, due in 2009.

CITY OF LINCOLN RECOMMENDED MITIGATION ACTIONS

ACTION ITEM #1: FLOOD WARNING SYSTEM

Issue/Background Statement: Purchase and install necessary software, rainfall and stream gages, training and tools to monitor precipitation and creek flood flows. Transmit preset warning parameters to City EMS systems. Add additional guages.

Other Alternatives Considered (including No Action): No Action. City would continue to respond to emergencies and flood warning based on citizen notifications.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): High

Cost Estimate/Potential Source of Funding: City has programmed $30,000 for funding period from 2004 to 2009.

Cost Benefit: Early warning of flood conditions could assist in prioritizing emergency response, and prevent damage, and reduce risk of injury to citizens with flood fighting.

Schedule: Software Acquisition began in 2004. Schedule of current programming would continue through 2009.

ACTION ITEM #2: STATE ROUTE 65: AUBURN RAVINE BRIDGE - RECONSTRUCT BRIDGE

Issue/Background Statement: The present bridge structure crossing SR65 is antiquated and does not pass the 100-year storm event. In fact flooding of the roadway has occurred in storm events smaller then the 10-year. This is a major entryway to the City, and road closures at this location represent a serious risk to health, safety, and emergency services Replacement of the bridge structure will involve adding capacity and raising roadway elevations to meet current design standards.

Other Alternatives Considered (including No Action): No Action.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: Although this is a State highway project, the City's participation is estimated at $5,500,000.

Cost Benefit: The main benefit would be for the safety and welfare of the citizens of the City of Lincoln. State Route 65 south of Lincoln is one of three entry and exit points to the downtown area of the City. All three entry and exit points are projected to flood in the 100-year event, which results in isolation of the downtown areas. Auburn Ravine also bisects the historical areas of the City from the newly developing South Lincoln Master Plan area. Roadway closures at this location would prevent emergency services from being able to provide service across this waterway.

Schedule: 2006 to 2008

ACTION ITEM #3: STATE ROUTE 193: AUBURN RAVINE BRIDGE - ADDITIONAL 110' SPAN

Issue/Background Statement: The existing State Route 193 Bridge at Auburn Ravine does not meet City requirements for freeboard in the 100-year design storm event. A new bridge span of 110 feet located in the overbank areas would provide additional conveyance capacity, but roadway elevations at SR-193 would also need to be raised.

Other Alternatives Considered (including No Action): No Action

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: Of the estimated $5,500,000 for the project, $500,000 is anticipated to be budgeted in 2006; $250,000 in 2007 and $2,500,000 in 2008. Much of the roadway elevating at the existing structure was performed by a previous CalTrans project.

Cost Benefit: This project is necessary for health and safety issues relating to emergency service accessibility during a major flood event. This is also one of three major access points to the historical downtown Lincoln area.

Schedule: 2006, 2007, 2008

ACTION ITEM #4: REGIONAL VOLUMETRIC MITIGATION BASIN – PHASE 2

Issue/Background Statement: As a result of litigation the City of Lincoln is required to mitigate the increased volume of runoff created by the development of housing, commercial industrial and infrastructure due to local and regional growth. This volumetric mitigation storage facility will mitigate downstream flooding by retaining flows within Ingram Slough for later release when stream levels subside. Construction of the volumetric storage facility serves as mitigation for the South Lincoln Master Plan Developments.

Other Alternatives Considered (including No Action): Compliance is required per a settlement agreement reached between the Twelve Bridges Development, the City of Lincoln, and Sutter County.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $1,500,000: Combination of City and Development Fees

Cost Benefit: Reduces the potential for development impact at known flooding areas downstream of the City at Sutter County and the Cross Canal areas.

Schedule: Design 2004, Construct 2005

ACTION ITEM #5: REGIONAL VOLUMETRIC MITIGATION BASIN – PHASE 3

Issue/Background Statement: As a result of litigation the City of Lincoln is required to mitigate the increased volume of runoff created by the development of housing, commercial industrial and infrastructure due to local and regional growth. This volumetric mitigation storage facility will mitigate downstream flooding by retaining flows within Ingram Slough for later release when stream levels subside. Construction of the volumetric storage facility serves as mitigation for the South Lincoln Master Plan Developments.

Other Alternatives Considered (including No Action): Compliance is required per a settlement agreement reached between the Twelve Bridges Development, the City of Lincoln, and Sutter County.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $2,720,543: Combination of City and Development Fees

Cost Benefit: Reduces the potential for development impact at known flooding areas downstream of the City at Sutter County and the Cross Canal areas.

Schedule: Design 2005, 2006, Construct 2007

ACTION ITEM #6: NORTH LINCOLN REGIONAL VOLUMETRIC MITIGATION IMPROVEMENTS - PHASE 1

Issue/Background Statement: Newly developing areas of the Markham Ravine and Coon Creek watersheds, which are a part of the current general plan, and which have not previously been studied for potential peak flow and volumetric impacts will require the development of mitigation facilities.

Other Alternatives Considered (including No Action): Require project by project mitigation or No Action which would result in downstream impacts

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $4,000,000: Combination of City and Development Fees

Cost Benefit: Reduces the potential for development impact at known flooding areas downstream of the City at Sutter County and the Cross Canal areas.

Schedule: Design 2005, 2006, Construct 2007

ACTION ITEM #7: NORTH LINCOLN REGIONAL DETENTION BASIN IMPROVEMENTS - PHASE 1

Issue/Background Statement: Newly developing areas of the Markham Ravine and Coon Creek watersheds, which are a part of the current general plan, and which have not previously been studied for potential peak flow and volumetric impacts will require the development of mitigation facilities.

Other Alternatives Considered (including No Action): Require project by project mitigation or No Action which would result in downstream impacts

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $1,000,000: Combination of City and Development Fees

Cost Benefit: Reduces the risk of development impacts to peak flow rates at downstream properties

Schedule: Design 2005, 2006.

ACTION ITEM #8: GLADDING PARKWAY, STATE ROUTE 65, MCCOURTNEY ROAD - STREAM RESTORATION AND CULVERT IMPROVEMENT

Issue/Background Statement: Project improvements include new culverts at Gladding Road at Markham Ravine, raised roadway elevations at the north/south stretch of Gladding Road and local storm drainage improvements for the streets.

Other Alternatives Considered (including No Action): Required by adapted master plan

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $1,840,000: Combination of City and Development Fees

Cost Benefit: This project is necessary for health and safety issues relating to emergency service accessibility during a major flood event.

Schedule: Design 2004, 2005 Construction 2006

ACTION ITEM #9: "O" STREET DRAINAGE IMPROVEMENTS

Issue/Background Statement: Modifications to the south tributary of Markham Ravine channel as it meanders through the City will be necessary to reduce flooding potential in the adjacent subdivisions. We are recommending that the invert be lowered to provide additional capacity to reduce flood elevations by zero to three feet.

Other Alternatives Considered (including No Action): No Action.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $485,000: Combination of City and Development Fees

Cost Benefit: An analysis of the existing storm drainage systems in the area shows that there is a potential of structural flooding and roadway flooding in a 100-year event.

Schedule: Design 2004 & 2005, Build 2005 & 2006

ACTION ITEM #10: 7TH STREET DRAINAGE IMPROVEMENTS

Issue/Background Statement: Significant surface flooding is known to occur in the area. An additional Storm drainage trunk pipeline is planned for 7th Street to extend storm drain service along this corridor and to relieve other existing systems which ultimately pick up this drainage area. The proposed system would bring the storm drainage protection to City Standards.

Other Alternatives Considered (including No Action): No Action

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $915,000: Combination of City and Development Fees

Cost Benefit: Many of the roadways along this corridor flood during normal rainfall events, and access to the High school and residences is restricted. Several residents have complained that they fear the flood waters and have witnessed encroachment of floodwater in their yards, which may encroach into their structures in larger storms.

Schedule: Design 2005, Construct 2006 or 2007 as funds available

ACTION ITEM #11: AUBURN RAVINE AT STATE ROUTE 193 BRIDGE

Issue/Background Statement: Significant sediment and debris accumulate at the "chevron" style piers and abutments. Full bridge capacity needs to be restored for flood protection

Other Alternatives Considered (including No Action): No action

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $90,000: Re-occuring item is programmed $10,000 in permits and $35,000 in work every 4 years. Currently programmed through 2009

Cost Benefit: Improvements would reduce flood frequency upstream of SR-193 and increase flood protection back to the intended installation of the bridge structure

Schedule: 2004-2009

ACTION ITEM #12: AUBURN RAVINE AT STATE ROUTE 65 BRIDGE

Issue/Background Statement: Significant sediment and debris accumulate at the invert and abutments of the bridge. Full bridge capacity needs to be restored for flood protection. The accumulation of sediment in ths location also results in a significant sediment accumulation issue upstream.

Other Alternatives Considered (including No Action): No Action

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $90,000: Re-occuring item is programmed $10,000 in permits and $35,000 in work every 4 years. Currently programmed through 2009

Cost Benefit: Improvements would reduce flood frequency upstream of SR-65 and increase flood protection back to the intended installation of the bridge structure

Schedule: 2004-2009

ACTION ITEM #13: AUBURN RAVINE AT JOINER PARKWAY AND UNION PACIFIC RAILROAD BRIDGES

Issue/Background Statement: Significant sediment and debris accumulate at the invert and abutments of the bridge. Full bridge capacity needs to be restored for flood protection. The accumulation of sediment in ths location also results in a significant sediment accumulation issue upstream.

Other Alternatives Considered (including No Action): No Action

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): H

Cost Estimate/Potential Source of Funding: $102,300 - A single stabilization effort is programmed for the 2005 dry season

Cost Benefit: Improvements would reduce flood frequency between SR-65 and Joiner Parkway and increase flood protection back to the intended installation of the bridge structures

Schedule: 2005

ACTION ITEM #14: INGRAM SLOUGH - ORCHARD CREEK RETURN CHANNEL

Issue/Background Statement: This project is located east of the Lincoln Crossings Development at the Nader Property. The Construction of the channel provides a gravity release for the new channels constructed through the Lincoln Crossings development and reduces floodplain elevations, and floodplain inundation areas.

Other Alternatives Considered (including No Action): No Action would result in a large shallow overspill area with limited development potential.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): M

Cost Estimate/Potential Source of Funding: $1,568,946: Combination of City and Development Fees

Cost Benefit: The construction of the channel would bring 100-year flood elevations within Ingram Slough at the Lincoln Crossing development to City Standard Freeboard requirements, however, the interim operation would not be expected to cause any structural damages.

Schedule: 2005

ACTION ITEM #15: MARKHAM RAVINE - UPDATED FEMA ANALYSIS AND MAPPING

Issue/Background Statement: Detailed mapping and analysis will be performed for the Markham Ravine watershed. Evaluation and updating of existing FEMA mapping will be accomplished.

Other Alternatives Considered (including No Action): Required by master plan

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): M

Cost Estimate/Potential Source of Funding: $180,000 Development Fees

Cost Benefit: Precise definition of 100 years flood allows for construction to be set at required criteria. Verification of base flood data will help to determine if any flood protection deficiencies exist in this system.

Schedule: Completion 2005/2006

ACTION ITEM #16: MARKHAM RAVINE DRAINAGE IMPROVEMENTS - UNION PACIFIC RAILROAD & STATE ROUTE 65 CROSSINGS

Issue/Background Statement: Modification of the existing UPRR and SR-65 crossings at Markham Ravine will be necessary to provide 100-year protection at these structures.

Other Alternatives Considered (including No Action): No action.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): M

Cost Estimate/Potential Source of Funding: $402,000 Development Funds

Cost Benefit: Briefly Explain why this is cost effective: The main benefit would be to for the safety and welfare of the citizens of the City of Lincoln. State Route 65 north of Lincoln, is one of three entry and exit points to the downtown area of the City. All three are projected to flood in the 100-year event, which results in isolation of the downtown areas.

Schedule: 2006 Design and construct

ACTION ITEM #17: AUBURN RAVINE STREAM RESTORATION PROJECTS (ANALYSIS AND REPAIRS)

Issue/Background Statement: Auburn Ravine is one of the three major watercourses in the City. The previously defined streambed may have been altered by improper encroachment into the floodplain, which changed sediment loading conditions, or acts of nature, resulting in changes to the flow regimes. This task will analyze and recommend specific areas of improvement.

Other Alternatives Considered (including No Action): Leaving stream unrepaired results in erosion potential, and the potential of additional deposition dowstream of the City, which reduces conveyance capacity.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): L

Cost Estimate/Potential Source of Funding: $400,000: Combination of City and Development Fees

Cost Benefit: Creek restoration improvements to include restoring the channel's cross section for maximum flow, efficient transportation of sediment, and restoration of the ecosystem.

Schedule: 2005 – 2007

ACTION ITEM #18: MARKHAM RAVINE STREAMBED RESTORATION PROJECTS (ANALYSIS ONLY)

Issue/Background Statement: The existing streambed of Markham Ravine must be evaluated to determine what is necessary to restore the creek section to optimum capacity for flow of water and sediment transport.

Other Alternatives Considered (including No Action): This stream is extremely sensitive to the large amounts of attenuation currently present. Changes in the sedment loading of this system could reduce the storage capacity of the system and result in significant increases to peak flow rates and flooding potential.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): L

Cost Estimate/Potential Source of Funding: $90,000: Combination of City and Development Fees

Cost Benefit: Determinination can be made of deficiences

Schedule: 2005 (analysis only)

ACTION ITEM #19: COON CREEK STREAMBED RESTORATION PROJECTS (ANALYSIS ONLY)

Issue/Background Statement: The existing streambed of Coon Creek must be evaluated to determine what is necessary to restore the creek section to optimum capacity for flow of water and sediment transport.

Other Alternatives Considered (including No Action): Identification of potential problems can lead to solutions.

Responsible Office/Person: John E. Pedri, P.E. Director of Public Works/City Engineer

Priority (H, M, L): L

Cost Estimate/Potential Source of Funding: $90,000: Combination of City and Development Fees

Cost Benefit: Determinination of deficiences can lead to solutions

Schedule: 2006 (analysis only)

TOWN OF LOOMIS RECOMMENDED MITIGATION ACTIONS

ACTION #1: RAISE FLOOD-PRONE HOUSES ALONG LOOMIS CREEKS.

Issue/Background: The Town has kept structure flooding data since 1984. Within the Town limits, there have been 16 homes and 4 buildings flooded in the 1986 flood and 10 homes flooded in the 1995 flood. All homes flooded in 1995 were flooded in 1986.

There are four significant creeks that flow north to south through Loomis; they are Antelope Creek, Sucker Ravine, Loomis Tributary and Secret Ravine. Antelope Creek is 9,000 feet long and runs along the west portion of the Town. The creek is a natural channel throughout Loomis. The creek crossed three important street systems (King Road, Sierra College Boulevard and Del Mar Road). There are three structures identified that are affected by flooding on Antelope Creek. Sucker Ravine is in the central portion of Loomis and is roughly 8,500 feet long. Flow in this system changes in character from the north to the south. The north area flow is gathered by surface runoff near the railroad tracks and enters into pipe systems in the industrial area of Swetzer Road. The flow then runs within pipes and concrete channels within the Sunrise-Loomix Subdivision and enters a naturally lined channel north of King Road. Once the flow crosses King Road, the remaining channel to the south Town limit is natural. The creek also crosses Saunders Avenue, Sierra College Boulevard, Bankhead Road, and Taylor Road (within Rocklin). One structure is identified as being effected by flooding on Sucker Ravine. The Loomis tributary is 10,000 feet long and collects flow from the central portion of Loomis. The flow runs through several piped systems within subdivisions to the north and south of Horseshoe Bar Road. The other segments are natural channel. No flooding of structures have been identified on this tributary. Secret Ravine runs parallel with Highway 80 and is 6,000 feet in length. The creek is a natural channel with two major street crossings at Horseshoe Bar Road and Brace Road. Most of the flooding occurs on this creek system due to the building of structures along the banks. Sixteen structures have been identified as flood prone within Secret Ravine.

Under the Town's updated General Plan, no new structures are allowed to be built within the 100 year floodplain. Existing structures can only be raised or extended to a second story. All information is taken from the FEMA FIRMs. Proposed projects adjacent to the 100-year floodplain must submit to the Town a drainage study report evaluating the drainage and verifying the location of the 100-year floodplain. Larger projects may be required to submit to FEMA, a Letter of Map Revision (LOMR) to update or amend the 100-year floodplain should it be affected by the project.

Other Alternatives: Relocate the structures out of the 100-year floodplain; purchase the property, remove structure and designate it as open space. Purchase the structure/land within the 100-year floodplain, designate it as open space/detention and leave the remaining land for property owner to develop. Compensate property owner for removing structure and acquire a no-build easement of property within 100-year floodplain. No Action.

Responsible Office: Brian Fragiao, Director of Public Works/Town Engineer, Town of Loomis

Priority (H, M, L): High

Cost Estimate: In 2004 dollars, there is roughly $2.5 million dollars of structures within the flood prone areas. The cost of land was not factored into the calculation. Depending on the alternative that is used, the cost of construction and incidentals would need to be estimated at current dollar values.

Cost Benefit: With the cost of property and construction and material costs going up, the Town would alleviate much of the cost and flooding concerns by being proactive before future flooding occurs. Providing open space upstream of many of the effected properties may provide additional detention and relieve flooding downstream. As future development occurs in Placer County, in the Town and in Rocklin, the Town of Loomis will need to look for areas to detain floodwaters. This mitigation action works towards flood control in the Town.

Potential Funding: FEMA, Town of Loomis, Affected Property Owner

Schedule: TBD, depending on funding

CITY OF ROCKLIN RECOMMENDED MITIGATION ACTIONS

ACTION #1: GIS BASED MAPPING OF PERTINENT INFORMATION THAT CAN BE USED BY ALL DEPARTMENTS AND AGENCIES IN THE DEVELOPMENT OF PRE-PLANNING AND DURING EMERGENCY INCIDENTS.

Issue/Background: The City of Rocklin is in the process of creating a GIS based mapping system that provides information of various infrastructure as well as systems and areas that are of benefit in pre-planning for emergencies or mitigation of such emergencies. Some of these include: water system, sewer system, storm water system, Fire Hazard zones, Emergency Evacuation Routes, Fire Response Zones, fire hydrant locations and flow information, Police Beats and Response Zones, street names and addresses, Zoning information, and property ownership.

Other Alternatives: Continue to use existing technology and hard copy information

Responsible Office: City of Rocklin, Information Technology, GIS Technician

Priority (H, M, L): High

Cost Estimate: It is estimated that an additional $100,000 is needed. The funds will be used to add to City General Fund dollars to expedite the completion of this project. On-going maintenance costs will be covered by the City of Rocklin.

Cost Benefit: The City of Rocklin has been gathering infrastructure and pre-emergency related data for many years. A fully-funded GIS project would allow this information to migrate into a GIS system sooner. It is difficult to put an exact cost benefit from such a project. Identification of critical infrastructure and use in pre-planning for emergencies would be the greatest benefit. A GIS system is most cost effective in maintenance and updating since it will only require data entry to an already established system. Such a system could also interface with other regional agencies and provide easy access for critical information sharing.

Potential Funding: Some funding has come from the City of Rocklin General Fund. No grant funding has been available for this project to date.

Schedule: In process. Estimated two to three years out for completion and full implementation.

ACTION #2: IMPLEMENTATION OF STORMWATER TREATMENT PLAN.

Issue/Background: The City of Rocklin Public Works Department adopted an ordinance imposing limitations and procedures regarding storm water treatment and incidents affecting

storm water run-off facilities. This was a mandated program by the Federal EPA. The plan was assembled and approved according to EPA recommendations.

Other Alternatives: Do not impose additional safety measures in such areas. Failure to comply with Federal mandate.

Responsible Office: City of Rocklin, Public Works Director

Priority (H, M, L): High

Cost Estimate: Under going analysis of projected costs to implement all phases of the program. It is estimated that approximately $100,000 each year is required to fully implement the plan for successful results.

Cost Benefit: Reduction of natural and environmental hazards to waterways and areas within the City and surrounding regional waterways.

Potential Funding: Grant funding can provide a valuable source of funding for this program

Schedule: Plan completed, implementation phase in progress.

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Multi-Hazard Mitigation Plan
6.0 Plan Adoption

44 CFR 201.6(c)(5): "{The local hazard mitigation plan shall include} documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council)."

The Placer County Board of Supervisors, the City and Town Councils, and various Board of Directors for participating Districts will adopt the Multi-Hazard Mitigation Plan by passing a resolution. The resolution creates the ongoing Mitigation Coordinating Committee comprised of the HMPC and Public Input Advisory Committee as described further in Section 7.0, Plan Implementation and Maintenance. The executed copy of the adopted resolution for each participating jurisdiction is included in Appendix C. The adoption of this resolution completes Step 9 of the Plan Development Process: Formal Plan Adoption.

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Multi-Hazard Mitigation Plan
7.0 Plan Implementation and Maintenance

44 CFR 201.6(c)(4): "{The plan maintenance process shall include a} section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle."

IMPLEMENTATION

Step 10 of the Plan Development Process: Implementation and Maintenance of the Plan is critical to the overall success of Hazard Mitigation Planning. Upon adoption, the plan faces the truest test of its worth: implementation. Implementation implies two concepts: action and priority. These are closely related.

While this plan puts forth many worthwhile and high priority recommendations, the decision about which action to undertake first will be the first task facing the HMPC. Fortunately, there are two factors that help make that decision. First, there are high priority items and second, funding is always an issue. Thus, pursuing low or no-cost high-priority recommendations will have the greatest likelihood of success.

Another important implementation mechanism that is highly effective and low-cost, is to incorporate the Hazard Mitigation Plan recommendations and their underlying principles of this into other community plans and mechanisms, such as comprehensive planning, capital improvement budgeting, economic development goals and incentives, or regional plans such as those put forth by the State Department of Transportation. **Mitigation is most successful when it is incorporated within the day-to-day functions and priorities of government and development**. This integration is accomplished by constant, pervasive and energetic efforts to network, identify and highlight the multi-objective, win-win benefits to each program, the community, and the constituents. This effort is achieved through the routine actions of monitoring agendas, attending meetings, sending memos, and promoting safe, sustainable communities.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This will include creating and maintaining a bank of ideas on how any required local match or participation requirement can be met. When funding does become available, the HMPC will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, special district budgeted funds, state or federal earmarked funds, and grant programs including those that can serve or support multi-objective applications.

Priority: The HMPC decidedly chose *not* to prioritize our recommended actions – for two reasons. First, the HMPC did not want to have to rank apples and oranges between communities. Each community has their own recommended actions in their own section and will have to

determine how to identify their own match requirements and priorities. The priority assigned for each recommendation is an indication of how the project ranks in priority within the community making the recommendation. Second, the CA-OES state Hazard Mitigation Plan states their own criteria for funding local projects, so the HMPC ranking holds little weight compared to the state's. The DMA regulations state that Benefit-Cost is the #1 method by which projects should be prioritized. In the state ranking, the B/C criteria are one of 10, and while they do not state what their overall priority is, B/C is listed last.

With adoption of this plan, the HMPC should be converted into the permanent advisory body referred to as the Mitigation Coordinating Committee. This Committee, led by the Placer County OEM, agrees to:

- Act as a forum for hazard mitigation issues,
- Disseminate hazard mitigation ideas and activities to all participants,
- Pursue the implementation of high priority, low/no-cost recommended actions,
- Keep the concept of Mitigation in the forefront of community decision-making by identifying plan recommendations when other community goals, plans and activities overlap, influence, or directly affect increased community vulnerability to disasters,
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to assist the community in implementing the recommended actions for which no current funding or support exists,
- Monitor and assist in implementation and periodic Plan updates,
- Report on Plan progress and recommended changes to the County Board of Supervisors, and
- Inform and solicit input from the public.

The Committee will not have any powers over County staff; it will be purely an advisory body. Its primary duty is to see the Plan successfully carried out and to report to the County Board of Supervisors and the public on the status of Plan implementation and mitigation opportunities in Placer County. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on the County website.

Additional mitigation strategies could include consistent and ongoing enforcement for existing rules and regulations, and vigilant review of countywide programs for coordination and multi-objective opportunities.

MAINTENANCE

Plan maintenance implies an ongoing effort to monitor and evaluate the Plan implementation, and to update the plan as progress, roadblocks or changing circumstances are recognized.

This monitoring and updating will take place through a semi-annual review by OEM, an annual review through the Mitigation Coordinating Committee, and a 5-year written update to be submitted to the state and FEMA Region IX, unless disaster or other circumstances (e.g., changing regulations) lead to a different time frame. CRS requires an annual re-certification report.

When the Committee reconvenes for the review they will coordinate with all stakeholders participating in the planning process – or that have joined the Committee since inception of the planning process – to update and revise the plan. Public notice will be posted and public participation will be invited, at a minimum, through available web postings and press releases to the local media outlets, primarily newspapers and AM radio stations.

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the Plan. Changes in vulnerability can be identified by noting:

- Lessened vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Updating of the plan will be by written changes and submissions, as the Committee deems appropriate and necessary, and as approved by the County Board of Supervisors.

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APPENDIX A
Acronyms Used in this Plan

AKA	Also Known As (see CA-DOT, below)
AMEC	AMEC Earth & Environmental
BMP	Best Management Practice
BOR	Bureau of Reclamation
CA-DOT	California Department of Transportation (aka “CalTrans”)
CA-OES	California Office of Emergency Services
CCR	California Code of Regulations
CDF	California Department of Forestry
CFC	California Fire Code
CFR	Code of Federal Regulations
CERES	California Environmental Resources Evaluation System
CERT	Citizen Emergency Response Team
CGS	California Geological Survey
CHP	California Highway Patrol
CRS	Community Rating System
CSA	County Service Area (a multi-purpose district)
DMA	Disaster Mitigation Act
DWR	California Department of Water Resources
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ES	Elementary School

FEMA	Federal Emergency Management Agency (technically the Emergency Preparedness and Response (EP&R) within the Department of Homeland Security [DHS])
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
FWS	Fish and Wildlife Service
HCP/NCCP	Habitat Conservation Plan/Natural Communities Conservation Plan
HMGP	Hazard Mitigation Grant Program
HMPC	Hazard Mitigation Planning Committee
HUD	Housing and Urban Development (Department of)
Km	Kilometer
LHMP	Local Hazard Mitigation Plan
LOMR	Letter of Map Revision (an administrative method of changing the mapped floodplain without having to actually re-map it)
MMI	Modified Mercalli Scale (one way of measuring earthquakes)
MSL	Mean Sea Level
NCDC	National Climatic Data Center, a statistical data base of NOAA/NWS
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Sevice
OES	Office of Emergency Services
PCWA	Placer County Water Agency
PDM	Pre-Disaster Mitigation (Grant Program)
PG&E	Pacific Gas & Electric
PIO	Public Information Officer

RCD	Resource Conservation District
RL	Repetitive Loss
ROA	Robert Olson Associates
ROW	Right of Way
SBA	Small Business Association
SEMS	State Emergency Management System
SSC	(California) Seismic Safety Commission
TRPA	Tahoe Regional Planning Agency
UBC	Uniform Building Code
UFC	Uniform Fire Code
URM	Unreinforced Masonry (e.g., brick buildings, most prone to earthquake damage)
USACE	United Sates Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WUI	Wildland Urban Interface (That area where development and forest overlap).
WNV	West Nile Virus

APPENDIX B
Alternatives and Criteria Examined and Used by Planning Team

Once planning goals were established, the HMPC identified and evaluated viable alternatives to support identified goals. Several decision-making tools were utilized in this process, including FEMA's recommended STAPLE/E set (Sustainable Disaster Recovery, Smart Growth principles) and Others. These tools are detailed below:

CATEGORIES OF MITIGATION MEASURES

PREVENTION: Preventive measures are designed to keep the problem from occurring or getting worse. Their objective is to ensure that future development is not exposed to damage and does not increase damage to other properties.

- ***Planning***
- ***Zoning***
- ***Open Space Preservation***
- ***Land Development Regulations***
  - ***Subdivision regulations***
  - ***Building Codes***
    - ***Fire-Wise Construction***
  - ***Floodplain development regulations***
  - ***Geologic Hazard Areas development regulations (for roads too!)***
- ***Storm Water Management***
- ***Fuels Management, Fire-Breaks***

EMERGENCY SERVICES measures protect people during and after a disaster. A good emergency services program addresses all hazards. Measures include:

- ***Warning*** (flooding, tornadoes, winter storms, geologic hazards, fire)
  - NOAA Weather Radio
  - Sirens
  - "Reverse 911" (Emergency Notification System)
- ***Emergency Response***
  - ***Evacuation & Sheltering***
  - ***Communications***
  - ***Emergency Planning***
    - Activating the EOC (emergency management)
    - Closing streets or bridges (police or public works)
    - Shutting off power to threatened areas (utility company)
    - Holding/releasing children at school (school district)
    - Passing out sand and sandbags (public works)
    - Ordering an evacuation (mayor)
    - Opening emergency shelters (Red Cross)
    - Monitoring water levels (engineering)
    - Security and other protection measures (police)

- ***Critical Facilities Protection (Buildings or locations vital to the response and recovery effort, such as police/fire stations, hospitals, sewage treatment plants/lift stations, power substations)***
  - Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes
  - Lifeline Utilities Protection
- ***Post-Disaster Mitigation***
  - Building Inspections
  - ID mitigation opportunities & funding before reconstruction

PROPERTY PROTECTION: Property protection measures are used to modify buildings subject to damage rather than to keep the hazard away. A community may find these to be inexpensive measures because often they are implemented by or cost-shared with property owners. Many of the measures do not affect the appearance or use of a building, which makes them particularly appropriate for historical sites and landmarks.

- ***Retrofitting/disaster proofing***
  - ***Floods***
    - Wet/Dry floodproofing (barriers, shields, backflow valves)
    - Relocation/Elevation
    - Acquisition
    - Retrofitting
  - ***High Winds/Tornadoes***
    - Safe Rooms
    - Securing roofs and foundations with fasteners and tie-downs
    - Strengthening garage doors and other large openings
  - ***Winter Storms***
    - Immediate snow/ice removal from roofs, tree limbs
    - "Living" snow fences
  - ***Geologic Hazards (Landslides, earthquakes, sinkholes)***
    - Anchoring, bracing, shear walls
    - Dewatering sites, agricultural practices
    - Catch basins
  - ***Drought***
    - Improve water supply (transport/storage/conservation)
    - Remove moisture competitive plants (Tamarisk/Salt Cedar)
    - Water Restrictions/Water Saver Sprinklers/Appliances
    - Grazing on CRP lands (no overgrazing-see Noxious Weeds)
    - Create incentives to consolidate/connect water services
    - Recycled wastewater on golf courses
  - ***Wildfire, Grassfires***
    - Replacing building components with fireproof materials
      - Roofing, screening
    - Create "Defensible Space"
    - Installing spark arrestors

        - Fuels Modification
    - ***Noxious Weeds/Insects***
        - Mowing
        - Spraying
        - Replacement planting
        - Stop overgrazing
        - Introduce natural predators

- ***Insurance***

NATURAL RESOURCE PROTECTION: Natural resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. In so doing, these activities enable the naturally beneficial functions of floodplains and watersheds to be better realized. These natural and beneficial floodplain functions include the following:

- storage of floodwaters
- absorption of flood energy
- reduction in flood scour
- infiltration that absorbs overland flood flow
- groundwater recharge
- removal/filtering of excess nutrients, pollutants, and sediments from floodwaters
- habitat for flora and fauna
- recreational and aesthetic opportunities

Methods of protecting natural resources include:

- ***Wetlands Protection***
- ***Riparian Area/Habitat Protection/Threatened-Endangered Species***
- ***Erosion & Sediment Control***
- ***Best Management Practices***

  Best management practices ("BMPs") are measures that reduce nonpoint source pollutants that enter the waterways. Nonpoint source pollutants come from non-specific locations. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams. BMPs can be implemented during construction and as part of a project's design to permanently address nonpoint source pollutants. There are three general categories of BMPs:

1. Avoidance: setting construction projects back from the stream.
2. Reduction: Preventing runoff that conveys sediment and other water-borne pollutants, such as planting proper vegetation and conservation tillage.

3. Cleanse: Stopping pollutants after they are en route to a stream, such as using grass drainageways that filter the water and retention and detention basins that let pollutants settle to the bottom before they are drained

    - ***Dumping Regulations***
    - ***Set-back regulations/buffers***
    - ***Fuels Management***
    - ***Water Use Restrictions***
    - ***Landscape Management***
    - ***Weather Modification***

STRUCTURAL PROJECTS have traditionally been used by communities to control flows and water surface elevations. Structural projects keep flood waters away from an area. They are usually designed by engineers and managed or maintained by public works staff. These measures are popular with many because they "stop" flooding problems. However, structural projects have several important shortcomings that need to be kept in mind when considering them for flood hazard mitigation:

- They are expensive, sometimes requiring capital bond issues and/or cost sharing with Federal agencies, such as the U.S. Army Corps of Engineers or the Natural Resources Conservation Service.

- They disturb the land and disrupt natural water flows, often destroying habitats.

- They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.

- They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.

- They require regular maintenance to ensure that they continue to provide their design protection level.

Structural measures include:

- ***Detention/Retention structures***
- ***Erosion and Sediment Control***
- ***Basins/Low-head Weirs***
- ***Channel Modifications***
- ***Culvert resizing/replacement/Maintenance***
- ***Levees and Floodwalls***
- ***Anchoring, grading, debris basins (for landslides)***
- ***Fencing (for snow, sand, wind)***
- ***Drainage System Maintenance***
- ***Reservoirs(for flood control, water storage, recreation, agriculture)***
- ***Diversions***
- ***Storm Sewers***

PUBLIC INFORMATION: A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. These activities can motivate people to take protection

- ***Hazard Maps and Data***
- ***Outreach Projects*** (mailings, media, web, speakers bureau, displays)
- ***Library Resources***
- ***Real Estate Disclosure***
- ***Environmental Education***
- ***Technical Assistance*** Health & Safety Maintenance (clean-up per hazard)

MITIGATION CRITERIA

Placer County Multi-Hazard Mitigation Planning Project

(For use in selecting and prioritizing Proposed Mitigation Measures)

1. **STAPLE**

Social: Does the measure treat people fairly? (different groups, different generations)

Technical: Will it work? (Does it solve the problem? Is it feasible?)

Administrative: Do you have the capacity to implement & manage project?

Political: Who are the stakeholders? Did they get to participate? Is there public s support? Is political leadership willing to support?

Legal: Does your organization have the authority to implement? Is it legal? Are there liability implications?

Economic: Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development?

Environmental: Does it comply with Environmental regulations?

2. **SUSTAINABLE DISASTER RECOVERY**

Quality of Life

Social Equity

Hazard Mitigation

Economic Development

Environmental Protection/Enhancement

Community Participation

3. SMART GROWTH PRINCIPLES

Infill versus Sprawl

Efficient Use of Land Resources

Full Use of Urban Resources

Mixed Uses of Land

Transportation Options

Detailed, Human-Scale Design

4. OTHER

Does measure address area with highest risk?

Does measure protect …

- The largest # of people exposed to risk?
- The largest # of buildings?
- The largest # of jobs?
- The largest tax income?
- The largest average annual loss potential?
- The area impacted most frequently?
- Critical Infrastructure (access, power, water, gas, telecommunications)

Timing of Available funding

Visibility of Project

Community Credibility

APPENDIX C
Community Adoptions
(Placeholder)